SARAJI EAST MINING LEASE PROJECT

Environmental Impact Statement

Appendix C-2

Offset Strategy

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Abbreviations

ARI	average recurrence interval
BMA	BM Alliance Coal Operations Pty Ltd
BOP	Biodiversity Offset Plans (in stages) that must be developed and approved by regulators prior to commencement of mining. BMA proposed to submit one combined BOP for each stage of the Project to meet Sate and Commonwealth requirements.
BVG	Broad vegetation group
CHPP	Coal Handling and Preparation Plant
CQCA	Central Queensland Coal Associate
DAFF	Department of Agriculture, Fisheries and Forestry (Commonwealth)
DES	Department of Environment and Science (Queensland)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DoEE	Department of the Environment and Energy (now the Department of Climate Change, Energy, the Environment and Water (DCCEEW)) (Commonwealth)
EA	Environmental Authority
EIS	Environmental Impact Statement
EO Act	*Environmental Offsets Act 2014*
EO Policy	Environmental Offsets Policy 2017 under the *EO Act 2014*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPC	Exploration Permit for Coal
EVNT	endangered, vulnerable and near threatened
FPC	foliage projective cover
FY	financial year
Ha	hectare
IMG	incidental mine gas
IRC	Isaac Regional Council
Km	kilometre
LGA	Local government area
MIA	Mining infrastructure area
ML	Mining Lease
MLA	Mining lease application
MLES	Matters of Local Environmental Significance
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
Mtpa	Million tonnes per annum
MW	megawatt

NC Act	*Nature Conservation Act 1992*
OAG	Offsets Assessments Guide
OAMP	Offset Area Management Plan
PMAV	Property Map of Assessable Vegetation
RE	regional ecosystem
ROM	run of mine
SEMLP	Saraji East Mining Lease Project
SLC	special least concern
SRI	Significant Residual Impact
TEC	threatened ecological community
ToR	Terms of Reference
UNESCO	United Nations Educational, Scientific and Cultural Organisation

Executive summary

Australian and Queensland Government policies require the provision of environmental offsets for significant impacts to Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES).

This Offset Strategy describes how the BM Alliance Coal Operations Pty Ltd (BMA) will secure and manage offsets to compensate for the significant impacts of the Saraji East Mining Lease Project (the Project) on MNES and MSES as determined by the Queensland *Environmental Offsets Act 2014* (EO Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Environmental Offset Policy (2012), and how offset obligations will be acquitted over the life of the Project.

The objective of this strategy is to outline BMA's proposed approach to the delivery of offsets as well as facilitate discussion between the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) and the Queensland Government Department of Environment and Science (DES) on suitable offsets for significant impacts to biodiversity values resulting from the Project.

BMA has predicted significant impacts on MNES and MSES from the Project and identified suitable offset areas within the Brigalow Belt Bioregion for ecological matters with anticipated impacts. Through direct land-based offsets, BMA will secure proportional areas for impacts to each protected matter and deliver an overall conservation outcome to improve or maintain the viability of matters of ecological significance.

BMA propose to deliver an offset package in a staged approach related to the timing of Project construction (i.e. Stage 1) and operation (i.e. Stage 2). The staged approach allows offsets to be sought for the predicted area of significant impact for each stage, with reconciliation of actual Stage 1 impacts by field verification to be carried through into the following stage, or for future BHP projects, as offset credits. This approach provides an incentive to avoid and minimise Stage 1 impacts wherever practical.

BMA demonstrate the Project is committed to ensuring the efficient, effective, timely, transparent, proportionate, scientifically robust, and reasonable use of offsets to deliver improved environmental outcomes under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Environmental Offset Policy (2012) and Queensland EO Act.

This offset strategy also provides guidance on the further development of offset requirements to be detailed in Offset Area Management Plan(s). To ensure conservation gains are achieved, performance criteria will be established for ecological condition, weeds and pests for the offset area. The final condition score of the offset site will be required to improve by at least one point over the life of the offset. Performance targets will be defined to measure performance of the management actions during the offset management period and measure progress toward final completion criteria. The interim performance targets will be established for Years 5, 10 and 15 to provide a means to compare monitoring results, track progress and trigger maintenance or corrective actions (if required). The offset area will improve in condition and provide a positive conservation outcome or gain for values that will be lost at the impact site.

The offsets and their management will be subject further to discussion between DCCEEW and DES and subsequent landholder negotiations.

1.0 Introduction

1.1 Purpose

The purpose of this Offset Strategy is to outline how the BM Alliance Coal Operations Pty Ltd (BMA) will meet the offset requirements for the development of the Saraji East Mining Lease Project (the Project) under the Queensland *Environmental Offsets Act 2014* (EO Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The objective of this Offset Strategy is to outline BMA's proposed approach to deliver offsets of an appropriate nature and scale to achieve compensatory environmental outcomes and facilitate discussion between the Department of Climate Change, Energy, the Environment and Water (DCCEEW) and the Queensland Government Department of Environment and Science (DES) on suitable offsets for significant impacts to biodiversity values resulting from the Project.

Related assessment of matters subject to offset under the relevant legislative framework are covered in the Environmental Impact Statement (EIS) (BMA, 2024) prepared for the Project, specifically Chapter 6 Terrestrial Ecology, Chapter 21 Matters of National Environmental Significance and the Terrestrial Ecology Technical Report (AECOM, 2024).

1.2 Project overview

The Project is located approximately 170 kilometres (km) south-west of Mackay and 30 km north of Dysart in the Isaac Region of central Queensland (Figure 1). This location is immediately east of the approved existing open-cut Saraji Mine (Section 1.2.1), which means that the extent and nature of the resource is well understood, of high quality and will meet current and expected future market requirements and demands.

The Project is a greenfield single-seam underground mine development to be located on Mining Lease Application (MLA) 70383 and MLA 70459 commencing from within Mining Lease (ML) 1775. The Project Site comprises Exploration Permit for Coal (EPC) 837, EPC 2103, MLA 70383, MLA 70459, ML 1775, ML 70142 and ML 1782, except the southern extent of the powerline connection that is within Lot 10 on CNS83 and Lot 11 on CNS373.

The Project Site encompasses approximately 11,427 hectares (ha) of predominantly grazing land. Mining and the infrastructure required to support the Project will be constrained to 3,348 ha (Project Footprint). The Project Site and Project Footprint, separated into direct and indirect impact areas, are presented on Figure 2. A summary of the key Project stages including timing of direct and indirect impacts associated with mining activities and production is outlined in Table 1.

Where practicable, the Project's infrastructure has been located to minimise the overall impact on environmental values through an iterative process of identifying environmental and operational constraints. The Project configuration was developed based on proximity to practical siting and sizing of coal handing and processing plant (CHPP), proximity to rail loading infrastructure, future mining and minimising disturbance of environmentally sensitive areas.

The Project will preferentially use the existing approved Saraji Mine infrastructure such as powerlines, water supply pipelines, CHPP, haul roads, workshops and warehouses. Additional mine infrastructure will include a new CHPP, associated mine infrastructure area (MIA) and a new rail spur and balloon loop located on the Project Site where it overlaps the existing adjacent Saraji Mine. A new infrastructure and transport corridor will be constructed on MLA 70383 and MLA 70459 to accommodate the reconfiguration of existing power and water networks and internal access roads.

Table 1 Project timing summary

Project Stage	Project Stage Timespan	Activities	Stage Related Impacts
Stage 1	Year 1-3	Development of the mine portal and associated surface infrastructure construction.	Construction (direct impacts) and implementation of critical surface infrastructure, including: • road networks, • powerlines, • rail networks, • incidental mine gas, • flare infrastructure.
Stage 2	Year 3-20	Thick seam mining within the Dysart Lower (D24 and D14) seam.	Operational stage potential impacts relevant to thick seam mining, resulting in the following impacts: • subsidence (indirect impact) • ponding within subsided areas (direct impact).
	Progressively on completion of mining of each panel	Management and remediation of subsiding areas (in accordance with Subsidence Management Plan (SMP))	Disturbance may be required when requirement for drainage infrastructure, crack repairs or other subsidence related consequences are identified (direct impact)
		Progressive rehabilitation following land settling period (approximately 2 years of subsidence) (in accordance with the Rehabilitation Management Plan (RMP))	Landform reshaping (where required), followed by rehabilitation activities (e.g. seeding)

1.2.1 Existing Saraji Mine

The Project Site is located adjacent to, and in some cases overlaps, areas which are currently approved as the existing BMA Saraji Mine.

The existing Saraji Mine is an active, open cut mine owned by the Central Queensland Coal Associate (CQCA) Joint Venture, namely BHP Coal Pty Ltd, BHP Queensland Coal Investments Pty Ltd, Umal Consolidated Pty Ltd, QCT Resources Pty Limited, QCT Mining Pty Ltd, QCT Investments Pty Ltd and Mitsubishi Development Pty Ltd. The CQCA is an unincorporated joint venture between BHP Billiton (50 per cent) and Mitsubishi Corporation (50 per cent). The existing Saraji Mine is operated by BMA under a management agreement.

The existing Saraji Mine is approved to undertake open cut operations on ML 1775, ML 70142, ML 1784, ML 1782, ML 2360, ML 2410, ML 70294, ML 70298, ML 70328 and ML 700021 under Environmental Authority (EA) Permit No. EPML00862313. The existing Saraji Mine is not within the scope of this report and BMA will continue to undertake open cut mining operations, and related activities (for example, rehabilitation), at the existing Saraji Mine in accordance with the terms of its existing approvals.

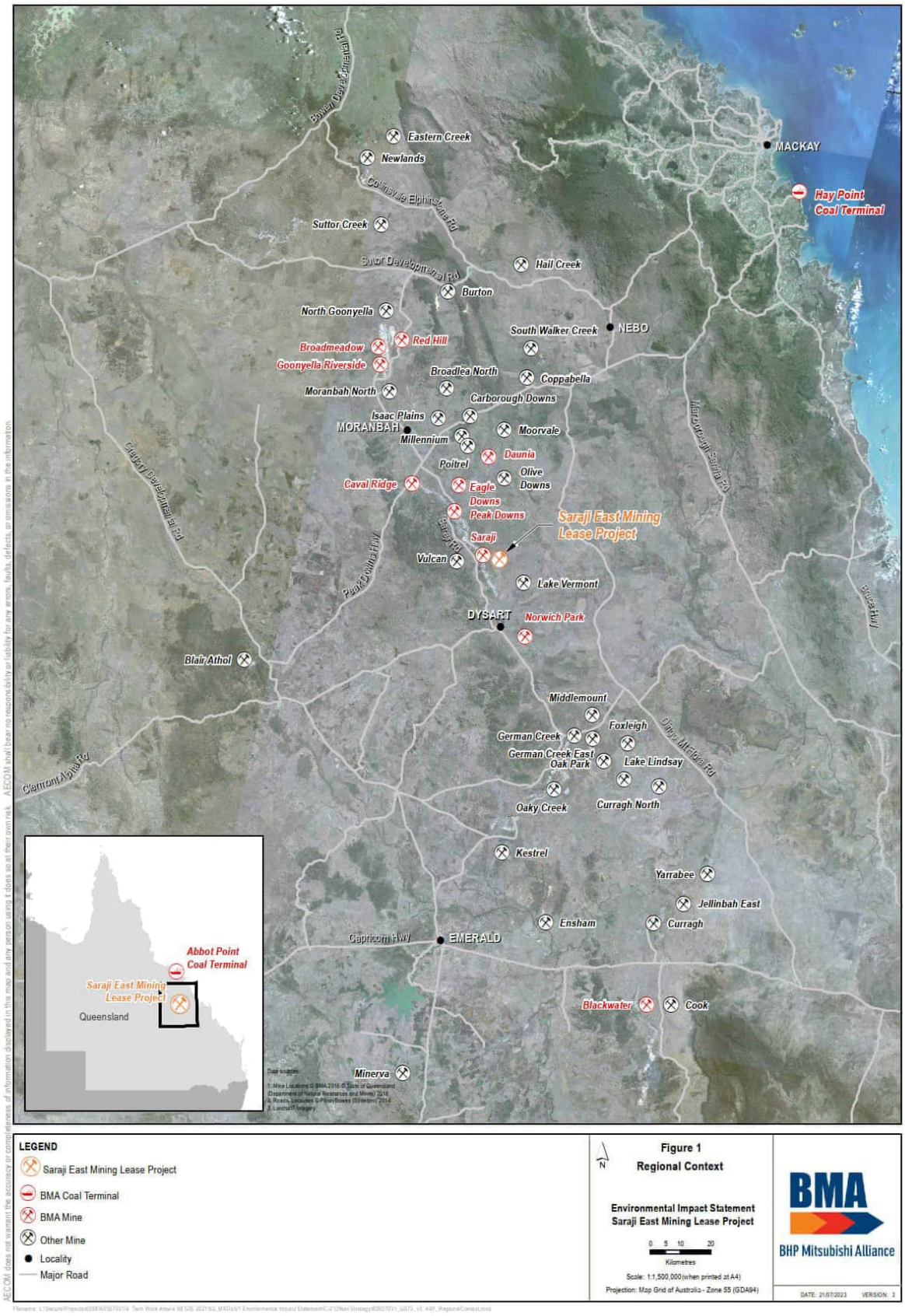


Figure 1 Regional context

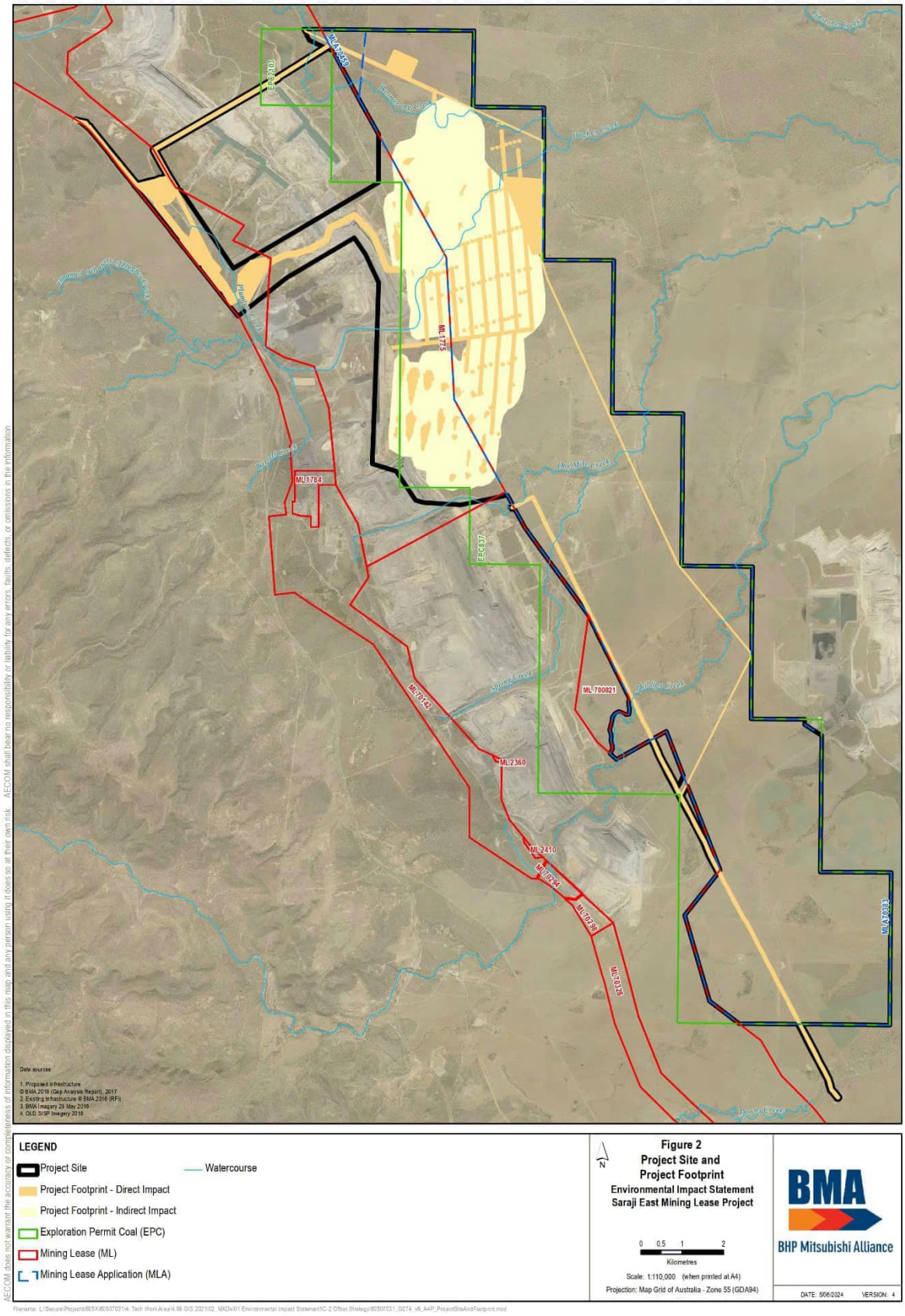


Figure 2 Project Site

2.0 Legislative framework

Offset policies under both Commonwealth and State government legislation are relevant to the Project. This section outlines principles and applicability of each policy of relevance to the Project.

2.1 Commonwealth legislation and policy

2.1.1 Applicability

On 5 October 2016, BMA referred the Project to the Department of the Environment and Energy (DoEE) (now DCCEEW) for a decision as to whether the Project constitutes a 'controlled action' that would require assessment and approval under the EPBC Act (Referral No. 2016/7791).

On 18 October 2016, the Project was determined to be a controlled action under the EPBC Act due to the potential impacts on Matters of National Environmental Significance (MNES). The relevant controlling provisions under the EPBC Act were determined as being:

- Nationally listed threatened species and communities (Section 18 and 18A).
- A water resource, in relation to coal seam gas development and a large coal mining development (Section 24D and 24E).

Environmental offsets are required where significant impacts on MNES occur from the proposed Project activities.

2.1.2 Environmental Offsets Policy 2012

The Project will be subject to the EPBC Act Environmental Offsets Policy 2012 that aims to:

- ensure the efficient, effective, timely, transparent, proportionate, scientifically robust and reasonable use of offsets under the EPBC Act
- provide proponents, the community and other stakeholders with greater certainty and guidance on how offsets are determined and when they may be considered under the EPBC Act
- deliver improved environmental outcomes by consistently applying the policy
- outline the appropriate nature and scale of offsets and how they are determined
- provide guidance on acceptable delivery mechanisms for offsets.

The EPBC Act Environmental Offsets Policy 2012 identifies eight requirements for suitable offsets:

- deliver an overall conservation outcome that improves or maintains the viability of the protected matter
- be built around direct offsets but may include other compensatory measures. Advanced offset will be considered
- be in proportion to the level of statutory protection that applies to the protected matter and be tailored specifically to the attribute of the protected matter that is impacted
- be of a size and scale proportionate to the impacts on the protected matter
- effectively account for and manage the risks of the offset not succeeding
- be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action)
- suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable
- have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.

Offsets that align with conservation priorities for the impacted protected matter and are tailored specifically to the attribute of the protected matter being impacted will deliver a conservation gain; for

example, if the proposed action is likely to have impacts on foraging habitat for a protected matter, then the offset should aim to create, improve, protect and/or manage foraging habitat.

2.2 State legislation and policy

2.2.1 Applicability

The Terms of Reference (ToR) for the Project EIS requires discussion of environmental offset requirements in accordance with the Queensland EO Act and the associated Environmental Offsets Policy 2017 Version 1.5 (EO Policy), as well as the EPBC Act Environmental Offsets Policy described above. Environmental offsets are required under the EO Act and EO Policy where significant impacts on Matters of State Environmental Significance (MSES) occur from the proposed Project activities.

2.2.2 Environmental Offsets Act 2014 and Environmental Offsets Regulation 2014

The EO Act coordinates the delivery of environmental offsets across jurisdictions and provides a single point-of-truth for offsets in Queensland.

The Environmental Offsets Regulation 2014 (EO Reg) provides details of the prescribed activities regulated under existing legislation and prescribed environmental matters to which the EO Act applies. These matters are MNES, MSES and Matters of Local Environmental Significance.

2.2.3 Environmental Offsets Policy 2017

The EO Policy provides a single, consistent, whole-of-government policy for the assessment of offset proposals to satisfy offset conditions. The EO Policy outlines seven principles that environmental offsets must meet:

- offsets will not replace or undermine existing environmental standards or regulatory requirements or be used to allow development in areas otherwise prohibited through legislation or policy
- environmental impacts must first be avoided, then minimised, before considering the use of offsets for any remaining impact
- offsets must achieve a conservation outcome that achieves an equivalent environmental outcome
- offsets must provide environmental values as similar as possible to those being lost
- offset provision must minimise the time-lag between the impact and delivery of the offset
- offsets must provide additional protection to environmental values at risk, or additional management actions to improve environmental values
- where legal security is required, offsets must be legally secured for the duration of the impact on the prescribed environmental matter.

For land-based offsets, the suitability of the offset site relative to the impact site and the prescribed environmental matters is measured through undertaking a habitat quality analysis. The Guide to Determining Terrestrial Habitat Quality (Department of Environment and Heritage Protection, 2017) must be used for Regional Ecosystems (REs) and species offsets (including advanced offsets) to undertake this analysis, unless an alternative approach is approved by DES as being able to measure a conservation outcome.

The proposed clearing areas and proposed offset sites will need to be assessed by undertaking habitat quality analysis. These assessments will be completed and outlined in a Project Offset Area Management Plan to be developed subsequent to this offset strategy.

2.3 Interaction between Commonwealth and State legislation and policy

Potential synergies exist between the EPBC Act Environmental Offsets Policy and offset policies administered by the Queensland Government. The EPBC Act Environmental Offsets Policy and Queensland EO Act support the development of complementary offset packages. The overlapping MNES and MSES will be considered when developing offset packages for the Project and offset delivery will preferentially secure offset areas which satisfy both MNES and MSES. However, in

accordance with the Queensland EO Policy, offset liabilities will not be unnecessarily duplicated and where interactions between Commonwealth and State offsets apply:

- the State cannot impose an offset condition for the same, or substantially the same, impact if the Commonwealth has assessed an activity as a controlled action and decided that an offset is, or is not, required
- State agencies cannot impose an offset condition for the same, or substantially the same, impact if another State agency has already imposed an offset condition.

3.0 Significant impacts

Direct impacts due to disturbance will occur during Stage 1: Construction (surface infrastructure, IMG drainage network) and Stage 2: Operation (ponding areas due to subsidence).

The extent of disturbance has been estimated for each Stage with calculations considered to be conservative in nature. During detailed design there may be opportunity to further minimise the footprint of the IMG network in particular. Similarly, during operation, measures will be implemented to manage any ponded areas such that the area is free draining. While these measures will largely avoid direct impacts of ponding the modelled ponding extent has been included in impact calculations to facilitate a conservative assessment (ie an over estimate of impact).

The development of the Project is expected to have a significant and impact on eight MNES and/or MSES. These matters that are subject to provision of an offset include:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community, referred to as Brigalow TEC (Endangered: EPBC Act) (MNES)
- Squatter pigeon (southern) (*Geophaps scripta scripta*) habitat (Vulnerable: EPBC Act; Vulnerable: NC Act) (MNES and MSES)
- Ornamental snake (*Denisonia maculata*) habitat (Vulnerable: EPBC Act; Vulnerable: NC Act) (MNES and MSES)
- Koala (*Phascolarctos cinereus*) habitat (Endangered*: EPBC Act; Vulnerable: NC Act) (MNES and MSES)
- Greater glider (*Petauroides volans*) habitat (Vulnerable: EPBC Act) (MNES)
- Regulated vegetation (Endangered / Of Concern REs) (MSES)
- Regulated vegetation (within the defined distance of a watercourse) (MSES)
- Regulated vegetation (REs within the defined distance of a wetland) (MSES)
- Connectivity areas (MSES)
- Protected wildlife habitat (MSES).

Indirect impacts associated with dust, noise and light changes, subsidence related changes to topography, pest and feal fauna, edge effects, weeds and mobilisation of sediment – are likely during both Stages 1 and 2. A number of management measures and monitoring programs will be implemented during Stage 1 and 2 to limit the indirect impacts to MNES and MSES and are not expected to result in significant impacts. One exception is the potential for fragmentation of Brigalow TEC patches during Stage 1 (specifically the IMG network). The fragmentation impact has been accounted for (and included in) in the extent of disturbance requiring offset.

3.1 Matters of National Environmental Significance

For known or likely TEC and threatened species, the intensity, duration, magnitude and geographic extent of the impacts has been assessed to indicate the significance of Project impacts in accordance with the EPBC Act Significant Impact Guidelines 1.1 (DotE, 2013). The assessment confirmed significant impacts on TEC and threatened species protected under the EPBC Act could occur from the Project (BMA, 2024). While mitigation and management measures for impacts focus on maximising

retention of MNES values across the Project footprint, significant impacts on TEC and listed threatened species will remain.

The quantified extent of maximum predicted impacts on MNES for the Project are summarised in Table 2, with a concise discussion outlining the rationale for determining the impact extent also provided.

Table 2 Predicted significant impacts on MNES

MNES	Predicted significant impact (ha)			Significant impact	Offset required
	Stage 1	Stage 2	Total		
Brigalow TEC	53.49	9.84	63.33	Yes	Yes
Squatter pigeon habitat	73.06	40.52	113.58	Yes	Yes
Ornamental snake habitat	331.96	54.22	386.18	Yes	Yes
Koala habitat	84.0	52.33	136.33	Yes	Yes
Greater glider habitat	34.5	4.05	38.55	Yes	Yes

Habitat quality survey and assessment for significantly impact MNES was undertaken in accordance with the EPBC Act Environmental Offsets Policy and habitat quality scores determined in accordance with the Commonwealth Modified Habitat Quality Assessment method. Two field survey events were undertaken in March and May of 2025 to collect required conditions data. The results of the condition assessment are provided in Attachment A.

3.1.1 Brigalow TEC

Presence in the Project Site

Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC (Brigalow TEC) was identified within the Project Site during the field surveys. Within the Project Site Brigalow TEC was found to be analogous to RE11.3.1, RE11.4.8 and RE11.4.9 occurring on alluvial plains adjacent to creeks and gullies (Boomerang, Plumtree and One Mile Creeks) as well as undulating clay plains. The extent of Brigalow TEC within the Project Site is 396.54 ha and is shown in Figure 3.

The condition of the Brigalow TEC varied across the Project Site with areas subject to higher grazing pressure (e.g. along creek lines or small isolated patches) showing lower species diversity within the ground and shrub layers. Larger areas of Brigalow TEC are in better condition with higher species diversity and more developed structure however still showed impacts of vegetation thinning, grazing and weed invasion from *Cenchrus ciliaris* (Buffel grass) and *Parthenium hysterophorus* (Parthenium weed).

Habitat critical to the survival of the ecological community

Several patches of Brigalow TEC have been confirmed in the Project Site. In Queensland, the Brigalow TEC is defined based on the Regional Ecosystem (RE) framework used for biodiversity planning (Sattler and Williams, 1999; Queensland Herbarium, 2013). Key diagnostic criteria and thresholds that must be met for Brigalow TEC to be confirmed include:

- Brigalow as the dominant or co-dominant species in the tree-layer
- at least 15 years since the last comprehensive clearing event (not just thinned)
- patch size is ≥ 0.5 ha
- exotic perennial species comprise < 50 per cent of total vegetation cover.

Habitat considered critical to the survival of Brigalow TEC is any patch of vegetation meeting the criteria (DoE 2013b). Based on these factors, 396.54 ha of habitat critical to the survival of the ecological community (HCSEC) is present in the Project Site for Brigalow TEC.

Several patches of RE 11.4.9 within the Project Site did not meet the thresholds listed above as these were dominated by *Casuarina cristata* (Belah) with Acacia *harpophylla* (Brigalow) absent. As such these patches were excluded from mapping and area calculations for both the TEC and HCSEC.

Project impacts and offset requirements

The Project will potentially have direct and indirect impacts to Brigalow HCSEC comprising 53.49 ha during construction (Stage 1) and up to 9.84 ha during operation (Stage 2). This impact is likely to adversely affect available habitat and reduce the extent of the TEC. The Project will result in impacts to habitat critical to the survival of Brigalow TEC of up to 63.33 ha (shown on Figure 3) to be offset.

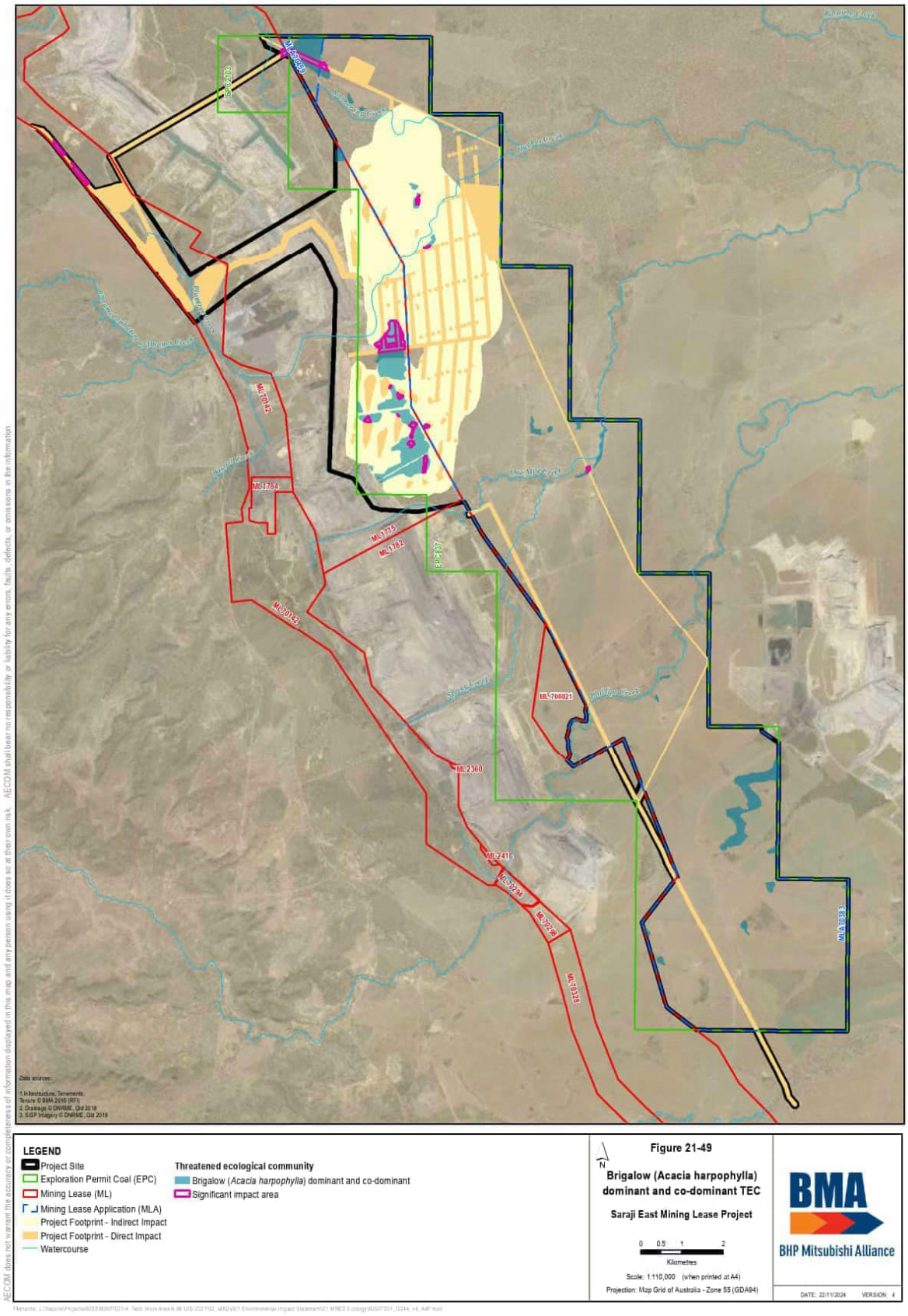


Figure 3 Brigalow HCSEC and predicted significant impact to be offset

3.1.2 Threatened species

The Project Site has been ground-truthed with habitats identified for each of the threatened fauna (indicated in Table 2). Habitat information collected during the field surveys, species records (previous and survey records), and Project vegetation mapping was used to map the potential habitat according to the habitat definitions. The habitat types have been mapped as defined in the Central Queensland Threatened Species Habitat Descriptions (Kerswell A, Kaveney T, Evans C and Appleby L., 2020).

Threatened Species Habitat

Preferred, suitable and marginal habitat types represent the below values for threatened species, with further discussion as to the site and species-specific characteristics in the following sections.

- ***Preferred habitat*** represents the habitat areas most important to the species and contains the features that are crucial for the species' persistence in an area. It includes habitats in which key activities are undertaken (e.g. breeding, roosting and/or where high quality/species limiting foraging resources are found). If the species is present in a region, individuals will usually be found in preferred habitat.
- ***Suitable habitat*** provides some resources for the species but is not considered crucial for its persistence in an area. Individuals may be found in suitable habitat but are not likely to be undertaking key activities such as breeding or roosting. Foraging resources within suitable habitat may be lower quality or used opportunistically (rather than being resources the species is dependent upon). If the species is present in a region, individuals may be found in suitable habitat, but this habitat type may also remain unoccupied.
- ***Marginal habitat*** provides limited resources for the species and is not crucial for its persistence in an area. Individuals may be occasionally found in marginal habitat but will not be undertaking key activities such as breeding, roosting or extensive foraging. If the species is present in a region, individuals would be found in marginal habitat only rarely and this habitat type is likely to be unoccupied most of the time.

Habitat Critical to the Survival of a Species

The EPBC Act Policy Statement 1.1 Significant Impact Guidelines: Matters of National Environmental Significance (Department of the Environment, 2013b) defines Habitat critical for the survival of the species (HCSS) as areas that are necessary for:

- activities such as foraging, breeding, roosting, or dispersal
- the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- the reintroduction of populations or recovery of the species or ecological community.

HCSS mapping for threatened species (for the purposes of significant impact assessment) comprised:

- All areas of preferred habitat: Habitats that are most important to the species and contain the features that are crucial for the species' persistence in an area, including activities such as foraging, breeding and/or roosting; and
- Most areas containing suitable habitat: Specifically, habitat areas connected to areas of Preferred habitat within the Project Site and/or contiguous areas of potential habitat (DoR mapped Regulated Vegetation) within the greater landscape context. While these areas may not be crucial to the species persistence in the Project Site, these are likely to be readily utilised by individuals/populations present, providing supplementary foraging resources and dispersal opportunities (i.e. contributing to 'long-term maintenance of the species') to adjacent areas of preferred habitat within the Project Site and surrounds.

HCSS did not include:

- Some minor areas of suitable habitat: This comprises smaller areas that are isolated and disconnected from preferred habitat or larger areas of suitable habitat within the Project Site and/or

potential habitat within the greater landscape context. These areas are not considered to comprise breeding/roosting habitat and unlikely to be necessary foraging resources or dispersal areas for the species ongoing persistence in the area; and

- Marginal habitat: As defined under the Central Queensland Threatened Species Habitat Descriptions (Kerswell et al., 2020), marginal habitat comprises limited resources for the species and is not crucial for its persistence in an area. Individuals may be occasionally found in marginal habitat but will not be undertaking key activities such as breeding, roosting or extensive foraging. If the species present in a region, individuals would be found in marginal habitat only rarely and this habitat type is likely to be unoccupied most of the time. Based on this description, marginal habitat is not considered to comprise HCSS.

Impact Assessment

As per the EPBC Act Significant Impact Guidelines 1.1 (Department of the Environment, 2013a), a 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts (Department of the Environment, 2013a). The Guidelines direct proponents to consider all these factors when determining whether an action is likely to have a significant impact on MNES.

In the context of this Project, the presence and determination of habitat types (i.e. preferred, suitable or marginal habitat) allows for a robust consideration of the sensitivity, value, and quality of the environment which is impacted (as discussed for each relevant species below). The significant impact assessments applied a conservative approach to considering the intensity, duration, magnitude and geographic extent of the impacts by assuming a worst-case scenario and conservative impact assessment approach for each stage. This is in line with the precautionary principle which the EPBC Act requires consideration of when determining impact significance (Department of the Environment, 2013a).

The impact assessment and other details of the above are found in Chapter 21 of the Saraji East Mining Lease Project Environmental Impact Statement. The following sections summarise the outcomes of the significant impact assessment undertaken as part of the Environmental Impact Statement.

3.1.2.1 Squatter pigeon (southern)

Habitat in the Project Site

The squatter pigeon (southern) (*Geophaps scripta scripta*) was recorded in the Project Site in 2012 and 2017 as part of Project field surveys. This extent of habitat for the species that occurs within the Project Site consists of:

- 1,375.27 ha of preferred habitat primarily located in a consolidated patch where Boomerang, Plumtree and Hughes Creeks converge. The species was recorded in the preferred habitat area in 2017.
- 475.80 ha of suitable habitat, which occurs as both a large patch between the preferred habitat fringing Plumtree and Hughes Creeks, and as additional small patches of suitable habitat scattered between Hughes Creek and One Mile Creek. The species has been recorded in 2013 in suitable habitat near One Mile Creek.
- 2,524.20 ha of marginal habitat concentrated through the centre of the Project Site.

Habitat critical to the survival of the species

HCSS includes the habitats that contain features that are crucial for the species' persistence in an area, including for activities such foraging, breeding, roosting or dispersal.

For Squatter Pigeon, this is predominantly associated with the preferred habitat category as this provides grassy understory of eucalypt woodlands near waterbodies where breeding will occur if the species is breeding on site. Preferred habitat is largely located in a consolidated patch where Boomerang, Plumtree and Hughes Creeks converge. In addition, there is suitable habitat mapped

between the preferred habitat fringing Plumtree and Hughes Creeks, which is also considered to meet the definition of HCSS. This area provides foraging resources and facilitates movement (dispersal) between preferred habitat areas.

Minor areas of suitable habitat relatively isolated and disconnected within the landscape, totalling 46.80 ha, were excluded from HCSS. Similarly, areas of marginal habitat corresponds to areas that may facilitate movement between patches of preferred and suitable habitat but does not provide important ecological resources (foraging or breeding). The species ability to readily disperse (i.e. fly) across these areas will not be impeded by the Project. As a result, these areas are not considered to meet the definition of HCSS and have been excluded.

Based on these factors, a total of 1,804.27 ha of HCSS is present in the Project Site (comprising 1,375.27 ha of preferred habitat and 429 ha of suitable habitat connected or in proximity to preferred habitat). Habitat critical to the survival of Squatter Pigeon is shown on Figure 4. Direct and indirect impacts to these sensitive habitat areas were assessed to be significant as per the EPBC Act Significant Impact Guidelines 1.1 (Department of the Environment, 2013a).

Important populations

As this species currently has no adopted recovery plan, important populations of Squatter Pigeon (Southern) (*Geophaps scripta scripta*) have been defined as per those listed in the SPRAT database (Department of Agriculture Water and the Environment, 2020b):

- populations occurring in the Condamine River catchment and Darling Downs of southern Queensland
- the populations known to occur in the Warwick-Inglewood-Texas region of southern Queensland
- any populations potentially occurring in northern New South Wales.

None of these populations are associated with the Project Site. This species remains common north of the Carnarvon Ranges in Central Queensland and is distributed as a single, continuous (i.e. inter-breeding) sub-population. Any population of Squatter Pigeon (Southern) (*Geophaps scripta scripta*) in the Project Site does not meet the definition of an important population.

Project impacts and offset requirements

The Project will have significant impacts to HCSS during the construction phase (Stage 1) as a result of habitat loss in the order of 73.06 ha, and operation phase (Stage 2) of 40.52 ha (based on the maximum extent of modelled ponding/inundation).

A total estimated 113.58 ha of HCSS may be directly impacted as shown in Figure 4. These impacts are considered to be significant and require compensation by offset.

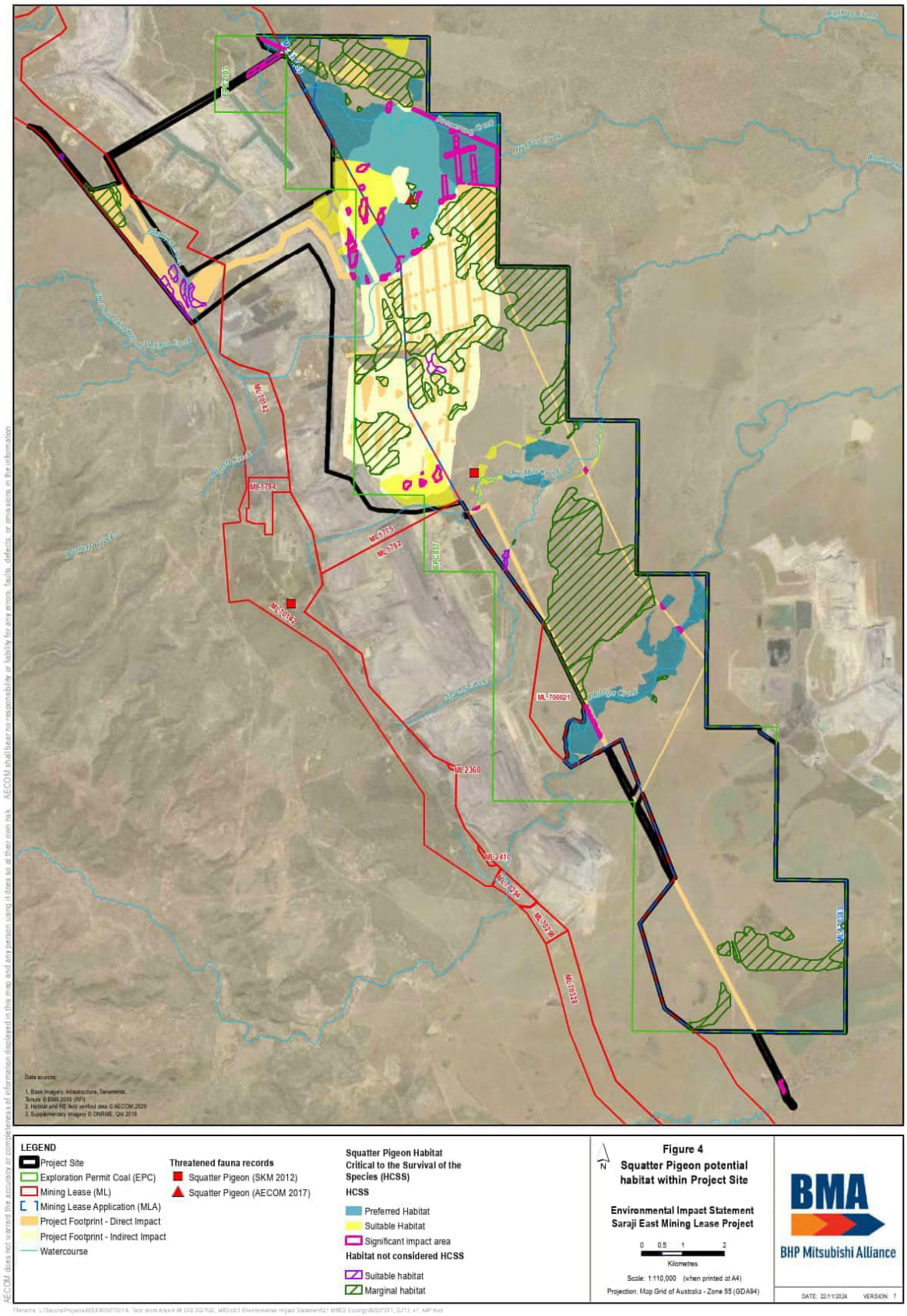


Figure 4 Squatter pigeon HCSS and predicted significant impact to be offset

3.1.2.2 Ornamental Snake

Habitat in the Project Site

Ornamental Snake (*Denisonia maculata*) has been recorded in the Project Site in 2020 and 2012. There are 11 previous records associated with studies conducted for the existing Saraji Mine. The extent of habitat for the species within the Project Site consists of 2,276.31 ha of suitable habitat. No habitat meeting the preferred or marginal definitions is located within the Project Site.

Suitable habitat incorporates dispersal habitat within 1 km of preferred habitat currently or previously dominated by brigalow or coolabah communities where gilgai or soil cracks are infrequent or are shallow or non-remnant areas. Suitable habitat for the species is present across the Project Site in the form of large and reasonably connected patches, primarily in the areas between Hughes Creek and One Miles Creek.

Further information on Ornamental Snake within the Project Site is provided in Chapter 21 of the Saraji East Mining Lease Project Environmental Impact Statement. .

Habitat critical to the survival of the species

Habitat critical to the survival of the species includes the habitats containing features crucial for the species' persistence in an area, including for activities such foraging, breeding, roosting or dispersal. The draft referral guidelines set out a cascading approach to determining 'suitable' and 'important' habitat for Ornamental Snake, the latter of which is synonymous with critical habitat.

For Ornamental Snake in the Project Site, HCSS includes larger, contiguous areas of suitable habitat providing opportunistic foraging resources for the species. These areas generally lack an abundance of microhabitat features such as deep soil cracks and fallen woody debris, excluding these areas from preferred habitat category. Habitat critical to the survival of the species primarily occurs in the areas between Hughes Creek and One Miles Creek.

Minor areas of suitable habitat that are relatively isolated and disconnected within the landscape, totalling 29.67 ha, were excluded from HCSS.

Based on these factors, a total of 2,246.65 ha of HCSS is present in the Project Site. Habitat critical to the survival of Ornamental Snake is shown on Figure 5.

Important populations

The draft referral guidelines state that given the Ornamental Snake is difficult to detect and population information is limited, important habitat is a surrogate for important populations for the purposes of significant impact assessment. If a project area contains important habitat, it contains an important population. Consequently, as important habitat is present in the Project Site, the population within the Project Site is considered 'important'.

Project impacts and offset requirements

The Project will have significant impacts to HCSS as a result of loss of habitat due to clearing for surface infrastructure (Stage 1, up to 331.96 ha) and maximum extent of temporary ponding during operation (Stage 2, up to 54.22 ha).

Large areas of suitable breeding and foraging habitat and dispersal pathways will be removed to establish surface infrastructure. Sheltering individuals may also be at risk of crushing during construction and compaction of soil cracks and removal of woody debris may reduce the carrying capacity of the habitat. Throughout construction, operation and decommissioning direct mortality from vehicle strike will remain a risk to the species.

Indirect impacts consist of habitat degradation and disruption to breeding, foraging and dispersal behaviours due to increased light and noise. While subsidence is likely to alter habitat for this species, it is expected that much of this habitat will still retain habitat functionality.

A total estimated 386.18 ha of HCSS will be directly impacted as shown in Figure 5. These impacts are considered significant and require compensation by offset.

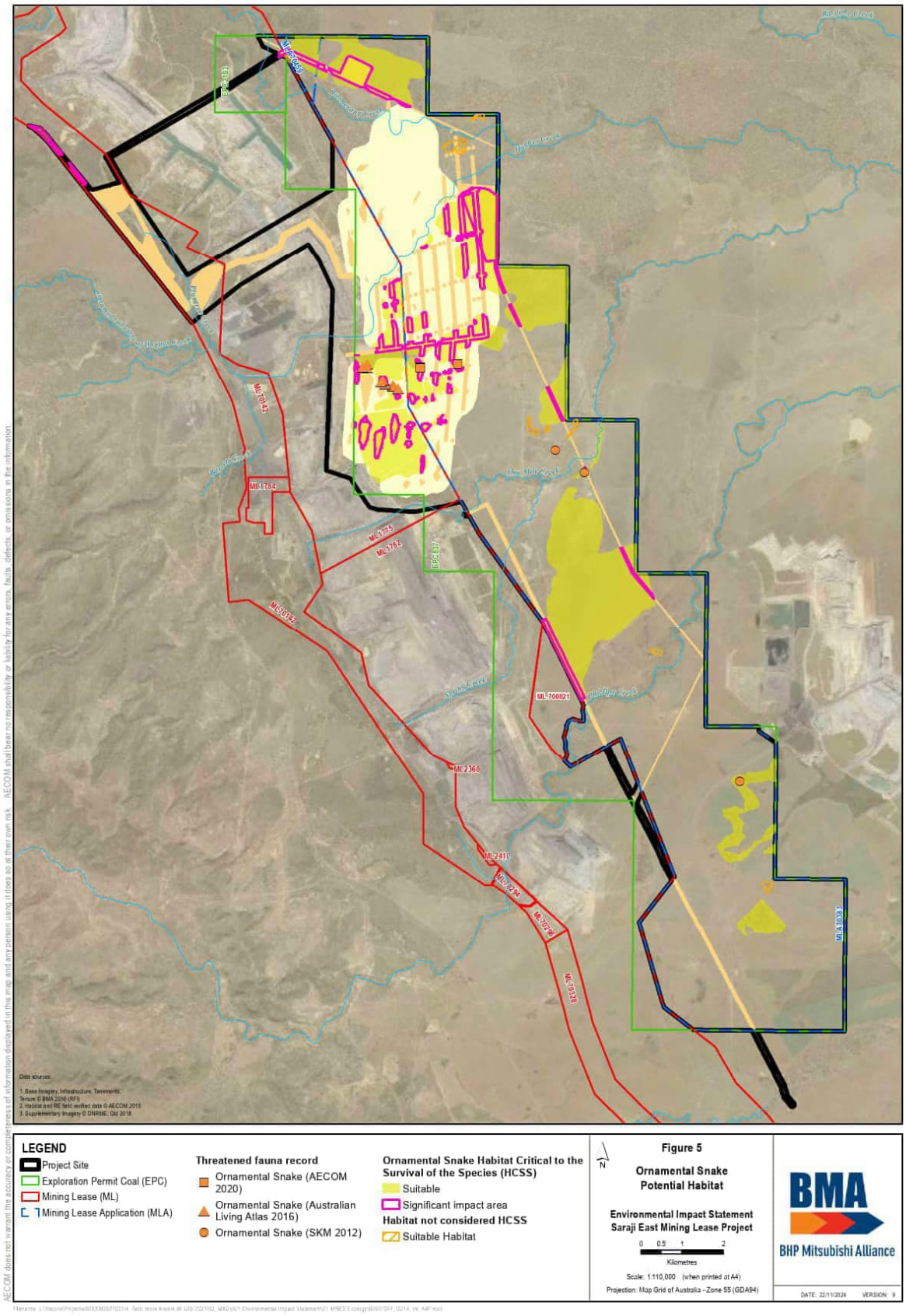


Figure 5 Ornamental snake HCSS and predicted significant impact to be offset

3.1.2.3 Koala

Habitat in the Project Site

A solitary Koala (*Phascolarctos cinereus*) was observed to the north-west of the Project Site within the riparian zone associated with Plumtree Creek in2020 and one Koala (*Phascolarctos cinereus*) was recorded from Downs Creek adjacent to the Project Site during previous ecological surveys. An additional record is known approximately 4 km west of the Project Site and the species was recorded at Peak Downs Mine East, directly north of the Project Site in 2018. The extent of habitat for the species that occurs within the Project Site consists of:

- 362.03 ha of preferred habitat occurring in association with watercourses in the Project Site and containing food trees
- 1,748.51 ha of suitable habitat not occurring in association with watercourses in the Project Site but containing food trees
- 386.67 ha of marginal habitat including Brigalow and Belah Woodland that are likely to support only very low numbers of koala populations due to lack of food resources.

Further information on Koala within the Project Site is provided in Chapter 21 of the Saraji East Mining Lease Project Environmental Impact Statement.

Habitat critical to the survival of the species

The National recovery plan states habitat critical to the survival of a species is the area that the species relies on to halt decline and promote the recovery of the species. In assessing this, the Recovery plan highlights key considerations, including if the habitat is used to meet essential life cycle requirements and if used by important populations. Within the Project Site HCSS is considered to consist of:

- all preferred habitat areas; and
- suitable habitat area that are in association with preferred habitat along Hughes Creek, Boomerang Creek, Plumtree Creek and Phillips Creek. These watercourses provide connectivity between areas of suitable habitat.

Combined preferred and suitable habitats describe eucalypt woodlands along creek-lines in semi-arid environments in central Queensland typically occupied by koalas due to higher tree species richness with higher abundance and correlating leaf moisture content (DAWE, 2022). Marginal habitat is otherwise fragmented and sparsely distributed open woodlands, shrubs and forests providing limited food trees and subject to seasonal water deficits and/or periodic high intensity fires in central Queensland have the potential to support only very low density koala populations (Kerswell, Kaveney, Evans and Appleby, 2020). A landscape across which koalas move, but does not contain palatable tree species, and/or a persistent freshwater aquifer sufficient to maintain leaf moisture at levels sufficient to sustain a resident koala population and/or a habitat structure that provides refuge from predators or the capacity to avoid heat stress, is not considered to provide habitat values for the species.

Based on these factors, a total of 2,110.54 ha of HCSS is mapped in the Project Site (comprising 362.03 ha of preferred habitat and 1,748.51 ha of suitable habitat), as shown in Figure 6.

Important populations

The Project Site may support an important population. The population of Koala (*Phascolarctos cinereus*) using the Project Site is not necessarily unique, isolated or genetically distinct from any other populations occurring in the region and the Project Site is not near the edge of the species' range. However, the Project Site contains habitat critical to the survival and an individual was recorded within this habitat. Given the scarcity of habitat critical to the survival and the importance of this habitat for providing breeding resources, it has been conservatively considered that the Project site may support a key source population for breeding and dispersal. It is also highlighted in the National recovery plan (Department of Agriculture, Water and the Environment, 2022), the Brigalow Belt population may have traits and underlying genetics that mean they are better adapted to drought and heatwaves than are other Koala populations, and hence they are important to the survival of the Koala into the future.

Project impacts and offset requirements

The Project will have significant impacts to HCSS as a result of loss of habitat during the construction phase (Stage 1), comprising 84 ha, and maximum extent of temporary ponding during operation (Stage 2) of up to 52.33 ha.

Indirect impacts of both stages relate to fragmentation, habitat modification from subsidence, disruption to behaviours due to light and noise, predator risks and habitat degradation. Management measures and monitoring are in place to reduce the likelihood of these impacts.

A total estimated 136.33 ha of HCSS will be directly impacted as shown in Figure 6. These impacts are considered significant and require compensation by offset.

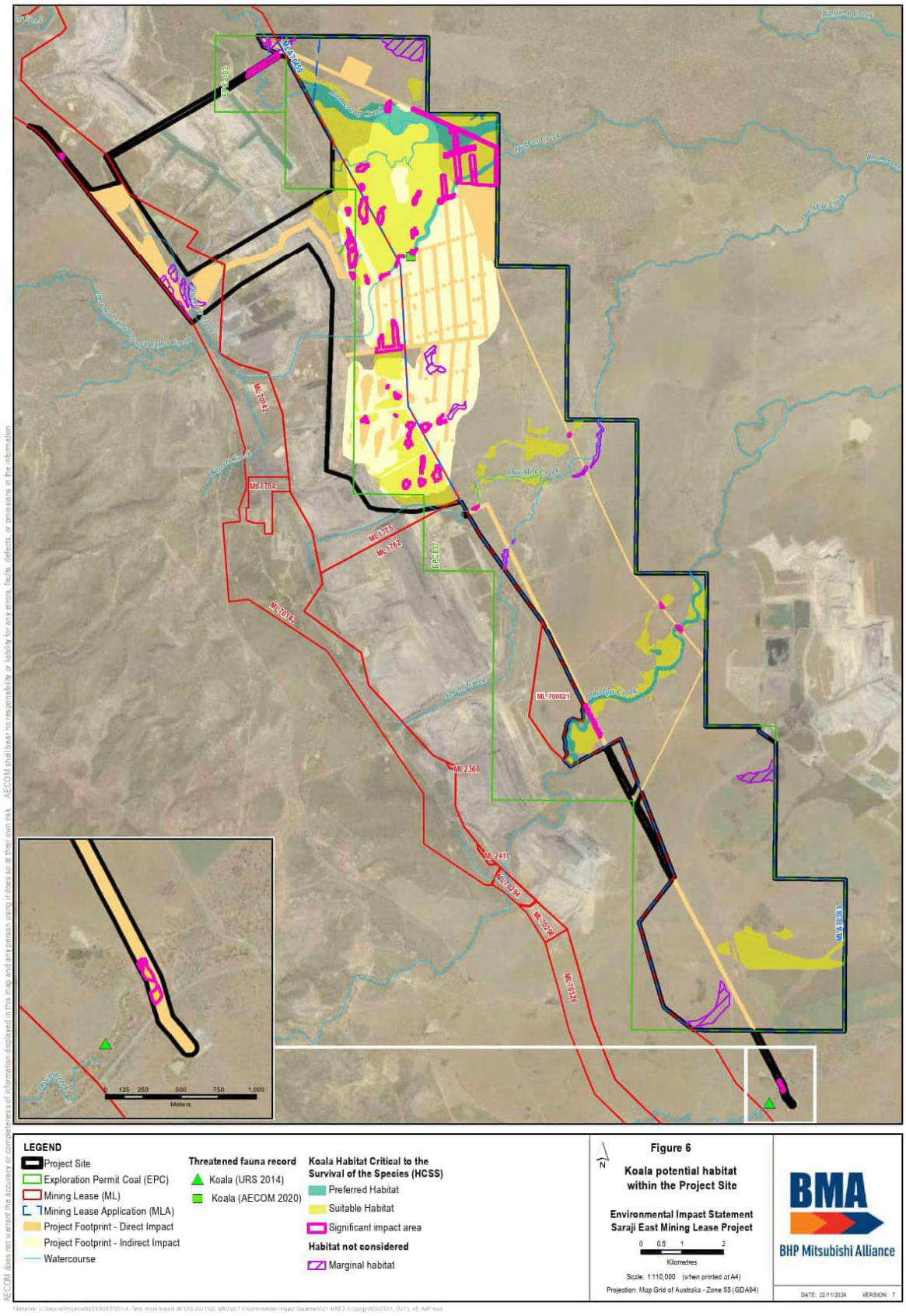


Figure 6 Koala HCSS and predicted significant impact to be offset

3.1.2.4 Greater Glider

Habitat in the Project Site

The Greater Glider (*Petauroides volans*) was recorded in the south of the Project Site 2012. A further 19 individuals were recorded in 2020, associated with riparian habitat of Boomerang Creek and Hughes Creek. Several records are known approximately 10 km west of the Project Site. The extent of habitat for the species that occurs within the Project Site consists of:

- 190.05 ha of preferred habitat located within the riparian zones, with the habitat supporting a known local population on Boomerang, Plumtree and Hughes Creeks.
- 441.82 ha of suitable habitat located adjacent to the preferred habitat and following the same riparian zones of the creek systems within the Project Site.
- 848.95 ha of marginal located in the south of the Project Site and between the Boomerang, Plumtree and Hughes Creeks in the north of the Project contains a large area of marginal habitat between suitable and preferred habitat.

Further information on Greater Glider within the Project Site is provided in Chapter 21 of the Saraji East Mining Lease Project Environmental Impact Statement.

Habitat critical to the survival of the species

There are no species-specific guidelines for determining habitat critical to the survival of the species or important populations and therefore the generic *EPBC Act Significant Impact Guidelines 1.1* definitions have been applied. HCSS includes the habitats that contain features that are crucial for the species' persistence in an area, including for activities such foraging, breeding, roosting or dispersal.

For Greater Glider (*Petauroides volans*), HCSS is primarily associated with the preferred habitat located within the riparian zones of creeks. This habitat provides key denning (hollows) and foraging resources and has been shown to support individuals. In addition to this, suitable habitat that is associated with preferred habitat that provides connectivity between preferred habitat patches, is also considered HCSS. This is due to the habitat being connected, which allows for species dispersal, recruitment and exchange of genetic material. Whereas marginal habitat is mostly previously cleared grazing areas with isolated remnant or regrowth vegetation (> 100 m) with much smaller and/or less frequent hollows. A total of 631.86 ha of HCSS is mapped within the Project Site. HCSS for Greater Glider (*Petauroides volans*) is shown on Figure 7.

Important populations

The SPRAT does not identify 'important populations' of Greater Glider (*Petauroides volans*). Therefore, any population potentially occurring within the Project Site has been assessed against the generic definition in the EPBC Act Significant Impact Guidelines 1.1 (DoE, 2013). Important populations of Vulnerable species are defined as those 'that are necessary for a species' long-term survival and recovery' and may include populations which are:

- key source populations either for breeding or dispersal;
- populations that are necessary for maintaining genetic diversity; and/or
- populations that are near the limit of the species range.

The Project Site is not located near the limit of the species range and the population of individuals present are not necessarily unique, isolated or genetically distinct from any other Greater Gliders (*Petauroides volans*) occurring in the region. However, given the high number of individuals recorded, their utilisation of preferred habitat (which contains breeding resources) and the large amounts of habitat present that allow for dispersal through and out of the Project Site, there may be an important population present.

Project impacts and offset requirements

The Project will have significant impacts to HCSS as a result of loss of habitat during the construction phase (Stage 1), comprising 34.5 ha, and maximum extent of temporary ponding during operation (Stage 2) of up to 4.05 ha.

Direct impacts will be likely the construction phase (Stage 1) long with risk for mortality during clearing works; however, mitigation measures such as fauna spotter-catchers will reduce impacts during clearing of habitat.

Indirect impacts of both stages relate to fragmentation, habitat modification from subsidence, disruption to behaviours as a result of light and noise, predator risks and habitat degradation. Management measures and monitoring are in place to reduce the likelihood of these impacts.

A total estimated 38.55 ha of HCSS will be directly impacted as shown in Figure 7. These impacts are considered to be significant and require compensation by offset.

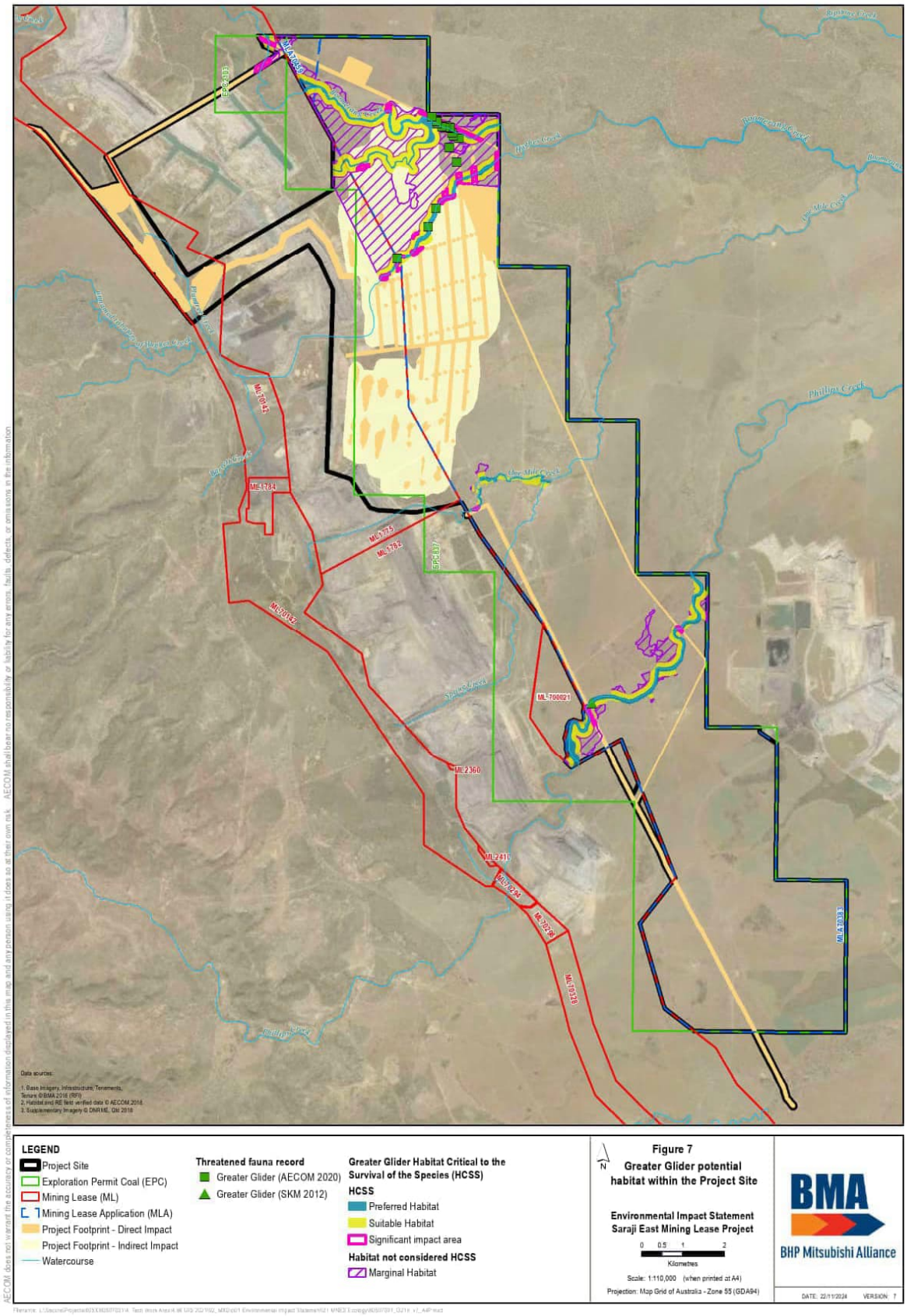


Figure 7 Greater glider HCSS and predicted significant impact to be offset

3.2 Matters of State Environmental Significance

Project impacts on identified MSES have been assessed in accordance with the Significant Residual Impact (SRI) Guidelines prepared by the Department of the Environment and Heritage Protection (2014) (AECOM, 2024). The outcome of this assessment confirmed significant impacts on Regulated Vegetation MSES according to the Certified Map showing V13.1 remnant cover ratified by the Queensland Herbarium on 8 August 2024, as described in Section 6.4.3 of Chapter 6 of the SEMLP EIS. The quantified extent of significant impacts on MSES for the Project are outlined in Table 3 and the following figures:

- Regulated vegetation (Endangered / Of Concern RE): Figure 8
- Regulated vegetation (within the defined distance of a watercourse): Figure 9
- Regulated vegetation (RE within the defined distance of a wetland): Figure 10

To avoid duplication of offset conditions between jurisdictions, state and local governments can only impose an offset condition in relation to a prescribed activity if the same or substantially the same impact and the same or substantially the same matter has not been subject to assessment under the EPBC Act. As such, SRI assessments for protected wildlife habitat have only been completed for the conservation significant species known or likely to occur within the Project Site, and not already been assessed under the EPBC Act Significant Impact Guidelines 1.1 (DotE, 2013).

Table 3 Maximum predicted significant impacts on MSES

MSES	Description	Maximum predicted significant impact (ha)			Significant impact	Offset required
		Stage 1	Stage 2	Total		
Regulated vegetation (Endangered / Of Concern RE)[1]	**Endangered RE**	**30.7**	**10.93**	**41.62**		Yes
	RE 11.3.1	1.32	0.00	1.32	Yes	
	RE 11.4.8	27.62	9.22	36.84	Yes	
	RE 11.4.9	1.76	1.71	3.47	Yes	
	Of Concern RE	**18.95**	**9.48**	**28.43**		Yes
	RE 11.3.2	8.18	0.00	8.18	Yes	
	RE 11.3.4	6.95	0.00	6.95	Yes	
	RE 11.4.2	3.82	9.48	13.30	Yes	
Regulated vegetation (within the defined distance of a watercourse)[1]	**RE adjacent to watercourses**	**10.63**	**0.95**	**16.18**		Yes
	RE 11.3.1	0.01	0.00	0.01	No	
	RE 11.3.2	0.92	0.00	0.92	No	
	RE 11.3.4	1.70	0.00	1.70	No	
	RE 11.3.25	10.63	0.95	11.58	Yes	
	RE 11.4.2	0.22	0.00	0.22	No	
	RE 11.4.8	0.07	0.00	0.07	No	
	RE 11.5.3	1.68	0.00	1.68	No	
Regulated vegetation (within the defined distance of a watercourse)[1]	**RE adjacent to wetlands**	**2.08**	**0.00**	**2.08**		Yes
	RE 11.3.4	0.04	0.00	0.04	No	
	RE 11.3.27f	2.08	0.00	2.08	Yes	
	RE 11.5.3	0.03	0.00	0.03	No	
Connectivity areas[1]	Connectivity areas	116.48	45.47	161.96	Yes	Yes

[1] Calculations based on Queensland Herbarium certified mapping.

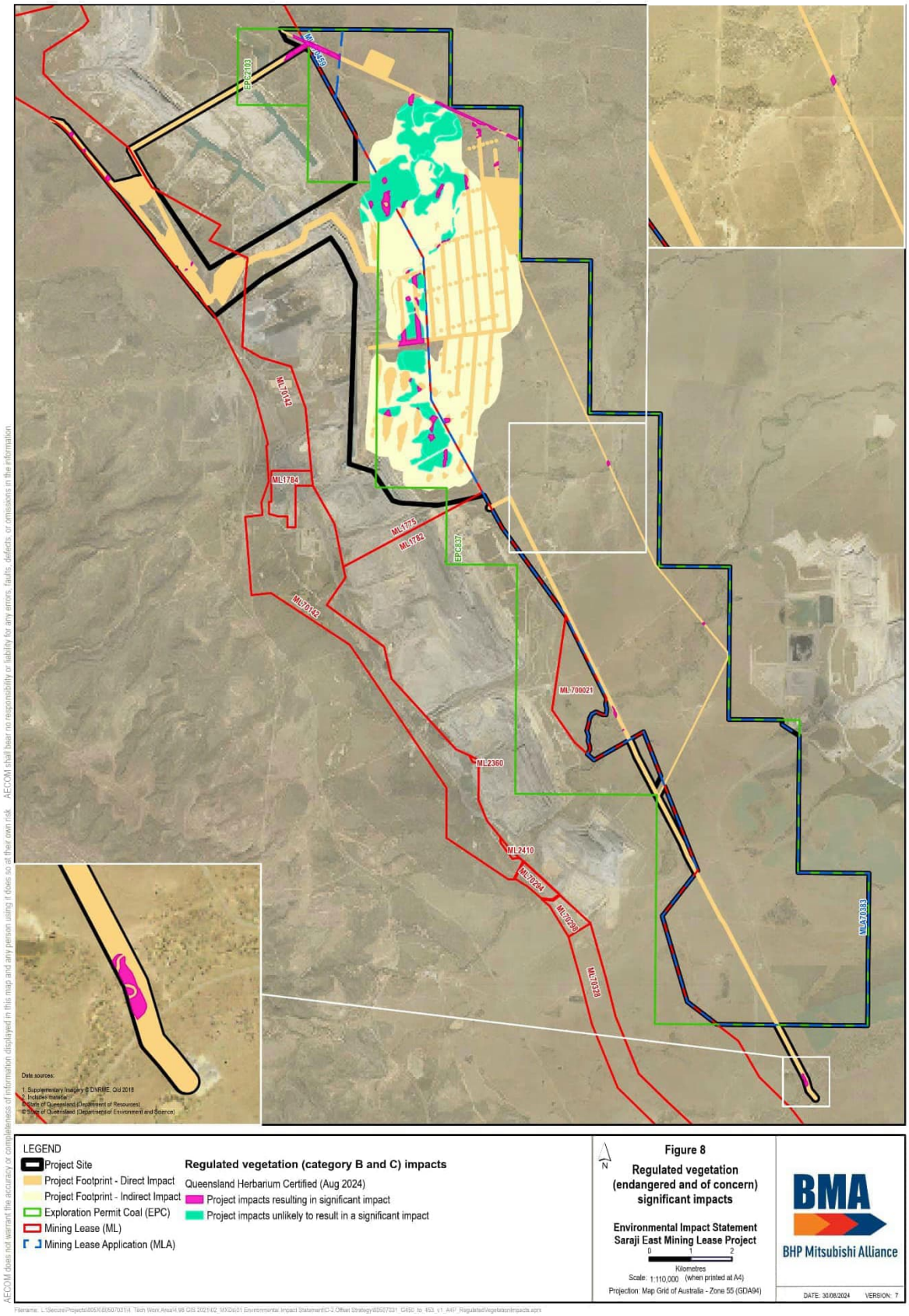


Figure 8 Regulated vegetation (endangered and of concern) significant impacts

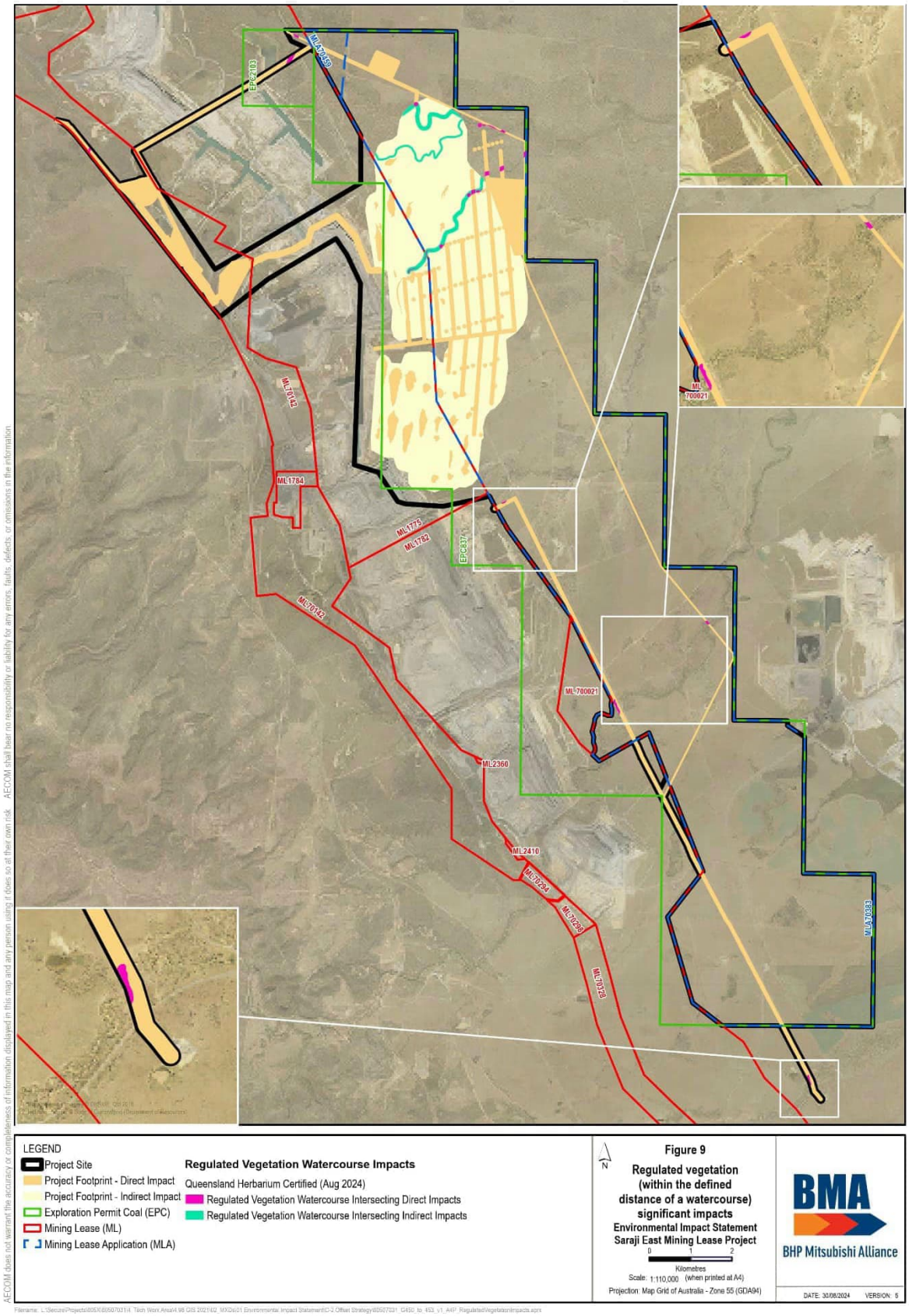


Figure 9 Regulated vegetation (within the defined distance of a watercourse) significant impacts

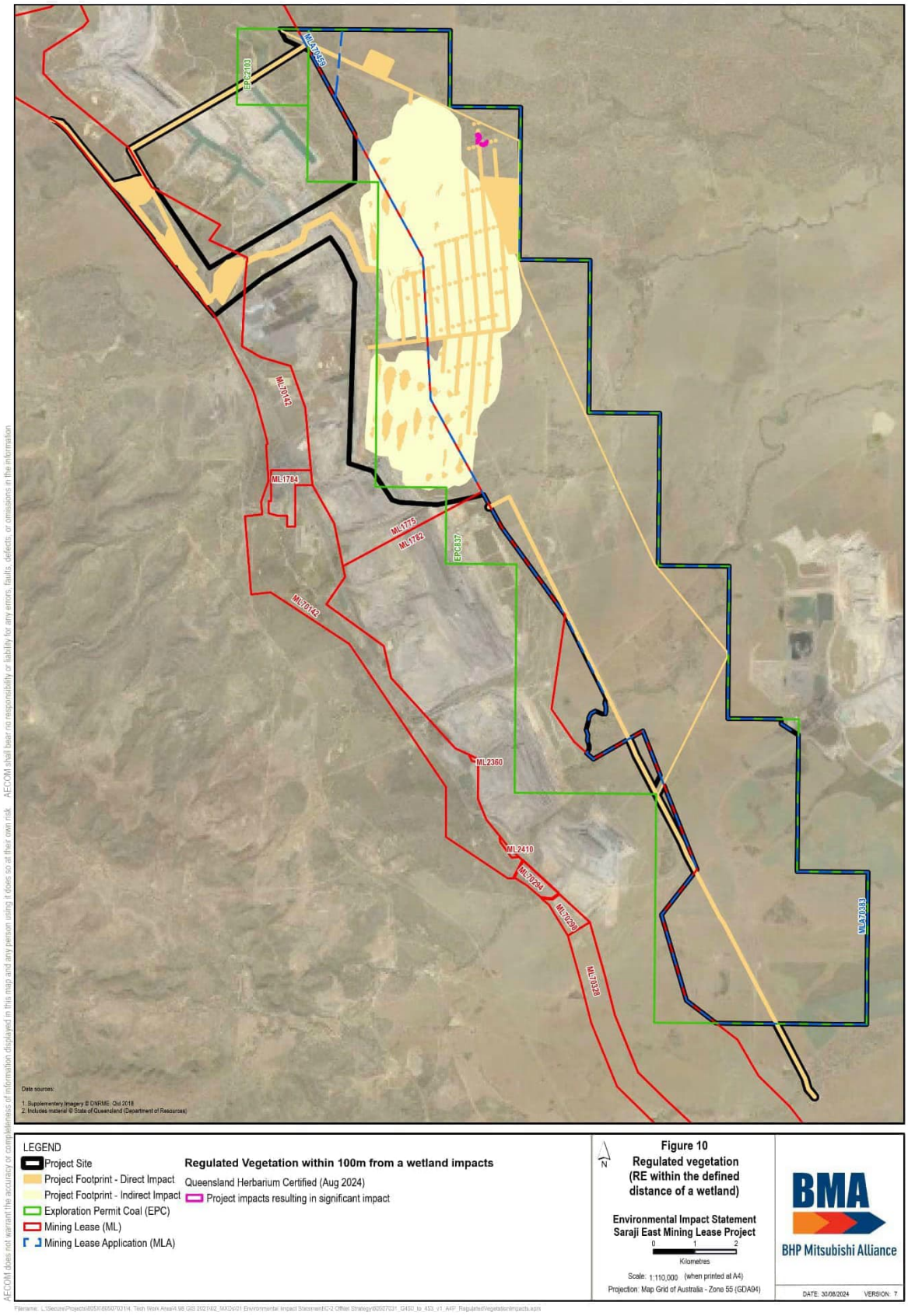


Figure 10 Regulated vegetation (RE within the defined distance of a wetland)

4.0 Summary of offset requirements and delivery mechanism

4.1 Overview

The Project offset requirements and delivery mechanisms are summarised in Table 4.

Table 4 Summary of Offset Requirement

Matter	Status		Significant Impact (ha)			Potential Offset Area required (ha)[1]	Offset delivery mechanism
	EPBC	State	Stage 1	Stage 2	Total		
MNES							
Brigalow TEC	E	-	53.49	9.84	63.33	253.32	Land-based
Squatter pigeon (southern)	V	V	73.06	40.52	113.58	454.32	Land-based
Ornamental snake	V	V	331.96	54.22	386.18	1544.72	Land-based
Koala	V	V	84.0	52.33	136.33	545.32	Land-based
Greater glider	V	V	34.5	4.05	38.55	154.2	Land-based
MSES							
Regulated vegetation – Endangered RE	-	E	30.7	10.93	41.62	166.5	Land-based
Regulated vegetation – Of Concern RE	-	OC	18.95	9.48	28.43	133.7	Land-based
Regulated vegetation – watercourse	-	-	10.63	0.95	11.58	46.4	Land-based
Regulated vegetation – wetland	-	-	2.08	0.00	2.08	8.2	Land-based
Connectivity	-	-	116.48	45.47	161.96	647.8	Land-based

[1]Estimated based on previous regulator requirements.

As noted in the Project EIS (Chapters 6 and 21) the impacts calculated are considered an over-estimate primarily due to the type of infrastructure. The IMG network footprint incorporates cleared pads for gas wells and conservative allowance for parallel corridors approximately 100m wide for the pipeline and associated access tracks. While the disturbance will be restricted to within the footprint defined in Figure 10 (which shows the 100m wide corridor), vegetation and habitat disturbance will be minimised to 20m and 50m in the case of the vehicle tracks, and 10m and 20m for the pipeline.

4.2 Duplication of offsets

Four of the matters in Table 4 are listed under both Commonwealth and State legislation. The Queensland EO Act specifies that the State or Local Government cannot impose an offset condition for the same or substantially the same impact if the Commonwealth has completed its assessment for a controlled action. As per Section 15 of the Queensland EO Act, an administering agency may impose an offset only if:

- The same impact, or substantially the same impact, has not been assessed under a Commonwealth Act; and
- The same prescribed matter, or substantially the same prescribed matter, has not been assessed under a relevant Commonwealth Act.

Squatter pigeon, ornamental snake, koala and greater glider impact assessment and offset considerations (including the potential offset area required) are determined in accordance with the Commonwealth EPBC Act offset framework. Consequently, additional offsets are unlikely to also be imposed under the State EO Act for those matters.

5.0 Approach to provision of offsets

BMA is committed to reducing potential impacts on MNES and MSES through further avoidance, management and mitigation measures during construction, operation and decommissioning phases of the Project. Recognising there will be a direct loss of a number of values an offset will be provided as a secondary measure to ameliorate significant impacts. The approach to identifying, securing and managing these offsets is detailed below.

5.1 Overarching Strategy

BMA is seeking approval for up to 100 per cent disturbance of significantly impacted MNES within the Project Footprint (Stage 1 and Stage 2). Noting the identified opportunity to further reduce impacts during construction of the IMG network in particular, the Project offsets will be delivered in two stages.

- Stage 1 - to acquit impacts related to construction activities. This comprises the offsetting of the significant impacts as a result of construction of surface infrastructure and the IMG network. This stage also accounts for identified fragmentation (indirect) impacts to Brigalow TEC resulting from the construction; and
- Stage 2 - to acquit impacts related to longer term operational impacts. This comprises the offsetting of the significant impact as a result of the predicted extent of ponding due to subsidence.

Offset delivery will align with the distinct construction/operation phases of the Project whereby at completion of Stage 1 activities the actual impact extent of the IMG network can be quantified. Any surplus offset provided can be accounted for during development of offsets for Stage 2.

The Stage 2 offset will consist of the predicted extent of ponding as a result of subsidence minus any surplus of equivalent values offset for Stage 1.

The key steps for provision of both Stage 1 and 2 offsets are summarised in the graphic below (Figure 11).

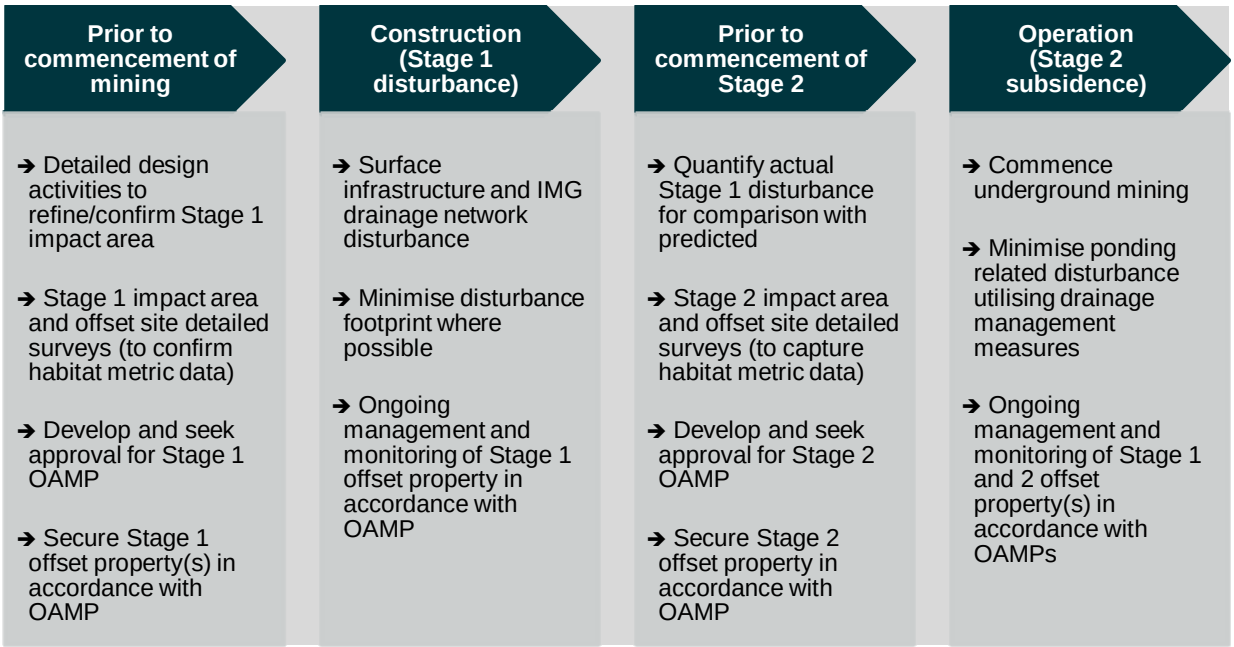


Figure 11 Key steps for provision of Project Offsets

5.2 Offset development

Prior to commencement of any ground disturbance for the Project an appropriate offset site for Stage 1 activities will be identified and an offset package developed for regulator approval. This process will consist of the following steps:

1. conduct site habitat quality analysis of disturbance area ('impact area'). Assessment of impact area habitat quality has been undertaken in 2025 (Attachment 1) and depending on the timing of proposed disturbance this analysis require review and updating
2. identify suitable offset site or sites sufficient to acquit the offset area required for each matter (include land-based, financial payment and co-location opportunities where appropriate) and conduct site habitat quality analysis to confirm the identified site(s) meets the requirements. Calculate the offset area required for each matter using the relevant offset calculator (EPBC Act offset calculator or EO Act land-based offsets multiplier calculator)
3. prepare an OAMP for approval by the Regulator.

Following execution of Stage 1 activities an accounting process will be completed to compare predicted disturbance extent with actual (in particular for the IMG network which has been calculated based on a corridor width that can be minimised on-ground)) such that the extent of offset for each matter can be reconciled and confirmed appropriate during Stage 2. Where accounting determines there is a surplus or deficit in the offset secured during Stage 1 the offset developed for Stage 2 impacts will provide an opportunity to adjust where necessary.

The Stage 2 offset will consist of the impacts relating to the modelled ponding extent and at this stage no reconciliation is planned for this offset component of the commitment.

5.2.1 Conduct habitat quality analysis for impact area

The EIS has identified matters that will be significantly impacted (as described in this strategy) which represents the maximum disturbance area to be disturbed during Stage 1 and Stage 2. Calculations in this strategy represent a conservative estimate of the likely actual losses.

Terrestrial habitat quality analysis for the Stage 1 impact area is provided in Attachment 1. The assessment will be reviewed and may be revised through site specific surveys to verify the baseline condition of the disturbance area and confirm the starting quality scores for the 'impact area' for the relevant offset calculators.

Habitat quality analysis for the impact area has used the habitat quality scoring methodology as per the Queensland Government *Guide to determining terrestrial habitat quality* (DEHP, 2017) to inform the Commonwealth offset habitat quality calculation requirements. The guide outlines the specific methodology for assessing habitat quality, which is determined by three indicators – site condition, site context and species habitat index. There is no stipulated Commonwealth method for assessing the three components of habitat quality. The terrestrial habitat quality scoring methodology will calculate the Commonwealth habitat quality inputs for the Offsets Assessments Guide (OAG) (Commonwealth Government, 2012).

The linkages between the EPBC Act offsets assessment guide habitat quality components and the Queensland guide are outlined in Table 5.

Table 5 Commonwealth habitat quality components and associated Queensland habitat quality indicators

Commonwealth habitat quality components	Queensland habitat quality indicators
Site condition: This is the condition of a site in relation to the ecological requirements of a threatened species or ecological community. This includes considerations such as vegetation condition and structure, the diversity of habitat species present, and the number of relevant habitat features.	Site condition: A general condition assessment of the following vegetation attributes compared to a benchmark: • canopy height and cover • shrub cover • species richness • recruitment • number of large trees • coarse woody debris • native perennial grass cover and organic litter.
Site context: This is the relative importance of a site in terms of its position in the landscape, taking into account the connectivity needs of a threatened species or ecological community. This includes considerations such as movement patterns of the species, the proximity of the site in relation to other areas of suitable habitat, and the role of the site in relation to the overall population or extent of a species or community.	Site context: An analysis of the site in relation to the surrounding environment based on the following landscape attributes: • patch size • connectedness • patch context • ecological corridors.
Species stocking rate: This is the usage and/or density of a species at a particular site. The principle acknowledges that a particular site may have a high value for a particular threatened species, despite appearing to have poor condition and/or context. It includes considerations such as survey data for a site in regard to a particular species population or, in the case of a threatened ecological community this may be a number of different populations. It also includes consideration of the role of the site population in regard to the overall species population viability or community extent.	Species habitat index: The ability of the site to support a species based on the following factors: • presence and severity of threats to the species • quality and availability of food and foraging habitat • quality and availability of shelter • species mobility capacity • role of the site to the species overall population in the State.

5.2.2 Identify offset area and confirm suitability

At the offset area (identified by desktop analysis) habitat quality will be measured within assessment units defined through a strategic combination of indicators that measure the overall viability of the site and its capacity to support assessment of habitat quality in line with the framework for Commonwealth offset habitat quality calculation requirements. The key indicators for determining habitat quality of an offset site are:

- Site condition: condition of a site in relation to the ecological requirements of a threatened species or ecological community.
- Site context: relative importance of a site in terms of its position in the landscape, taking into account the connectivity needs of a threatened species or ecological community.
- Species stocking rate: usage and/or density of a species at a particular site.

The outputs of the habitat quality measured at both the impact and offset areas will be utilised for implementation of the EPBC Act offset calculator and/or EO Act land-based offsets multiplier calculator to assess and confirm suitability of the offset area chosen.

5.2.3 Prepare an Offset Area Management Plan

An OAMP will be prepared for each Stage to present results of the habitat quality assessments for the impact area and the offset area. The OAMP(s) will:

- define the offset mechanism to be used for the Project Stage
  - identify the properties that will be secured as offsets, their locations and contribution towards offset requirements
  - identify those offset requirements that will be secured through the provision of other offset lands
  - identify offset requirements that will be secured through an offset payment
  - identify any indirect offset proposals
- detail conservation outcomes and performance criteria, including interim milestones
- document ongoing management actions and risks and processes for corrective actions
- detail monitoring, reporting and review requirements.

5.2.3.1 Offset Area Management Plan structure

The OAMP(s) will include:

- A description and mapping of the offset area/s, including location, size, condition, environmental values present and surrounding land uses.
- Details of how the offset area/s will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the relevant listed threatened species and communities.
- Maps and shapefiles to clearly define the location and boundaries of the offset area/s, accompanied by the offset attributes (e.g. physical address of the offset area/s, coordinates of the boundary points in decimal degrees, the listed threatened species and communities that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares).
- Specific offset completion criteria derived from the site habitat quality to demonstrate the improvement in the quality of habitat in the offset area/s over a 20 year period.
- Details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria.
- Interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset completion criteria
- Details of the nature, timing and frequency of monitoring to inform progress against achieving the 5-yearly interim milestones (the frequency of monitoring must be sufficient to track progress towards each set of milestones, and sufficient to determine whether the offset area/s are likely to achieve those milestones in adequate time to implement all necessary corrective actions).
- Proposed timing for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved.
- Timing for the implementation of corrective actions if monitoring activities indicate the interim milestones have not been achieved.
- Risk analysis and a risk management and mitigation strategy for all risks to the successful implementation of the OAMP and timely achievement of the offset completion criteria, including a rating of all initial and post-mitigation residual risks in accordance with a risk assessment matrix.
- Evidence of how the management actions and corrective actions take into account relevant species and TEC approved conservation advice with consideration of relevant recovery plans and threat abatement plans.
- Details of the legal mechanism for legally securing the proposed offset area/s, such that legal security remains in force over the offset area/s for at least 20 years to provide enduring protection for the offset area/s against development incompatible with conservation.

Prior to construction, BMA will develop, submit and implement the OAMP.

The OAMP will be periodically reviewed for consistency against the EPBC Act Environmental Offset Policy (2012). Annual reporting may be required to be undertaken to assess the progress of the offset area against biodiversity objectives. The Commonwealth has introduced requirements for compliance reporting and auditing of the OAMP(s), with which BMA will comply as directed.

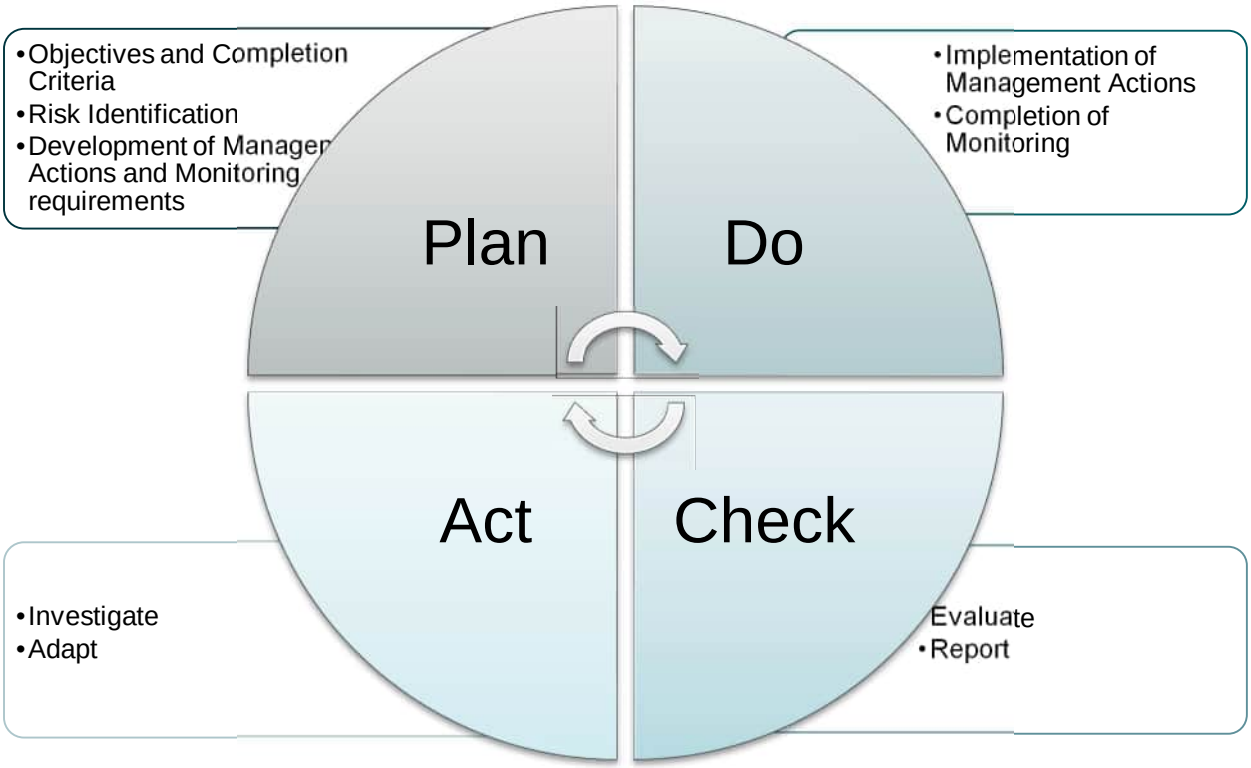
5.2.3.2 Offset Area Management Plan approval

The Project OAMP will be submitted to Regulator for approval prior to the commencement of any disturbance activities.

5.3 Offset management framework

The management of the offset commitment will be implemented in accordance with an Offset Management Framework centred on an adaptive management cycle. The cycle is based on the PLAN – DO – CHECK – ACT model used in the overarching BHP Environmental Management System (EMS). 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 may be appointed and held accountable to BMA to deliver the necessary outcomes (e.g. maintenance of infrastructure, monitoring reports etc.).

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 finally circling back to updating documentation and work plans (PLAN) to ensure improved actions are then incorporated and implemented (DO) in future.



The framework encompasses the following key components:

PLAN

- **Offset Management Objectives** – understanding of the MNES values to be offset during each Stage and threats to those values drives the management objectives for the site.
- **Completion Criteria** – final completion criteria specific to the management objectives identified. Performance targets will be defined to measure performance of the management actions during the offset management period and progress toward final completion criteria.
- **Risk Planning** – a risk assessment will identify 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.
- **Management Actions Definition** – management actions will be designed specific to the desired conservation outcomes of the offset. Actions will be documented in terms of method, location, timing for implementation and responsibility. In addition, action specific performance indicators will be defined for each management action and options for corrective actions identified.
- **Monitoring Program** – the monitoring requirements will be clearly documented. 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 (CLOR) and Management Plan LOR (or comparable management systems of the time). A corresponding mechanism for assigning and tracking monitoring, management actions, reporting etc. will be implemented. Work orders (or similar) can be developed to provide a detailed breakdown of tasks to be completed.

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. Implementation will be undertaken by suitably qualified personnel depending on the nature of the task.
- **Operation** – the offset site(s) will be operated in accordance with the management strategies defined the corresponding OAMP. This includes aspects such as land use restrictions identified to ensure the delivery of an improved environmental outcome, and the legally binding mechanism under the *Vegetation Management Act 1999* under which the offset will be secured.

CHECK

- **Evaluate** – outcomes of 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.
- **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 measuring against KPIs and performance targets.

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 can be raised for implementation (e.g. minor fencing repair). For major actions or repair works, a plan for completion can 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 fauna 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 specific species conservation).
    - The investigation may require multiple stakeholder input such as BHP Environment representative, the suitably qualified persons (e.g. ecological consultants and/or experts in specialists disciplines, landholder or land management specialists) depending on the complexity of the outcome.
- **Adapt** – where investigation outcomes require a long-term amendment to the OAMP (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 OAMP will be formally reviewed every five years (at a minimum and more frequently should monitoring outputs trigger adaptive management updates). The review will consider results of all monitoring including information gathered by the suitably qualified person, 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.

5.4 Management actions

Through the implementation of management actions, the condition of the vegetation and offset values within the offset sites will be improved from the baseline habitat quality to achieve the completion criteria within 20 years of commencement of the OAMP(s) and the offset area will be secured for the life of the approval, for the purposes of an environmental offset.

Context improvement will be achieved through the management of the broader property to reduce the likelihood of edge effects, weed invasion and provides security to the habitat connectivity in place. For example, a controlled grazing regime may be introduced as part of the OAMP(s) based on local conditions and knowledge and conform to the published science on grazing in native woodlands and grasslands. Through active management it is anticipated that the selected offset area(s) will provide continued and improved fauna colonisation, particularly through the management of grazing pressure and the control of feral animals.

To achieve the desired conservation outcomes for the offset areas, BMA will implement management actions and restrictions tailored to threats to the MNES with consideration of relevant threat abatement plans. Specific species management measures will be outlined in the OAMP once the offset site(s) is selected. These management actions will be further developed in the OAMP with consideration of

activities required to set up the offset and ongoing measures required to maintain and progress to offset toward completion criteria.

To set up the offset, activities such as below may be required:

- install access controls – e.g. fencing to restrict informal access, signage
- determine controlled grazing regime to prevent impacts to microhabitat features – suitably qualified person to determine appropriate grazing regime (e.g., no grazing, low intensity grazing). In development of the regime responsibilities for specific actions will be identified and communicated
- capture baseline data with respect to diversity and abundance of weed and pest communities
- determine interim and final completion criteria
- install species specific infrastructure if required (e.g. water points)
- select monitoring points and undertaken baseline data capture (e.g. photograph monitoring points, BioCondition).

Management actions likely to be detailed in the OAMP(s) for implementation throughout the offset period:

- routine monitoring and inspections to allow for management actions to be implemented in response to any risks identified
- inspection/repair of infrastructure following extreme weather events and assessment of status in the event changes in management are required (e.g. change grazing regime, alter restoration action plans)
- pest control measures – specific measures determined through routine inspection outcomes across the offset area. May require coordination with surrounding properties.
- management of fire risk through management of fire breaks and fuel loads (if required)
- revegetation and supplementary planting (for areas of non-remnant vegetation).

With routine management activity, the risks associated with offset management can be maintained at a low risk level as indicated in Table 6. A risk assessment update will be carried out during the development of the OAMP.

Table 6 Risks associated with management actions

Management action	Associated risk	Risk*	Proposed measure to minimise risk	Proposed remedial action if risks occurred
Grazing / Fencing	Overgrazing / grazing pressures	Low	Monitoring of grazing regimes, grass cover and biomass	Alteration of proposed grazing regimes
	Fence failures	Low	Leaseholder monitoring	Maintenance of fencing
Weed control	New weeds	Low	Weed hygiene protocols and monitoring	Weed control
	Weed infestation	Low	Weed control, grazing and monitoring	Additional weed control
Pest control	Pest outbreak	Low	Pest control and monitoring	Additional pest control
Human disturbance	Unauthorised access and disturbance	Low	Leaseholder monitoring	Security measures and signage
Fire management	High fuel loads	Low	Leaseholder monitoring	Fuel reduction methods and frequency

* Low = requires routine action; Moderate = requires moderate action < 1 month; High = requires priority action < 2 weeks; Extreme = requires immediate action < 1 week

5.5 Conservation outcome

The OAMP(s) and the measures defined within will be designed to deliver an overall conservation outcome that improves and/or maintains the viability of each matter significantly impacted by the Project, i.e. improving existing habitat for each protected matter and reducing threats. The overarching objective of the OAMP(s) will be to reduce threatening processes and increase the habitat quality of the area to a level that provides greater conservation value than the impact site.

In the first instance the definition of the offset area will be developed using the OAG which uses the area of impact and quality of habitat to assess the total quantum of impact that needs to be offset. Risk of success of the offset is also reflected in the OAG inputs such that the OAMP(s) can include measures, trigger and remedial actions to manage risk. These aspects during development of the offset area serve to establish an offset commensurate with the scale of impact. In addition, the OAMP will be targeted for each of the relevant matters significantly impacted. Potential targeted measures for the impacted matters are listed in Table 7.

To ensure conservation gains are achieved, performance criteria will be established for ecological condition, weeds and pests for the offset area. The final condition score of the offset site will be required to improve by at least one point over the life of the offset. This increase may be greater, if required to ensure the final offset condition is equal to that of the offset site.

Performance targets will be defined to measure performance of the management actions during the offset management period and measure progress toward final completion criteria. The interim performance targets will be established for Years 5, 10 and 15 to provide a means to compare monitoring results and track progress.

Multiple ecological condition indicators will be measured to achieve minimum scores to demonstrate an increase ecological condition of the offset area. The offset area will improve in condition and provide a positive conservation outcome or gain for values that will be lost at the impact site.

Table 7 Potential measures to contribute to conservation gains

Matter	Potential measures for achieving conservation gain
Brigalow TEC	• secure protection of an area of Brigalow or Brigalow regrowth from clearing or modification by land use practices • identify threats located at the offset and mitigate where possible. Monitor to assess progress and allow for adaptive management to respond accordingly • manage invasion by weeds • manage disturbance by feral animals • restrict or reduce grazing intensity
Squatter pigeon (southern)	• secure protection of an area of habitat for the species from clearing or modification by land use practices • manage invasion by weeds • manage disturbance by feral animals • restrict or reduce grazing intensity • consider installation of water sources where beneficial.
Ornamental snake	• secure protection of an area of habitat for the species from clearing or modification by land use practices • manage disturbance by feral animals, in particular pigs • restrict or reduce grazing intensity • prohibit planned fires other than for ecological purposes.
Koala	• secure protection of an area of habitat for the species from clearing or modification by land use practices • manage presence of dogs • establish opportunities for connectivity to other habitat areas locally.
Greater glider	• secure protection of an area of habitat for the species from clearing or modification by land use practices • remove any barbed wire fencing • establish opportunities for connectivity to other habitat areas locally • prohibit planned fires other than for ecological purposes.

5.6 Monitoring and reporting

The OAMP will detail the performance targets and completion criteria for improving vegetation condition within the offset site, and therefore MNES habitat quality, such that there can be a demonstration of the success in achieving the overall conservation outcome. Monitoring activities will include:

- photo point monitoring at the commencement of the Plan, and then every five years for the remaining 20 years (to be undertaken by a suitably qualified person appointed by the landowner)
- BioCondition Assessment at the commencement (baseline), and then every five years for the remaining 20 years (to be undertaken by a suitably qualified person appointed by the landowner)
- feral animal and weed monitoring conducted concurrently with BioCondition Assessment (to be undertaken by a suitably qualified person appointed by the landowner)
- manager monitoring of grazing, pest plants, pest animals fencing, access and fire breaks (to be undertaken by a suitably qualified person appointed by the landowner).

All monitoring results (including leaseholder/property manager observations) are to be recorded in documented or electronic form suitable for external audit. Reports will be provided to the relevant authorities for review as required.

The frequency of monitoring will be determined based on the current condition of the offset area and the likely rate of change (improvement or decline). Monitoring frequency is likely to be higher in the initial five years as this is generally the period in which the greatest change occurs, and an important period in ensuring management measures have the offset heading in the right trajectory to reach the performance criteria.

BMA will prepare a report on the implementation of this management plan at 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 the activities implemented under the plan, and discuss the effectiveness of mitigation measures, based on the results of monitoring activities. Reporting will be conducted through internal BMA compliance reporting.

6.0 Offset availability

6.1 Overview

Biodiversity offsets delivered by BMA will be in accordance with the requirement of the EPBC Act and EO Act. Development of the offset package (including OAMP(s)) will be finalised once all approvals are granted and preparations for the Project execution are underway. This offset strategy has been developed to accompany the Project EIS and more detailed analysis of offset availability will be undertaken in future stages. To support decision making a preliminary assessment of offset availability for the relevant matters to the Project is presented here. The purpose of this preliminary assessment is to confirm the likelihood of sufficient land-based offset being available to BMA.

The preliminary assessment comprised a desktop assessment that considered offset availability within land currently owned by BMA (as priority) followed by geospatial analysis using available datasets to assess availability of a suitable offset within the region. The preliminary assessment confirms there is opportunity within BMA owned property and other land in the region to develop an offset suitable to compensate for impacts associated with the Project.

6.2 Offset availability identification methodology

Estimation of potential offset availability within the bioregion was undertaken using desktop assessment of available remnant, MSES and High Value Regrowth vegetation within the Brigalow Belt Bioregion and criteria that reflect the identified offset criteria listed in applicable offset guidelines.

Potential offset areas were selected based on lot and plan rather than properties which may contain more than one lot. Offsets may be located on several properties due to the requirements of ornamental

snake habitat and the brigalow TEC which are substantially different to the remainder of the MNES potentially being impacted.

The desktop assessment identified limitations, including:

- areas require ground-truthing of environmental values
- potential conflicts may exist between land use areas
- further site-specific habitat quality analyses are required to determine the suitability of the offset and the size of the offset required for each impact
- landholders who own the potential offset areas may not wish their land to be the subject of environmental offsets.

6.3 Offset availability within the region

Potential land-based offset availability for significant impacts to MSES and MNES including Regulated Vegetation, TEC and listed threatened species habitat has been identified as present within the Brigalow Belt Bioregion.

Four properties (identified in Table 8) owned by BMA, comprising of freehold, leasehold or trust land, have been selected which offer potential to offset all identified significant impacts of the Project. In addition to these four identified properties, five further properties (identified as A, B, C, D and E) (see Table 9) offer additional offset capacity, and demonstrate ample suitable offset area is available in the region to acquit unanticipated significant impacts associated with the Project.

Information presented by this report likely underestimate the full extent of available offset areas within the region. Potential offset area availability does not include younger regrowth vegetation that could also be suitable to address the Project's offset requirements. Furthermore, assessment of suitable areas to address MNES offset requirements has been limited to suitable BVGs to address MSES significant impacts, with the intent of co-locating offsets. Other suitable BVGs for offsetting MNES are available in the region. This available area does not include younger regrowth vegetation that could also be suitable to address the Project's offset requirements.

Table 8 Potential offset availability for maximum predicted significant impacts to MNES and MSES

Matter		Status RE/BVG	Area (ha)								
			Significant impact			Potential offset required	Offset availability by property				
			Stage 1	Stage 2	Total		Terang[1]	Myuna[2]	Croydon[3]	Ganadero[4]	Total
MNES	Brigalow TEC	Endangered 25a	53.49	9.84	63.33	253.32	348.7	1,039.0	-	350.0	1,737.7
	Ornamental snake	Vulnerable 25a	331.96	54.22	386.18	1,544.72	379.0	892.0	64.4	297.0	1,632.38
	Koala	Vulnerable 16a, 17a, 25a	84.0	52.33	136.33	545.32	1,707.3	5,112.0	688.3	33.0	5,007.2
	Greater glider	Vulnerable 16a, 17a	34.5	4.05	38.55	154.2	92.3	1,514.0	87.5	-	1,693.8
	Squatter pigeon (southern)	Vulnerable 16a, 17a, 25a	73.06	40.52	113.58	454.32	2,094.0	5,320.0	108.4	-	7,522.4
MSES	Endangered RE	11.4.8/11.4.9/11.3.1 (25a)	30.7	10.9	41.6	166.5	848.9	78.4	591.6	352.0	1,357.8
	Of concern RE	11.3.2/11.4.2 (17a) 11.3.4 (16c)	19.0	9.5	28.4	133.7	113.7	-	-	66.2	179.9
	Regulated vegetation within defined distance of a watercourse	11.3.25 (16a)	10.6	1.0	11.6	46.4	58.9	3.2	5.1	-	57.2
	Regulated vegetation within defined distance of a wetland	11.3.27f (34d)	2.1	0.0	2.1	8.4	To be confirmed				

[1] E2M Consulting (2022). *Saraji East Offset Suitability Assessment*. Prepared for AECOM Australia on behalf of BM Alliance Coal Operations Pty Ltd.
[2] Eco Logical Australia (2021). *Myuna Property Terrestrial Ecology Assessment*. Prepared for Advisian on behalf of BHP.
[3] E2M Consulting (2022). *Blackwater Mine Northern Extension Project Offsets – Westbridge Paddock Survey Summary*. Prepared for SLR Consulting on behalf of BHP.
[4] Eco Logical Australia (2015). *Ecological Assessment of Ganadero Property: Validation of Commonwealth and State Offset Values*. Prepared for BM Alliance Coal Operations Pty Ltd.

Table 9 Additional properties providing offsetting opportunities for MNES and MSES

Matter		Status RE/BVG	Area (ha)							
			Significant impact	Potential offset required	Potential offset availability by property					
					A	B	C	D	E	Total offset opportunity
MNES	Brigalow TEC	Endangered 25a	63.33	253.32	2,658	-	721	1,489	5,458	10,326
	Ornamental snake	Vulnerable 25a	386.12	1,544.72	2,658	-	721	523	8,786	12,688
	Koala	Vulnerable 16a, 17a, 25a	136.33	545.32	9,780	14,698	7,885	6,661	11,451	50,475
	Greater glider	Vulnerable 16a, 17a	38.55	154.2	713	2,276	4,487	3,898	9,808	21,182
	Squatter pigeon (southern)	Vulnerable 16a, 17a, 25a	113.58	454.32	10,031	17,499	4,788	7,831	12,059	52,208
MSES	Endangered RE	11.3.1/11.4.8/11.4.9 (25a)	41.6	166.5	2,492	0	721	486	4,595	8,294
	Of concern RE	11.3.2/11.4.2 (17a) 11.3.4 (16c)	28.4	133.7	472	1,079	502	1,079	1,335	4,467
	Regulated vegetation within defined distance of a watercourse	11.3.25 (16a)	11.6	46.4	64	6	290	244	1,071	1,675
	Regulated vegetation within defined distance of a wetland	11.3.27f (34d)	2.1	8.4	To be confirmed					

6.4 Offset site prioritisation

While proposed offset areas will meet the intent of Commonwealth and State offset policies, prioritisation will be given to those areas containing multiple offset values and are strategically located. Offsets which contain connectivity values, such as those within regional wildlife corridors, will be prioritised to provide a greater enhancement of biodiversity and long-term conservation outcomes.

The final availability and ecological suitability will be dependent on both landholder engagement and ecological equivalence.

With the exception of potentially one or two relevant ecological values, BMA considers it has sufficient currently unutilised reserve offset land within its existing portfolio of available properties, inclusive of the in progress development of call option arrangements, to address all the MNES and MSES values to be offset in accordance with legislative and policy requirements.

BMA is also actively monitoring commercial developments relating to several other potential target properties to identify the optimal time to secure ownership for additions to its in-reserve portfolio. One trigger for settling arrangements for these target properties would be confirmation during BMA's regular review processes post EIS and pre Project commencement that further offset land is needed because, for example, some of BMA's reserve land is used for other projects or a top up is needed for one or two values e.g. ornamental snake habitat. A second example for a trigger would be if the Commonwealth were able to resolve problems with its Advanced Offsets policy limiting the ability for project proponents to secure offsets prior to the conclusion of a referral and assessment process. This would provide BMA with the confidence to expand its reserve land portfolio.

BMA and its owners have strong financial positions to enable land acquisitions as required. In addition, BMA has a highly successful track record stretching back more than 15 years of securing offset properties before the necessary deadlines associated with many relevant project developments and associated environmental approvals.

7.0 Conclusion

This Offset Strategy describes how BMA will secure and manage offsets required to compensate for the significant impacts of the Project on MNES and MSES, as determined by the Queensland EO Act and the Commonwealth EPBC Act Environmental Offsets Policy (2012), and how offset obligations will be acquitted over the life of the Project.

Through direct, land-based offsets, BMA will secure proportional areas for impacts to each protected matter and deliver an overall conservation outcome that improves or maintains the ecological condition and viability of populations.

BMA has assessed the maximum predicted significant impact of the Project (Section 3.0) and identified a reasonable approach (Section 5.0) with enough potential offset areas available within the Brigalow Belt Bioregion for all the matters with significant impacts (Section 6.0). The results of this desktop assessment have been presented for each MNES and MSES with total available offset area (hectares).

As well as significant impact estimates and associated offset availability, BMA's approach to the provision of offsets outlined within Section 3.2, includes details the offset staging process and landholder negotiations. The staged approach allows offsets to be sought for the maximum area of significant impact, with reconciliation of actual impacts by field verification to be carried onto future BHP projects as offset credits.

This Offset Strategy has demonstrated that the Project is committed to ensuring the efficient, effective, timely, transparent, proportionate, scientifically robust and reasonable use of offsets to deliver improved environmental outcomes under the EPBC Act Environmental Offset Policy and EO Act.

Prior to Stage 1, and associated direct construction impacts, the acquittal process to be used to demonstrate that offsets have been provided for existing and future significant impacts will be subject to discussion between DCCEEW and DES and subsequent landholder negotiations.

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Attachment 1 Impact Site Habitat Quality Assessment

Saraji East Mining Lease Project: Impact Site Habitat Quality Assessment

19 June 2025

BHP Mitsubishi Alliance

480 Queen Street, Brisbane, QLD, 4000

Document Management

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Contact Information	
Ph: 07 3062 6960	Website: e2m.com.au
Level 3, 19 Lang Parade, Milton, Queensland, 4064	PO Box 1444, Milton, Queensland, 4064

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Appendix B MNES Habitat Quality sites
Appendix C Habitat Quality Scores

1 Introduction

BM Alliance Cola Operations Pty Ltd (BMA) is seeking Commonwealth approval under the under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the proposed Saraji East Mining Lease Project (SEMLP), herein referred to as the Project.

Habitat quality assessments for Matters of National Environmental Significance (MNES) significantly impacted by the Project are required within the Disturbance Area and surrounds (refer to Figure 1). Impacts to MNES are based on calculations detailed within *Chapter 21: Matters of National Environmental Significance* of the SEMLP Environmental Impact Statement (EIS). MNES significantly impacted by the Project include:

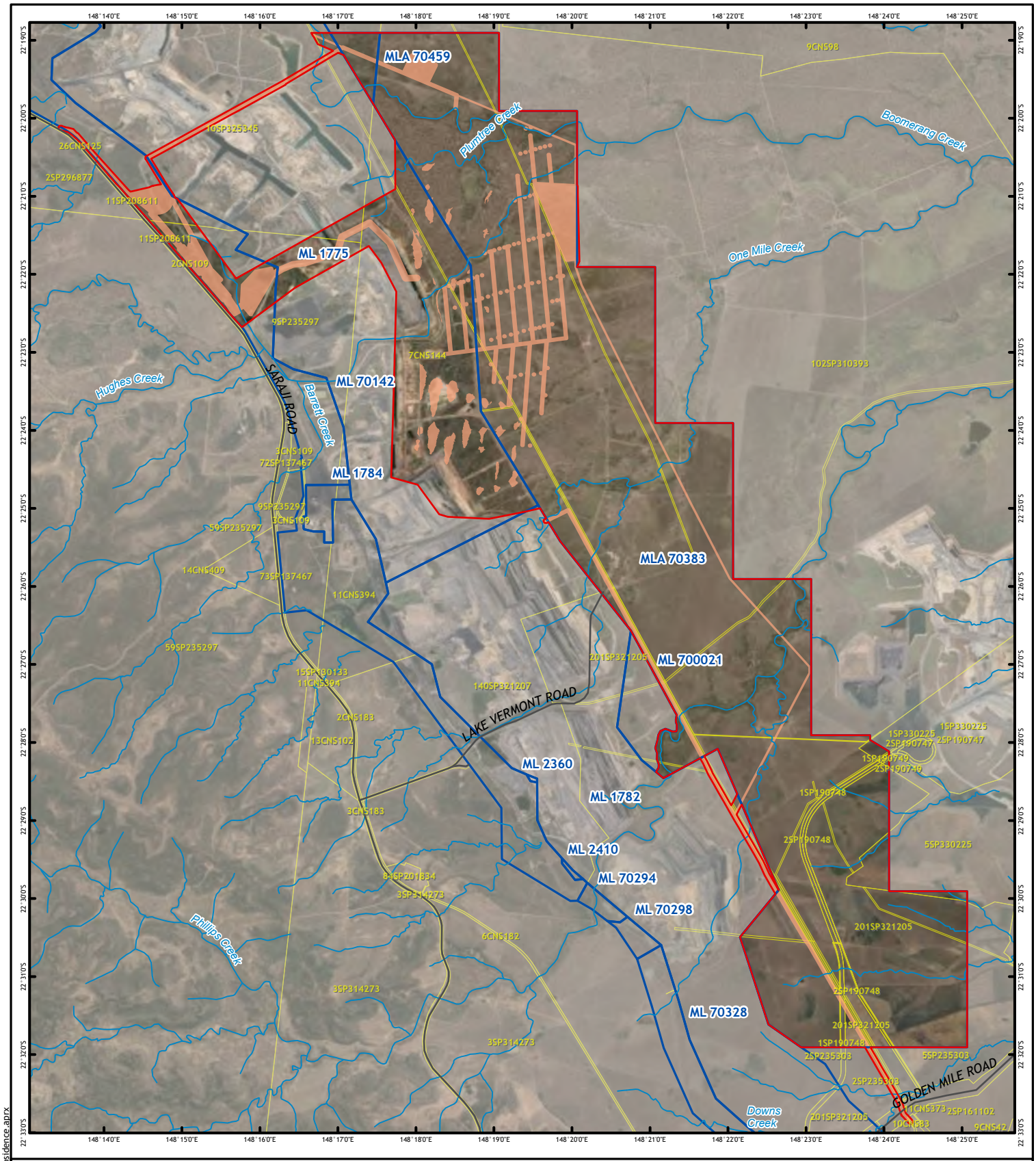
- 63.33 ha of Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community (Brigalow TEC)
- 386.18 ha of ornamental snake (*Denisonia maculata*) habitat
- 113.58 ha of squatter pigeon (southern subspecies) (*Geophaps scripta scripta*) habitat
- 136.33 ha of koala (*Phascolarctos cinereus*) habitat; and
- 38.55 ha of greater glider (central and southern) (*Petauroides volans volans*) habitat.

1.1 Scope and objectives

E2M Pty Ltd (E2M) was commissioned by BMA to assess the habitat quality for each MNES impacted in order to inform offset suitability and acquittal requirements for the Project. Specifically, the scope of works for this assessment was to:

- Undertake a desktop review of available ground-truthed vegetation and habitat mapping completed within the Project Site, specifically Habitat Critical to the Survival of the Species or Ecological Community, to determine associated assessment units and indicative habitat quality assessment locations.
- Complete surveys to assess habitat quality for MNES significantly impacted by the Project in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (Department of Sustainability, Environment, Water, Population and Communities (DSEWPC), 2012) (EPBC Act EOP); and
- Calculate the habitat quality scores for MNES significantly impacted by the Project.

This report details the habitat quality methodology applied and the associated scores for each MNES impacted by the Project.



Legend

- Watercourse
- Road
- Study Area
- Mining Lease
- Disturbance Area
- Cadastre

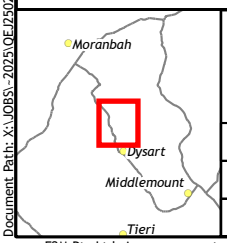
N

Scale 1:123,000 (A4)

0 2,000 4,000 6,000

Metres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
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Road: © DNRMMRRD 2021

Rev	Description	Drawn	Approved	Date
0	Issued for Review	JY	PW	19/06/2025
B	Issued for Review	HM	KK	04/06/2025

FIGURE 1: STUDY AREA OVERVIEW

Saraji East Habitat Quality Assessment
BMA

Map Number	Job Number	Rev
1 of 1	QEJ25022	0

Document Path: X:\JOBS\-2025\QEJ25022\GIS\PRO\QEJ25022\QEJ25022_Subsidence.aprx

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

2 Project Site overview

The Project Site is located north of Dysart in Queensland's Bowen Basin and encompasses 11,427 hectares (ha) of land adjacent to the existing Saraji Mine, operated by BMA (Figure 1). The Project Site is primarily bounded by Exploration Permit for Coal (EPC) 837, EPC 2103, Mining Lease Application (MLA) 70383, MLA 70459, Mining Lease (ML) 1775, ML 70142 and ML 1782 (except where the southern extent of the powerline connection continues off-tenure, intersecting Lot 10 on CNS83 and Lot 11 on CNS373).

The northern portion of the Project Site comprises large tracts of remnant vegetation comprising predominantly *Eucalyptus* and *Acacia* dominated communities. Vegetation in the northern extent consists of eucalypt woodlands dominated by *Eucalyptus populnea* (poplar box), *E. melanophloia* (silver-leaved ironbark), *Corymbia tessellaris* (Moreton Bay ash) and *C. clarksoniana* (long-fruited bloodwood). Woodlands fringing the watercourses in the north are dominated by *Eucalyptus tereticornis* (forest red gum), *Melaleuca fluviatilis* (weeping tea-tree) and *Casuarina cunninghamiana* (river she-oak). Across the Project Site are patches of *Acacia harpophylla* (brigalow) and *Eucalyptus cambageana* (Dawson's River blackbutt) woodland. These patches vary in species dominance and density with *Casuarina cristata* (belah) and *Terminalia oblongata* (yellowwood) becoming locally dominant in patches. The western extent of the Project Site comprised clay pans with *Eucalyptus orgadophila* (mountain coolibah) woodlands with a grassy understory. The central and southern portion of the Project Site includes large areas of cleared vegetation mostly young *Acacia harpophylla* (brigalow) regrowth and non-remnant pasture for cattle grazing. A number of remnant vegetation patches are located in the southern extent of the Project Site, largely in association with the riparian corridor of One Mile Creek.

The Project Site is also traversed by four major watercourses, including Boomerang Creek (stream order 4) and Plumtree Creek (stream order 2), which converge into Hughes Creek (stream order 5), and One Mile Creek (stream order 3).

The underground mining extent, incidental mine gas (IMG) network and associated infrastructure for the Project is not proposed within the full extent of the Project Site (approx. 3,348 ha), with potential construction and operational impacts constrained to a smaller area within MLA 70383, MLA 70459, ML 70142 and ML 1775. The direct vegetation and topsoil disturbance, comprising the IMG network and surface infrastructure, as well as the areas determined to be directly impacted by ponding are referred to as the Disturbance Area (Figure 1).

2.1 Project impacts to MNES

The following sections provide a summary of each MNES significantly impacted by the Project. Information provided has been summarised from the *Saraji East Mining Lease Project (SEMLP) Environmental Impact Statement (EIS), Appendix C-1 Terrestrial Ecology Technical Report* (BMA, 2024a) and Chapter 21 Matters of National Environmental Significance Report (BMA, 2024b).

2.1.1 Brigalow TEC

The Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC, listed as Endangered under the EPBC Act, is characterised by *Acacia harpophylla* (brigalow) as one of the dominant species in the tree layer. The species may also be co-dominant with other species, most commonly *Casuarina cristata* (belah) (Department of the Environment (DotE), 2013a). The Brigalow TEC was identified within the Project Site in association with three REs, namely REs 11.3.1, 11.4.8 and 11.4.9 that met the key diagnostics and condition thresholds for the TEC (BMA, 2024b). Several patches of RE 11.4.9 within the Project Site did not

meet the key diagnostic and condition criteria of the TEC and were dominated by belah with brigalow absent or associated (BMA, 2024b). As such these patches were excluded from the Brigalow TEC.

A total of 396.54 ha of Brigalow TEC comprising Habitat Critical to the Survival of the Ecological Community was identified within the Project Site. A total of 63.33 ha of Habitat Critical to the Survival of the Ecological Community will be significantly impacted by the Project, comprising 33.92 ha from the surface infrastructure and IMG network; 9.84 ha associated with ponding; and 19.57 ha from resulting fragmentation (BMA, 2024b).

2.1.2 Ornamental snake

Ornamental snake (*Denisonia maculata*) is listed as Vulnerable under the EPBC Act. The species was recorded at five locations in the Project Site during two field survey events (2012 and 2020) (BMA, 2024a). All records were from areas of brigalow dominated vegetation including regrowth vegetation with suitable habitat for frog breeding.

A total of 2,246.65 ha of Habitat Critical to the Survival of the Species was recorded within the Project Site, comprising large, contiguous areas of suitable habitat (BMA, 2024b). A total of 386.18 ha of Habitat Critical to the Survival of the Species will be significantly impacted by the Project, comprising 331.96 ha from the surface infrastructure and IMG network; and 54.22 ha associated with ponding (BMA, 2024b).

2.1.3 Koala

The koala (*Phascolarctos cinereus*) was listed as Vulnerable under the EPBC Act at the time of the Project referral under the EPBC Act. Two koalas were observed during ecological surveys for the Project. One was observed in the north-western extent of the Project Site within the riparian zone associated with Plumtree Creek and one koala was recorded from Downs Creek adjacent to the Project Site during previous ecological surveys (BMA, 2024a).

A total of 2,110.54 ha of Habitat Critical to the Survival of the Species was recorded within the Project Site, comprising areas of preferred and suitable habitat (BMA, 2024b). A total of 136.33 ha of Habitat Critical to the Survival of the Species will be significantly impacted by the Project, comprising 84.00 ha from the surface infrastructure and IMG network; and 52.33 ha associated with ponding (BMA, 2024b).

2.1.4 Greater glider (central and southern)

The greater glider (*Petauroides volans*) was listed as Vulnerable under the EPBC Act and NC Act at the time of the submission of the Project EPBC Act referral. One greater glider was located in mature *Eucalyptus camaldulensis* (River Red Gum) woodlands fringing Phillips Creek in the south of the Project Site (BMA, 2024a). Within similar habitat associated with Boomerang Creek and Hughes Creek in the north of the Project Site, another 18 records (*Petauroides volans*) were noted in 2020 (BMA, 2024a).

A total of 631.86 ha of Habitat Critical to the Survival of the Species was recorded within the Project Site, comprising areas of preferred and suitable habitat (BMA, 2024b). A total of 38.55 ha of Habitat Critical to the Survival of the Species will be significantly impacted by the Project, comprising 34.50 ha from the surface infrastructure and IMG network; and 4.05 ha associated with ponding (BMA, 2024b).

2.1.5 Squatter pigeon (southern)

The squatter pigeon (southern subspecies) (*Geophaps scripta scripta*) is listed as Vulnerable under the EPBC Act. The squatter pigeon (southern subspecies) was recorded at multiple locations within the Project Site during ecological surveys undertaken as part of the EIS (BMA, 2024a).

A total of 1,804.27 ha of Habitat Critical to the Survival of the Species was recorded within the Project Site, comprising areas of preferred habitat and areas of suitable habitat that are connected or in close proximity to preferred habitat (BMA, 2024b). A total of 113.58 ha of Habitat Critical to the Survival of the Species will be significantly impacted by the Project, comprising 73.06 ha from the surface infrastructure and IMG network; and 40.52 ha associated with ponding (BMA, 2024b).

3 Habitat quality method

Habitat quality within the Project Site was assessed in accordance with the Commonwealth Modified Habitat Quality Assessment (MHQA) method, which incorporates methods detailed within the *Guide to Determining Terrestrial Habitat Quality* (Version 1.2) (Department of Environment and Heritage Protection, 2017) (Habitat Quality Guide). The MHQA method assesses three key attributes, in accordance with the EPBC EOP, comprising:

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

In determining habitat quality scores for MNES, habitat areas were first delineated into Assessment Units (AUs). An AU comprised an area or a group of areas within the matter area (i.e. Regional Ecosystems (REs) that constitute habitat) that were homogenous in vegetation community classification and broad condition state (i.e. remnant, regrowth, non-remnant)).

Habitat quality assessment sites were then selected for each AU and habitat quality data collected. The number of sampling sites for each AU was based on the associated area, with suggested number of sampling sites provided in Table 1 of the Habitat Quality Guide. Further detail regarding data collected and associated scoring for each of the three attributes is provided in the following sections.

3.1 Site Condition

Site Condition was assessed in accordance with the MHQA and Habitat Quality Guide and comprises three key components:

- Site-based attributes
- Quality and Availability of Food and Foraging Habitat; and
- Quality and Availability of Shelter.

Associated data was collected within a 100 x 50 m plot (including various sub-plots) at each sampling site. The maximum scores and reference to the associated scoring matrices for these Site Condition components are provided in Table 1.

Quality and Availability of Food and Foraging Habitat and Quality and Availability of Shelter assessed the capacity of an AU to support a specific species for all, or part, of its life cycle, whether permanently or intermittently. These two criteria were assessed based on species-specific criteria and weightings. These are detailed for each MNES fauna species in Appendix A.

In the case of Brigalow TEC, Quality and Availability of Food and Foraging Habitat and Quality and Availability of Shelter was excluded. As such, Site Condition was calculated using site-based attributes only.

Table 1: Site Condition components for MNES

Attribute	Description	Assessment extent	Scoring matrices	Maximum score
Site-based attributes†	Assessment of attributes describing the structure and function of the vegetation community, compared to the expected range for a relatively undisturbed community	100 m x 50 m	Refer to *BioCondition Assessment Manual v2.2* (Eyre et al., 2015a)	80 (refer to Table 2)
Quality and Availability of Food and Foraging Habitat	Assessment of parameters relative to the essential foraging habitat requirements for the species.	100 m x 50 m	Species specific - Refer to Appendix A	10
Quality and Availability of Shelter	Assessment of parameters relative to the essential shelter and/or breeding habitat requirements for the species.	100 m x 50 m	Species specific - Refer to Appendix A	10
			Total	**100**

† For a TEC only site-based attributes are to be used to score the Site Condition component of HQ.

Site-based attributes were compared to the associated BioCondition benchmark values for the relevant RE benchmark (Queensland Herbarium, 2024). Associated scoring matrices for site-based attributes were accordance with the *BioCondition Assessment Manual* (Eyre et al., 2015) and are summarised in Table 2.

Table 2: Summary of site-based attributes assessment criteria

Attribute	Description	Assessment plot	Maximum score*
Large trees	Number of large trees per hectare, as determined by existing BioCondition benchmarks for the associated RE	100 m x 50 m	15
Tree canopy height	Median canopy height in metres of the ecologically dominant layer.	100 m x 50 m	5
Recruitment (%)	The proportion of overstorey species present at a site that are regenerating (<5 cm diameter at breast height (DBH))	100 m x 50 m	5
Tree canopy cover (%)	Vertical projection of the tree canopy crown cover along a transect	100 m transect	5
Shrub layer cover (%)	Vertical projection of the shrub layer cover of native shrubs	100 m transect	5
Coarse woody debris	The length of fallen woody logs and other coarse woody debris (>10 cm diameter and >0.5 m in length) per hectare	50 m x 20 m	5

Attribute	Description	Assessment plot	Maximum score*
Native plant species richness	Native plant species richness, comprising all life forms (i.e. trees, shrubs, grasses and forbs/other)	100 m x 50 m (trees) 50 m x 10 m (shrubs, grasses, forbs/other)	5 each (20 total)
Non-native plant cover	Percentage cover of non-native/weed plant species	50 m x 10 m	10
Native perennial grass cover (%)	Average percentage cover of native perennial grass species	Five 1 m x 1 m	5
Organic litter cover	The average percentage cover of organic material such as fallen leaves, twigs, and branches <10 cm diameter	Five 1 m x 1 m	5
		Total	80

* Maximum total scores may be less for particular ecosystem types that naturally lack certain site-based attributes (e.g. grasslands and shrublands etc).

3.2 Site Context

Site Context seeks to assess the capacity of the site and the greater landscape context in supporting a population, or populations, of a species. In accordance with the MHQA and Habitat Quality Guide, the Project Site is located within a 'fragmented landscape' (refer to Section 6 of the BioCondition Manual) and is to be assessed against the criteria summarised in Table 3.

Associated scoring matrices for size of patch, context, connectedness, ecological corridors and role of the site location for the population in the State are to be in accordance with the MHQA. Associated buffer distances to assess context is provided in Table 4. Estimation of MNES habitat/community extents outside of the Project Site were calculated using potential habitat models produced by the former Queensland Department of Environment, Science and Innovation (2022) and State-mapped RE associations.

Species-specific criteria to score species mobility capacity and threats are detailed within Appendix A.

Table 3: Site Context assessment criteria

Attribute	Description	Assessment extent	Scoring matrices	Maximum score
For fragmented landscapes (Brigalow Belt bioregion)				
Size of patch	The size of the habitat patch assessed and associated directly with connected AUs containing habitat (contiguous habitat patch)	Contiguous habitat patch containing the HQ site	Refer to Habitat Quality Guide (Table 2)	10
Context	The percentage of suitable habitat within a buffer of the habitat patch	Refer to Table 4	Refer to Habitat Quality Guide (Table 2)	5

Attribute	Description	Assessment extent	Scoring matrices	Maximum score
Connectedness	The proportion of the habitat patch boundary that is connected to suitable habitat	Habitat patch containing the HQ site	Refer to Habitat Quality Guide (Table 2)	5
Role of the site location for the population in the State	Based on the observed role of the site in relation to the overall population of the species in Queensland. This should take into account the species' use of the site (i.e. whether it is used for foraging and/or breeding) and the effect that damage or removal of the site would have to the likelihood of the species' overall population survival.	Impact/offset area	Refer to Habitat Quality Guide (Table 3)	5
Species mobility capacity[1]	Measured in consideration of the presence and severity of factors that would contribute to a reduction in the mobility of the species (e.g. barriers to movement)	Habitat patch containing the HQ site	Refer to Appendix A	10
Ecological corridors[2]	Proximity of the habitat patch to mapped State-wide biodiversity corridors (available via Queensland Government Q-Spatial website)	Habitat patch containing the HQ site	Refer to Habitat Quality Guide (Table 3)	6
Threats to the species	Based on the number and severity of threatening processes observed at or adjacent to the site	Habitat patch containing the HQ site	Refer to Appendix A	15
			Total	**56**

Table 4: Buffer distances for MNES to assess context within a fragmented landscape as per MHQA

MNES	Context buffer distance (km)
koala	20
ornamental snake	5
squatter pigeon (southern subspecies)	20
greater glider (northern/southern and central)	20

[1] Not relevant to TEC's. As such TECs have a total Site Context score out of 46.

[2] An 'ecological corridor' is represented as any riparian or terrestrial feature within the 'CORR_TYPE' attribute table of the 'Queensland biodiversity and vegetation offsets special features' map or 'Statewide Biodiversity Corridors' layer on QGlobe.

3.2.1 Threats to the Species

Threats identified for each MNES were determined using information detailed within the associated Conservation Listing Advice and available Recovery Plans. Associated weightings for each individual threat was based on the likelihood and consequence categories detailed within each Conservation Listing Advice. Further details on the identified threats to each MNES and the associated weightings is provided in Appendix A.

Each of the identified MNES threats were scored based on the threat's Scope and Severity. The Scope considers the proportion of the MNES habitat/community or local population within the matter area (i.e. habitat patch) that can be reasonably expected to be affected by the threat within ten years given the continuation of current circumstances and trends (refer to IUCN and Conservation Measures Partnership 2007). The Scope rating scale includes:

- **1 = Very high**: the threat affects all or most (80-100%) of the MNES occurrence or population within the site/habitat patch
- **2 = High**: the threat affects the majority (60-79%) of the MNES occurrence or population within the site/habitat patch
- **3 = Medium**: the threat affects some (40-59%) of the s MNES occurrence or population within the site/habitat patch
- **4 = Low:** the threat affects a small proportion (20-39%) or the MNES occurrence of population within the site/habitat patch; and
- **5 = Very low**: the threat affects a negligible proportion (1-19%) of the MNES occurrence or population within the site/habitat patch.

Severity assesses the level of damage from the threat to the MNES habitat/community or local population that can be reasonably expected given the continuation of current circumstances and trends (IUCN and Conservation Measures Partnership 2007). Severity categories comprise:

- **1 = Very high**: the threat is likely to destroy or reduce the MNES habitat/community or local population by 80-100% within ten years or three generations
- **2 = High**: the threat is likely to seriously degrades or reduces the MNES habitat/community or local population by 40-79% within ten years or three generations
- **3 = Medium**: the threat is likely to moderately degrade or reduce the MNES habitat/community or local population by 11-39% within ten years or three generations
- **4 = Low**: the threat is likely to slightly degrade or reduce the MNES habitat/community or local population by 6-10% within ten years or three generations; and
- **5 = Very low**: the threat is likely to have a negligible damage or will only degrade or reduce the MNES habitat/community or local population by 1-5% within ten years or three generations.

The Scope and Severity scores for each site were then multiplied to get a total score for each threat. Scores for each threat carry a minimum score of one and a maximum score of twenty-five (25), with one being the highest potential impact to the species and 25 being the lowest potential impact to the species. The individual scores for each threat at a site are then weighted according to the threat weighting for each MNES (refer to Appendix A). These weighted scores are then added together to get a total threat score out of 25 for the site. The total threat score for a site is then adjusted to a score out of 15, in accordance with the Habitat Quality Guide (refer to Table 3 of the Habitat Quality Guide).

3.2.1.1 Targeted pest fauna surveys

To assist in determining threats related to pest fauna for MNES, baited motion cameras were deployed within the Project Site to determine the presence of wild dogs, feral cats, feral pigs and European foxes. Eight cameras were deployed for eight weeks and were deployed in association with habitat quality sites.

3.3 Species Stocking Rate

Species Stocking Rate assesses the importance and presence of the MNES within the Project Site. Information collected as part of the previous ecology surveys for the Project, as detailed in Appendix C-1 of the SEMLP EIS (BMA, 2024a), were utilised to determine Species Stocking Rate for each MNES.

An overview of the criteria to assess Species Stocking Rate is provided in Table 5. Where possible, approximate densities (or density categories) for MNES were determined based on available literature, targeted surveys undertaken within the Project Site and/or population data/density ranges based on local survey records and sightings. Further species-specific details on densities are provided in Appendix A.

Calculation and assessment criteria for the 'role/importance of species population on site' component is provided in Table 6. For a species, an important population is one that is necessary for a species' long-term survival and recovery (refer to *DCCEEW Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (DotE 2013b) (MNES Guidelines)). This may include populations identified in species recovery plans, and/or that are:

- Key source populations for breeding or dispersal
- Populations that are necessary for maintaining genetic diversity; and/or
- Populations that are near the limit of the species range.

Table 5: Species Stocking Rate criteria

Scoring criteria	Description	Score	Maximum score
Presence detected on or adjacent to site	No	0	10
	Yes - adjacent	5	
	Yes – on site	10	
Species usage of the site	Dispersal	5	15
	Foraging	10	
	Breeding	15	
Approximate density (per ha) *	Species-specific – Refer to Appendix A.		30
Role/importance of species population on site*	Refer to Table 7.		15
		Total	70

Table 6: Role/Importance of species population on site scoring

Scoring criteria	Description	Score	Maximum score
Key source population for breeding	No	0	10
	Yes/possibly	10	
Key source population for dispersal	No	0	5
	Yes/possibly	5	
Necessary for maintaining genetic diversity	No	0	15
	Yes/possibly	15	
Near the limit of the species range	No	0	15
	Yes	15	
		Total	45

3.4 Overall habitat quality score

Overall HQ scores for each target MNES were calculated in accordance with the weightings of attributes detailed below. Weightings for Site Condition, Site Context and Species Stocking Rate attributes have been assigned based on the associated MNES. A summary of the attribute weightings for each MNES is provided in Table 7. The overall habitat quality score for each MNES was calculated out of a total score of 10.

Table 7: MNES attribute weightings

MNES	Site Condition weighting	Site Context weighting	Species Stocking Rate weighting
Brigalow TEC	70%	30%	0%
Ornamental snake	30%	30%	40%
Koala	30%	30%	40%
Greater glider	30%	30%	40%
Squatter pigeon	30%	30%	40%

Results

3.5 Field survey timing and conditions

HQ assessments were conducted by two E2M ecologists over two survey events, comprising:

- **Survey 1**: 24 to 28 March 2025; and
- **Survey 2:** 14 to 20 May 2025.

The region had received an above average rainfall in the three months (January-March) preceding the field assessments, recording approximately 371.6 mm[3] (average of 96 mm a month) of rainfall since January 2025 (Bureau of Meteorology, 2025). Approximately 60 mm had been recorded in the four weeks preceding Survey 1 (Bureau of Meteorology, 2025). Weather conditions at the time of the survey were overcast with daily temperatures of approximately 31°C (Bureau of Meteorology, 2025). Survey 1 was interrupted due to heavy rain events requiring the team to demobilise.

Survey 2 was carried out in May 2025 and had approximately 62 mm of rainfall recorded in the four weeks preceding the field survey (Bureau of Meteorology, 2025). At the time of the survey, scattered pools of water were present throughout waterways, wetlands and gilgai. In May the conditions during Survey 2 were dry and warm with daily maximum temperature of 26°C (Bureau of Meteorology, 2025).

3.6 Habitat quality assessments

A total of 29 habitat quality sites were undertaken across 14 AUs (categorised by RE and vegetation class) within the Disturbance Area and surrounds (representative communities). A summary of AUs, number of assessment HQ sites and associated MNES impacted by the Project are provided in Table 8. An overview of the location of habitat quality sites applicable to the Project Disturbance Area and target protected matters is provided in Appendix B.

Table 8: Summary of Assessment Units within the Project Site

Assessment Unit	RE and vegetation type	Extent (ha) within Disturbance Area	No. of HQ sites	Associated MNES
AU1	Non-remnant RE 11.4.9	163.24	3	Ornamental snake
AU2	Remnant RE 11.4.9 (Brigalow TEC)	0.16	1	Ornamental snake Greater glider Brigalow TEC
AU3	Remnant RE 11.4.13	38.03	2	-
AU4	Non-remnant RE 11.4.8	163.24	2	Ornamental snake

[3] Rainfall and temperature data collected from Moranbah Airport weather station (ID No. 34035), approximately 40 km north-west of the Project Site.

Assessment Unit	RE and vegetation type	Extent (ha) within Disturbance Area	No. of HQ sites	Associated MNES
AU5	Remnant RE 11.3.2	19.13	3	Koala Greater glider Squatter pigeon (southern)
AU6	Remnant RE 11.5.3	95.94	2	Koala Greater glider Squatter pigeon (southern)
AU7	Remnant RE 11.3.25	14.83	3	Koala Greater glider Squatter pigeon (southern)
AU8	Remnant RE 11.4.8	72.33*	4	Ornamental snake Koala Brigalow TEC
AU9	Remnant RE 11.3.27b	3.04	2	Koala Squatter pigeon (southern)
AU10	Remnant RE 11.3.1 (Not Brigalow TEC)	1.51	1	-
AU11	Remnant RE 11.3.4	0.01	2	Squatter pigeon (southern)
AU12	Non-remnant RE 11.5.3	<0.01	2	Ornamental snake
AU13	Remnant RE 11.4.9 (Not Brigalow TEC)	6.59	1	Ornamental snake
AU14	Remnant RE 11.3.1 (Brigalow TEC)	0.45	1	Ornamental snake Squatter pigeon (southern) Brigalow TEC

* Includes areas directly impacted and those indirectly impacted due to fragmentation (i.e. Brigalow TEC).

3.6.1 Targeted pest fauna surveys

A total of four pest fauna species listed under the Queensland *Biosecurity Act 2014* were detected as part of the targeted surveys within the Project Site. Pest fauna detected during the surveys included:

- feral pigs (*Sus scrofa*) on five occasions
- a European rabbit (*Oryctolagus cuniculus*) on one occasion
- a feral cat (*Felis catus*) on one occasion; and
- secondary signs (i.e. footprints) of wild dogs (*Canis lupus familiaris*) at two locations.

No wild dogs were detected on the motion detection cameras. These species, as well as European fox (*Vulpes vulpes*) were also recorded as part of ecological surveys undertaken to inform the Project EIS (BMA, 2024a).

3.7 Overall Habitat Quality scores

A summary of the overall habitat quality score for MNES impacted by the Project are provided in Table 9. Overall habitat quality scores were moderate ranging from 6.37 to 6.63 out of 10.

Detailed Habitat Quality scores for each MNES, including Site Condition, Site Context and Species Stocking Rate scoring, are provided in Appendix C. The following sections provide a brief summary of factors influencing each of the three key attributes for MNES within the Project Site.

Table 9: Target MNES overall habitat quality score summary for impacted areas

Target protected matter	Assessment Unit(s)	RE and vegetation type	Extent within Disturbance Area (ha)	Overall Habitat Quality score (/10)
MNES				
Brigalow TEC	AU2	Remnant RE 11.4.9	0.17	**6.26 (6)**
	AU8	Remnant RE 11.4.8	62.70*	
	AU14	Remnant RE 11.3.1	0.46	
		Total	**63.33**	
Ornamental snake *Denisonia maculata*	AU1	Non-remnant RE 11.4.9	163.22	**6.13 (6)**
	AU2	Remnant RE 11.4.9	0.14	
	AU4	Non-remnant RE 11.4.8	163.21	
	AU8	Remnant RE 11.4.8	52.62	
	AU12	Non-remnant RE 11.5.3	<0.01	
	AU13	Remnant RE 11.4.9	6.56	
	AU14	Remnant RE 11.3.1	0.42	
		Total	**386.18**	
Koala *Phascolarctos cinereus*	AU5	Remnant RE 11.3.2	19.04	**6.93 (7)**
	AU6	Remnant RE 11.5.3	75.65	
	AU7	Remnant RE 11.3.25	14.83	
	AU8	Remnant RE 11.4.8	23.76	
	AU9	Remnant RE 11.3.27b	3.05	
		Total	**136.33**	
Squatter pigeon (southern subspecies) *Geophaps scripta scripta*	AU5	Remnant RE 11.3.2	19.04	**6.83 (7)**
	AU6	Remnant RE 11.5.	76.98	
	AU7	Remnant RE 11.3.25	14.07	
	AU9	Remnant RE 11.3.27b	3.04	
	AU11	Remnant RE 11.3.4	0.01	
	AU14	Remnant RE 11.3.1	0.44	
		Total	**113.58**	

Target protected matter	Assessment Unit(s)	RE and vegetation type	Extent within Disturbance Area (ha)	Overall Habitat Quality score (/10)
Greater glider	AU2	Remnant RE 11.4.9	0.03	**6.46 (6)**
Petauroides volans	AU5	Remnant RE 11.3.2	13.08	
	AU6	Remnant RE 11.5.3	13.88	
	AU7	Remnant RE 11.3.25	11.55	
	AU13	Remnant RE 11.4.9	0.01	
		Total	**38.55**	

* Includes TEC areas directly impacted and those indirectly impacted due to fragmentation.

3.7.1 Site Condition

Site-based attribute scores were generally of moderate condition when compared to the associated BioCondition benchmark. Indicators assessed which contributed to a decrease in the overall site-based attribute scores included:

- Large tree numbers generally low likely due to historical clearing and thinning
- low native perennial grass cover due to abundance of non-native grass cover associated with historical clearing and land use management (i.e. pasture improvement and livestock grazing)
- high non-native plant cover including C*enchrus ciliaris* (buffel grass), *Bothriochloa pertusa* (Indian bluegrass), *Sida cordifolia* (flannel weed), *Lantana camara* (lantana) and *Parthenium hysterophorus* (parthenium).
- High abundance of forbs due to recent rain events; and
- low densities of coarse woody debris in regrowth and non-remnant areas due to grazing management and historical thinning of large trees.

Quality and Availability of Food and Foraging and Shelter scores for target species were generally moderate to high (i.e.>5 out of 10) within the Disturbance Area reflective of the habitat mapped for the species (i.e. Habitat Critical to the Survival of the species, comprising predominantly preferred and suitable habitat types). Ornamental snake habitat scored highly due to the high abundance of deep gilgai with soil cracks present in areas of shrubby brigalow regrowth. Similarly, Quality and Availability of Food and Foraging for the koala and greater glider was also moderate to high across habitat areas due to the dominance of food tree and locally important koala tree species (LIKTs). Scores associated with shelter for the greater glider (central and southern) were moderate due to the scarcity of very large trees (i.e. >50 cm Diameter at Breast height) within some habitat areas. Quality and Availability of Food and Foraging for the squatter pigeon (southern subspecies) was variable across the sites, largely associated with the infiltration (i.e. ground cover) of non-native environmental weeds and pasture grasses, such as buffel grass, *Melinis repens* (red natal grass), *Megathyrsus maximus* (Guinea grass) and Indian bluegrass.

3.7.2 Site Context

Site Context scores for all MNES were predominantly moderate, largely attributed to the historical and ongoing land use within and surrounding the Project Site. The Project Site and surrounds have been subject to historical vegetation and habitat clearing resulting in fragmentation and reduced patch sizes. In addition to influencing patch size, context and connectedness, habitat fragmentation also impacted on scores for species mobility for the koala, ornamental snake and greater glider (southern and central).

Mapped ecological corridors (i.e. statewide biodiversity corridors) were also restricted to narrow, riparian corridors associated with Ripstone Creek, Boomerang Creek and One Mile Creek. As such, scores for the Ecological Corridors component of Site Context were low.

Although a number of existing threats were identified within the Project Site, such as introduced predators (e.g. wild dogs, feral pigs, European foxes and feral cats), density and abundance of these were considered low at the time of the survey.

3.7.3 Species Stocking Rate

Species Stocking Rate scores for MNES fauna species within the Project Site were also moderate. While the species confirmed presence and usage of the site (i.e. breeding) scored highly, the Role and Importance of the species population on site were lower. Based on the abundance of records within the Project Site compared with the surrounds, populations and individuals within the Project Site were not considered critical to maintaining genetic diversity or containing key source populations for dispersal. Similarly, the Project Site was not near the limits of the range of MNES significantly impacted by the Project.

4 Conclusion

Habitat quality within the proposed Disturbance Area was assessed for MNES significantly impacted by the proposed SEMLP Project. A total of 29 habitat quality sites were undertaken across 14 AUs for the relevant MNES. The habitat quality assessments determined overall habitat quality scores for all MNES within the Disturbance Area were moderate, with all matters scoring 6 or 7 out of 10. Indicators assessed which contributed to a decrease in the overall habitat quality scores included:

- low scores for indicators assessed for Site Condition, specifically site-based attributes. This was largely associated with historical disturbance (i.e. clearing) and current land-use management influencing vegetation condition, including:
  - native perennial grass cover and species richness associated with historical clearing and land use management (i.e. pasture improvement and livestock grazing)
  - high non-native plant cover, particularly from non-native grasses and forbs
  - low density of large trees; and
  - low densities of coarse woody debris.
- lower scores for Site Context, reflective of the type of habitat identified for the MNES, including:
  - historical clearing and fragmented nature of the vegetation and habitats within and surrounding the Project Site
  - lack of State mapped Ecological Corridors; and
  - reduced Species mobility capacity associated existing movement barriers and fragmentation for species such as greater glider (central and southern) and koala.

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Appendix A MNES Habitat Quality criteria Overview

Brigalow TEC

BRIGALOW TEC SCORING

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
Site Condition	**70%**	**BioCondition**	**100%**	Recruitment of woody perennial species in EDL	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%
				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					
Site Context	**30%**	**Size of patch**	**17.86%**	The size of the habitat patch assessed and associated directly with connected AUs containing habitat (contiguous habitat patch)	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/10	100%
		Context	**8.93%**	The percentage of suitable habitat within a buffer of the habitat patch	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Connectedness	**8.93%**	The proportion of the habitat patch boundary that is connected to suitable habitat	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Ecological Corridors	**10.71%**	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%
		Role of site location for the population in the State	**8.93%**	Role of site location to overall population score	As per the MHQA			/5	100%
		Threats to species	**26.78%**	Clearing / Fragmentation	TEC patch	As per the MHQA (i.e. in accorddance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017). Assessed based on the scope and severity factor for each threat at a site. Scope considers the proportion of the species' habitat or local population within the matter area that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends (IUCN-CMP, 2007). These factors include: 1 = Very high (threat affects all or most (80-100%) of the species occurrence or population within the site/habitat patch 2 = High (threat affects the majority (60-79%) of the species occurrence or population within the site/habitat patch 3 = Medium (threat affects some (40-59%) of the species occurrence or population within the site/habitat patch 4 = Low (threat affects a small proportion (20-39%) or the species occurrence of population within the site/habitat patch 5 = Very low (threat affects a negligible proportion (1-19%) of the species occurrence or population within the site/habitat patch Severity assesses the level of damage from the threat to the species' habitat/local population that can reasonably be expected given the continuation of current circumstances and trends (IUCNCMP, 2007). Severity factors comprise: 1 = Very high (threat to destroy or reduce the species' habitat/local population by 80-100% within ten years or three generations) 2 = High (threat seriously degrades or reduces the species' habitat/local population by 40-79% within ten years or three generations) 3 = Medium (threat to moderately degrade or reduce the species' habitat/local population by 11-39% within ten years or three generations) 4 = Low (threat slightly degrade or reduce the species' habitat/local population by 6-10% within ten years or three generations) 5 = Very low (threat to have a negligible damage or will only degrade or reduce the species' habitat/local population by 1-5% within ten years or three generations) The scores for each threat at a site are then weighted and added to give a score out of 25. These scores are then adjusted to a to a score out of 15.		/15	35%
				Degradation by weed infestation	TEC patch			/15	30%
				Risk of fire	Habitat patch			/15	35%

Ornamental snake

Site Condition

Species specific scoring criteria for the relevant Site Condition component (i.e. 'Quality and Availability of Food and Foraging Habitat' and 'Quality and Availability of Shelter') for the ornamental snake is provided in Table A-1.

Table A-1: Ornamental snake Site Condition attribute scoring

Indicators	Assessment area	Scoring system	Weight
Quality and Availability of Food and Foraging Habitat			
Abundance of prey/ frog breeding habitat	100 x 50 m plot	Frog breeding habitat (e.g. permanent and ephemeral wetlands) within the plot are: 0 = Non-existent 1 = Limited (<1% of plot) 3 = Moderately abundant (1-10% of the plot) 5 = Abundant (>10% of the plot)	100%
Quality and Availability of Shelter			
Soil crack abundance and depth	100 x 50 m plot	Soil cracks are: 0 = Absent or, if present, are shallow (<2 cm deep) 2.5 = Soil cracks are present in moderate to high density but mostly shallow (<2 cm) and with few deep cracks (>2 cm) 5 = Soil cracks are present in moderate to high density and are mostly deep cracks (>2 cm)	60%
Abundance of ground shelter	100 x 50 m plot	Suitable ground shelter for ornamental snake (e.g. coarse woody debris and litter) are: 0 = <1% cover 1 = 1-5% cover 2 = 5-10% cover 3 = 10-15% cover 4 = 15-20% cover 5 = >20% cover	20%
Condition of vegetation as per the VM Act categories	*100 x 50 m plot*	Vegetation is: 0 = Non-remnant 1 = Non-remnant with young woody regrowth 3 = High value regrowth 5 = Remnant	20%

Site Context

Species specific scoring criteria for the relevant Site Context components (i.e. 'Species Mobility Capacity' and 'Threats to the Species') for the ornamental snake are provided in Table A-2.

Table A-2: Ornamental snake Site Context attribute scoring

Indicators	Assessment area	Scoring system	Weight
Species mobility capacity			
Average patch size of suitable habitat	Habitat patch	Area of contiguous suitable habitat (i.e. patch size) in which the assessment site is located is: 0 = <1 ha 1 = 1-5 ha 3 = 5-10 ha 5 = >10 ha	50%
Connectivity of suitable habitat patch	Habitat patch	Connectivity between the site and a metapopulation of the species is: 0 = Limited (suitable habitat is isolated in the landscape) 2.5 = Moderate (there is some connectivity between patches, however connected habitat may be degraded, or of limited extent) 5 = High (habitat within the site is well connected to a broad area of habitat for the species)	50%
Threats to the Species			
Cane toad abundance	Habitat patch	Out of 25, in accordance with the Threat Matrix (DES, 2020) and converted to a score out of 15.	30%
Clearing/ fragmentation	Habitat patch		35%
Habitat degradation by cattle tramping and feral pigs	Habitat patch		35%

Species Stocking Rate

Species Stocking Rate for the ornamental snake is to be assessed in accordance with the MHQA method. Due to the limited information on population densities where the species has been recorded, gauging of approximate density categories is not considered feasible. As such, the approximate density scoring within Species Stocking Rate is to be excluded for this species (i.e. max score of 40).

ORNAMENTAL SNAKE SCORING

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
Site Condition	30%	BioCondition	80%	Recruitment of woody perennial species in EDL	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%
				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					
		Quality and availability of food and foraging habitat	10%	Abundance of prey/ frog breeding habitat (Frog breeding habitat (e.g. permanent and ephemeral wetlands))	HQ site scale	0	Non-existent	/10	100%
						1	Limited (<1% of plot)		
						3	Moderately abundant (1-10% of the plot)		
						5	Abundant (>10% of the plot)		
		Quality and availability of shelter	10%	Soil crack abundance and depth	HQ site scale	0	Absent or, if present, are shallow (<2 cm deep)	/10	60%
						2.5	Soil cracks are common but mostly shallow (<2 cm) and with few deep cracks (>2 cm)		
						5	Soil cracks are common to frequent and are mostly deep cracks (>2 cm)		
				Abundance of ground shelter (e.g. coarse woody debris and litter)	HQ site scale	0	<1% cover	/10	20%
						1	1-5% cover		
						2	>5-10% cover		
						3	>10-15% cover		
						4	>15-20% cover		
						5	>20% cover		
				Condition of vegetation as per the VM Act categories	HQ site scale	0	Non-remnant	/10	20%
						1	Non-remnant with young woody regrowth		
						3	High value regrowth		
						5	Remnant		
Site Context	30%	Size of patch	17.86%	The size of the habitat patch assessed and associated directly with connected AUs containing habitat (contiguous habitat patch)	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/10	100%
		Context	8.93%	The percentage of suitable habitat within a buffer of the habitat patch	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Connectedness	8.93%	The proportion of the habitat patch boundary that is connected to suitable habitat	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Ecological Corridors	10.71%	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%
		Species mobility	17.86%	Average patch size of suitable habitat	Area of contiguous suitable habitat (i.e. patch size) in which the assessment site is located is: 0 = <1 ha 1 = 1-5 ha 3 = >5-10 ha 5 = >10 ha			/5	50%
				Connectivity to suitable habitat that may support individuals	0 = Limited (suitable habitat is isolated in the landscape) 2.5 = Moderate (there is some connectivity between patches, however connected habitat may be degraded, or of limited extent) 5 = High (habitat within the site is well connected to a broad area of habitat for the species)			/5	50%
		Role of site location for the population in the State	8.93%	Role of site location to overall population score	As per the MHQA			/5	100%
		Threats to species	26.78%	Cane toad abundance	Habitat patch	As per the MHQA (i.e. in accorddance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017). Assessed based on the scope and severity factor for each threat at a site. Scope considers the proportion of the species' habitat or local population within the matter area that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends (IUCN-CMP, 2007). These factors include: 1 = Very high (threat affects all or most (80-100%) of the species occurrence or population within the site/habitat patch 2 = High (threat affects the majority (60-79%) of the species occurrence or population within the site/habitat patch 3 = Medium (threat affects some (40-59%) of the species occurrence or population within the site/habitat patch 4 = Low (threat affects a small proportion (20-39%) or the species occurrence of population within the site/habitat patch 5 = Very low (threat affects a negligible proportion (1-19%) of the species occurrence or population within the site/habitat patch Severity assesses the level of damage from the threat to the species' habitat/local population that can reasonably be expected given the continuation of current circumstances and trends (IUCNCMP, 2007). Severity factors comprise: 1 = Very high (threat to destroy or reduce the species' habitat/local population by 80-100% within ten years or three generations) 2 = High (threat seriously degrades or reduces the species' habitat/local population by 40-79% within ten years or three generations) 3 = Medium (threat to moderately degrade or reduce the species' habitat/local population by 11-39% within ten years or three generations)			/15	30%
				Clearing/ fragmentation (historical imagery/landholder)	Habitat cleared within 3 km radius from the site			/15	30%

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
				Habitat degradation by cattle tramping and feral pigs	Habitat patch	4 = Low (threat slightly degrade or reduce the species' habitat/local population by 6-10% within ten years or three generations) 5 = Very low (threat to have a negligible damage or will only degrade or reduce the species' habitat/local population by 1-5% within ten years or three generations) The scores for each threat at a site are then weighted and added to give a score out of 25. These scores are then adjusted to a to a score out of 15.		/15	40%
Species Stocking Rate	**40%**	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	**25.00%**	As per the MHQA				/10	100%
		Species usage of the site (habitat type)	**37.50%**					/15	100%
		Approximate density	**na**	na	na			na	na
		Role/importance of species population on site*	**37.50%**	As per the MHQA				/15	100%

A.2 Koala

Site condition

Species specific scoring criteria for the relevant site condition component (i.e. 'Quality and Availability of Food and Foraging Habitat' and 'Quality and Availability of Shelter') for the koala is provided in Table A-3.

Table A-3: Koala Site Condition attribute scoring

Indicators	Assessment area	Scoring system	Weight
Quality and Availability of Food and Foraging Habitat			
Presence of Locally Important Koala Trees (LIKTs)[4]	100 x 50 m plot	0 = No LIKTs present 1 = LIKTs present only as juvenile trees (<10 cm DBH) 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	90%

[4] See Youngentob et al. (2021) for list of LIKT species for each Bioregion.

Indicators	Assessment area	Scoring system	Weight
Leaf moisture content/availability of soil water to feed trees	100 x 50 m plot	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. 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. 5.0 = 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.	10%
Quality and Availability of Shelter			
Abundance of suitable Koala shelter trees (LIKT, Ancillary habitat tree, or other suitable shade tree species) ≥10 cm DBH	100 x 50 m plot	0 = no suitable koala shelter trees present 1 = 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)	100%

Site Context

Species specific scoring criteria for the relevant Site Context components (i.e. 'Species Mobility Capacity' and 'Threats to the Species') for the koala are provided Table A-4.

Table A-4: Koala Site Context attribute scoring

Indicators	Assessment area	Scoring system	Weight
Species Mobility Capacity			
Patch size of suitable habitat (remnant or regrowth vegetation with LIKTs ≥ 10 cm DBH)	Habitat patch	0 = Patch <2 ha 1 = Patch is 2 – 10 ha 2 = Patch is 11 – 50 ha 3 = Patch is 51 – 250 ha 4 = Patch is 251 – 500 ha 5 = Patch is > 500 ha	40%

Connectivity of suitable habitat patch in the landscape	Habitat patch	0 = The suitable habitat patch is separated from other suitable habitat by: • Man-made or natural barriers to dispersal (e.g., fencing, dense/impenetrable weedy ground cover, permanent watercourses >30 m wide); or • >1 km of cleared/developed land with no suitable habitat trees; or 1 = The suitable habitat patch is separated from other suitable habitat by: • >1 km of mostly cleared/developed land with scattered habitat trees • Numerous busy roads or a single multi-lane highway 2 = The suitable habitat patch is separated from other suitable habitat by: • 500 m to 1 km 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 suitable habitat patch is separated from other suitable habitat by: • 100 m to 500 m of mostly cleared/developed land with scattered habitat trees, and/or • 500 m to 1 km of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees 4 = The suitable habitat patch is separated from other suitable habitat by: • <100 m of mostly cleared/developed land with scattered habitat trees and/or • 100 m to 500 m of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees 5 = Suitable habitat more or less contiguous or separated from other areas of suitable habitat by: • <100 m of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees	60%

Indicators	Assessment area	Scoring system	Weight
Threats to the Species			
Presence of predators (feral dogs, dingoes)	Habitat patch	Out of 25, in accordance with the Threat Matrix (DES, 2020) and converted to a score out of 15.	35%
Density of dense weedy ground cover (e.g., thickets of lantana) impeding movement of koalas/limiting access to feed trees			20%
Man-made barriers preventing movement between suitable habitat patches e.g. fences, large multi-lane highways, and high density housing			25%
Vehicular collision			20%

Species Stocking Rate

Species Stocking Rate for the koala was assessed in accordance with the MHQA method. For the assessment of approximate densities, species presence and abundance will be dependent on targeted species surveys and assessments undertaken, including direct and indirect observations and survey techniques. Scoring and density categories for the species are based on published density estimates at various sites across Queensland, with estimates ranging from 0.1-2.51 individuals/ha (refer to Youngentob, *et al.* (2021)). Published literature on measuring density and previous ecology surveys for the Project detailed in the SEMLP EIS Terrestrial Ecology Chapter (BMA, 2024a) were utilised to determine density. Associated density scoring is detailed in Table A-5.

Table A-5: Approximate density scoring categories

Density category	Score
Species not recorded/unknown	0
>0/ha and ≤0.1/ha	10
>0.1/ha and ≤1/ha	20
>1/ha	30

KOALA SCORING

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
Site Condition	**30%**	**BioCondition**	**80%**	Recruitment of woody perennial species in EDL	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%
				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					
		Quality and availability of food and foraging habitat	**10%**	Presence of Locally Important Koala Trees (LIKTs)	HQ site scale	0	No LIKTs present	/10	90%
						1	LIKTs present only as juvenile trees (<10 cm DBH)		
						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		
				Presence of Locally Important Koala Trees (LIKTs)	HQ site scale	1	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.	/10	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	**10%**	Abundance of suitable Koala shelter trees (LIKT, Ancillary habitat tree, or other suitable shade tree species) ≥10 cm DBH	HQ site scale	0	no suitable koala shelter trees present	/10	100%
						2	single suitable koala shelter tree present		
						6	suitable koala shelter trees present at low-to-moderate abundance (2-5 per 100 x 50 m plot)		
						10	suitable koala shelter trees present at moderate-to-high abundance (>5 per 100 x 50 m plot)		
		Size of patch	**17.86%**	The size of the habitat patch assessed and associated directly with connected AUs containing habitat (contiguous habitat patch)	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/10	100%
		Context	**8.93%**	The percentage of suitable habitat within a buffer of the habitat patch	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Connectedness	**8.93%**	The proportion of the habitat patch boundary that is connected to suitable habitat	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Ecological Corridors	**10.71%**	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%
				Patch size of suitable habitat	Habitat patch	0 = Patch <2 ha 1 = Patch is 2 – 10 ha 2 = Patch is 11 – 50 ha 3 = Patch is 51 – 250 ha 4 = Patch is 251 – 500 ha 5 = Patch is > 500 ha		/5	40%

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
Site Context	**30%**	**Species mobility**	**17.86%**	Connectivity of suitable habitat patch in the landscape	Habitat patch	0 = The suitable habitat patch is separated from other suitable habitat by: •Man-made or natural barriers to dispersal (e.g., fencing, dense/impenetrable weedy ground cover, permanent watercourses >30 m wide); or •>1 km of cleared/developed land with no or scattered suitable habitat trees; or 1 = The suitable habitat patch is separated from other suitable habitat by: •>1 km of mostly cleared/developed land with scattered habitat trees •Numerous busy roads or a single multi-lane highway 2 = The suitable habitat patch is separated from other suitable habitat by: •500 m to 1 km 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 suitable habitat patch is separated from other suitable habitat by: •100 m to 500 m of mostly cleared/developed land with scattered habitat trees, and/or •500 m to 1 km of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees 4 = The suitable habitat patch is separated from other suitable habitat by: •<100 m of mostly cleared/developed land with scattered habitat trees and/or •100 m to 500 m of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees 5 = Suitable habitat more or less contiguous or separated from other areas of suitable habitat by: •<100 m of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees		/5	60%
		Role of site location for the population in the State	**8.93%**	Role of site location to overall population score	As per the MHQA			/5	100%
		Threats to species	**26.78%**	Presence of predators (feral dogs, dingoes)	Habitat patch	As per the MHQA (i.e. in accorddance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017). Assessed based on the scope and severity factor for each threat at a site. Scope considers the proportion of the species' habitat or local population within the matter area that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends (IUCN-CMP, 2007). These factors include: 1 = Very high (threat affects all or most (80-100%) of the species occurrence or population within the site/habitat patch 2 = High (threat affects the majority (60-79%) of the species occurrence or population within the site/habitat patch 3 = Medium (threat affects some (40-59%) of the species occurrence or population within the site/habitat patch 4 = Low (threat affects a small proportion (20-39%) or the species occurrence of population within the site/habitat patch 5 = Very low (threat affects a negligible proportion (1-19%) of the species occurrence or population within the site/habitat patch Severity assesses the level of damage from the threat to the species' habitat/local population that can reasonably be expected given the continuation of current circumstances and trends (IUCNCMP, 2007). Severity factors comprise: 1 = Very high (threat to destroy or reduce the species' habitat/local population by 80-100% within ten years or three generations) 2 = High (threat seriously degrades or reduces the species' habitat/local population by 40-79% within ten years or three generations) 3 = Medium (threat to moderately degrade or reduce the species' habitat/local population by 11-39% within ten years or three generations) 4 = Low (threat slightly degrade or reduce the species' habitat/local population by 6-10% within ten years or three generations) 5 = Very low (threat to have a negligible damage or will only degrade or reduce the species' habitat/local population by 1-5% within ten years or three generations) The scores for each threat at a site are then weighted and added to give a score out of 25. These scores are then adjusted to a to a score out of 15.		/15	35%
				Density of dense weedy ground cover (e.g., thickets of lantana) impeding movement of koalas/limiting access to feed trees	Habitat patch			/15	20%
				Man-made barriers preventing movement between suitable habitat patches e.g. fences, large multi-lane highways, and high density housing	Habitat patch			/15	25%
				Vehicular collision	Habitat patch			/15	20%
Species Stocking Rate	**40%**	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	**14.29%**	As per the MHQA				/10	100%
		Species usage of the site (habitat type)	**21.43%**					/15	100%
		Approximate density (per ha)	**42.86%**	0	Species not recorded/unknown			/30	100%
				10	>0/ha and ≤0.1/ha				
				20	>0.1/ha and ≤1/ha				
				30	>1/ha				
		Role/importance of species population on site*	**21.43%**	As per the MHQA				/15	100%

A.3 Greater glider

Site Condition

Species specific scoring criteria for the relevant Site Condition component (i.e. 'Quality and Availability of Food and Foraging Habitat' and 'Quality and Availability of Shelter') for the greater glider is provided in Table A-6.

Table A-6: Greater glider Site Condition attribute scoring

Indicators	Assessment area	Scoring system	Weight
Quality and Availability of Food and Foraging Habitat			
Diversity of preferred food trees (As described by Eyre *et al.* (2022)) of >30 cm DBH	100 x 50 m plot	0 = Preferred food trees are absent 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	25%
Cover of large, preferred food trees (>30cm DBH)	100 x 50 m plot	0 = Preferred food trees are absent 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 20-50 % of canopy species) 5 = Preferred food trees are dominant in the canopy (comprise over 50% of canopy species)	75%
Quality and Availability of Habitat required for Shelter and Breeding			
Density of very large (>50 cm DBH) trees likely to bear hollows	100 x 50 m plot	0 = Large hollow bearing trees or stags are absent (>10 cm) 1 = 1-2 large hollow bearing trees or stags (>10 cm) 3 = 3-4 large hollow bearing trees or stags (>10 cm) 5 = ≥5 large hollow bearing trees or stags (>10 cm)	100%

Site Context

Species specific scoring criteria for the relevant Site Context components (i.e. 'Species Mobility Capacity' and 'Threats to the Species') for the greater glider are provided in Table A-7.

Table A-7: Greater glider Site Context attribute scoring

Indicators	Assessment area	Scoring system	Weight
Species Mobility Capacity			
Patch size of suitable habitat	Habitat patch	0 = Suitable habitat patch is <1 ha 1 = Suitable habitat patch is 1 – 3 ha 2 = Suitable habitat patch is >3 – 5 ha 3 = Suitable habitat patch is >5 – 10 ha 4 = Suitable habitat patch is >10 – 20 ha 5 = Suitable habitat patch is > 20 ha	35%
Connectivity of suitable habitat in the landscape	Habitat patch	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. 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.	35%
Presence of man-made fragmentation features	Habitat patch	0 = Main roads or large cleared areas are present to prevent connectivity with other suitable habitat 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	30%

Indicators	Assessment area	Scoring system	Weight
Threats to the Species			
Barbed wire entanglement	Habitat patch	Out of 25, in accordance with the Threat Matrix (DES, 2020) and converted to a score out of 15.	20%
Risk of habitat fragmentation			30%
Risk of clearing or logging			30%
Risk of fire			20%

Species Stocking Rate

Species Stocking Rate for the greater glider was assessed in accordance with the MHQA method. For the assessment of approximate densities, species presence and abundance was dependent on targeted species surveys and assessments undertaken as part of the Project EIS. Publicly available literature assisted in determining the approximate density of the species in the bioregion, with density categories detailed within Table A-8. Scoring was based on published density estimates at various sites across Queensland, with estimates ranging from 0.1- 2.51 animals/ha (Eyre, 2006; Hofman et al., 2022; Kavanagh, 2000; Smith et al., 2007). Previous ecology surveys for the Project detailed in the SEMLP EIS Terrestrial Ecology Chapter (BMA, 2024a) were utilised to determine density.

Table A-8: Approximate density scoring categories

Density category	Score
Greater glider	
Species not recorded/unknown	0
<0.5 individuals/ha	10
0.5-1.0 individuals/ha	20
>1 individuals/ha	30

GREATER GLIDER (CENTRAL & SOUTHERN) SCORING

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
Site Condition	30%	BioCondition	80%	Recruitment of woody perennial species in EDL	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%
				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					
		Quality and availability of food and foraging habitat	10%	Diversity of preferred food trees (As described by Eyre et al. (2022)) of >30 cm DBH	HQ site scale	0	Preferred food trees are absent	/5	25%
						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		
				Cover of large, preferred food trees trees (>30cm DBH)	HQ site scale	0	Preferred, large food trees are absent	/5	75%
						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 20-50 % of canopy species)		
						5	Preferred food trees are dominant in the canopy (comprise over 50% of canopy species)		
		Quality and availability of shelter	10%	Density of very large (>50 cm DBH) trees likely to bear hollows	HQ site scale	0	0 very large trees/ ha	/10	100%
						1	1-2 very large trees/ ha		
						3	3-4 very large trees/ ha		
						5	≥5 very large trees/ ha		
ite Context	30%	Size of patch	17.86%	The size of the habitat patch assessed and associated directly with connected AUs containing habitat (contiguous habitat patch)	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/10	100%
		Context	8.93%	The percentage of suitable habitat within a buffer of the habitat patch	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Connectedness	8.93%	The proportion of the habitat patch boundary that is connected to suitable habitat	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Ecological Corridors	10.71%	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%
		Species mobility	17.86%	Patch size of suitable habitat	Habitat patch		0 = habitat patch is <1 ha 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	/5	35%
				Connectivity of suitable habitat patch in the landscape	Habitat patch		0 = The habitat patch is separated from other suitable habitat by: •≥50m of non-remnant or regrowth vegetation; or •≥200m of non-suitable remnant vegetation. 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.	/5	35%
				Presence of man-made fragmentation features	Habitat patch		0 = Main roads or large cleared areas are present to prevent connectivity with other suitable habitat 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	/5	30%
		Role of site location for the population in the State	8.93%	Role of site location to overall population score	As per the MHQA			/5	100%

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
S		Threats to species	26.78%	Barbed wire entanglement	Habitat patch		As per the MHQA (i.e. in accorddance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017). Assessed based on the scope and severity factor for each threat at a site. Scope considers the proportion of the species' habitat or local population within the matter area that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends (IUCN-CMP, 2007). These factors include: 1 = Very high (threat affects all or most (80-100%) of the species occurrence or population within the site/habitat patch 2 = High (threat affects the majority (60-79%) of the species occurrence or population within the site/habitat patch 3 = Medium (threat affects some (40-59%) of the species occurrence or population within the site/habitat patch 4 = Low (threat affects a small proportion (20-39%) or the species occurrence of population within the site/habitat patch 5 = Very low (threat affects a negligible proportion (1-19%) of the species occurrence or population within the site/habitat patch Severity assesses the level of damage from the threat to the species' habitat/local population that can reasonably be expected given the continuation of current circumstances and trends (IUCNCMP, 2007). Severity factors comprise: 1 = Very high (threat to destroy or reduce the species' habitat/local population by 80-100% within ten years or three generations) 2 = High (threat seriously degrades or reduces the species' habitat/local population by 40-79% within ten years or three generations) 3 = Medium (threat to moderately degrade or reduce the species' habitat/local population by 11-39% within ten years or three generations) 4 = Low (threat slightly degrade or reduce the species' habitat/local population by 6-10% within ten years or three generations) 5 = Very low (threat to have a negligible damage or will only degrade or reduce the species' habitat/local population by 1-5% within ten years or three generations) The scores for each threat at a site are then weighted and added to give a score out of 25. These scores are then adjusted to a to a score out of 15.	/15	20%
				Risk of habitat fragmentation	Habitat patch			/15	30%
				Risk of clearing or logging	Habitat patch			/15	30%
				Risk of fire	Habitat patch			/15	20%
Species Stocking Rate	40%	Presence detected on or adjacent to site (neighbouring property with connecting habitat)	14.29%	As per the MHQA				/10	100%
		Species usage of the site (habitat type)	21.43%					/15	100%
		Approximate density (per ha)	42.86%	0	Species not recorded/unknown			/30	100%
				10	GG (central and southern) = <0.5 individuals/ha				
				20	GG (central and southern) = 0.5-1.0 individuals/ha				
				30	GG (central and southern) = >1 individuals/ha				
		Role/importance of species population on site*	21.43%	As per the MHQA				/15	100%

A.4 Squatter pigeon

Site Condition

Species specific scoring criteria for the relevant Site Condition component (i.e. 'Quality and Availability of Food and Foraging Habitat' and 'Quality and Availability of Shelter') for the squatter pigeon (southern) is provided in Table A-9.

Table A-9: Squatter pigeon (southern) Site Condition attribute scoring

Indicators	Assessment area	Scoring system	Weight
Quality and Availability of Food and Foraging Habitat			
Abundance of seed-producing native grasses and forbs	100 x 50 m plot	0 = Seed-producing native grasses and forbs absent or extremely limited (<30% of ground cover) 2.5 = Seed-producing native grasses and forbs comprising 30% to 50% of ground stratum 5 = Ground layer dominated by seed-producing native grasses and forbs (comprising >50% of ground stratum)	25%
Ground cover	100 x 50 m plot	0 = Ground layer absent (<1%) OR very dense (>70%) 1 = Ground layer very sparse (1-5%) OR moderately dense (61-70%) 3 = Ground layer patchy (5-10%) or mid-dense (30-60%) 5 = Ground layer sparse to mid-dense (10-30%)	25%
Ground cover height	100 x 50 m plot	0 = Ground layer median height >0.7 m 2.5 = Ground layer median height 0.4-0.7 m 5 = Ground layer low median height < 0.4 m	25%
Distance to 'suitable' water source (including dams, troughs, seasonal wetlands, and pools along watercourses).	Habitat patch	0 = Site >2 km from a suitable water source 2.5 = Site 1-2 km from a suitable water source 5 = Site <1 km from a suitable water source	25%
Quality and Availability of Shelter			
Abundance of low trees (<15 m height) suitable for roosting	100 x 50 m plot	0 = Overstory does not include low trees suitable for roosting 2.5 = Very few low trees suitable for roosting in overstory (1-2 per plot) 5 = Overstory includes a reasonable number of low trees suitable for roosting (>3 per plot)	50%

Indicators	Assessment area	Scoring system	Weight
Distance to 'suitable' water source (including dams, troughs, seasonal wetlands, and pools along watercourses).	Radius from the habitat assessment site	0 = Site >2 km from a suitable water source 2.5 = Site 1-2 km from a suitable water source 5 = Site <1 km from a suitable water source	50%

Site Context

Species specific scoring criteria for the relevant Site Context components (i.e. 'Species Mobility Capacity' and 'Threats to the Species') for the squatter pigeon (southern) are provided in Table A-10.

Table A-10: Squatter pigeon (southern) Site Context attribute scoring

Indicators	Assessment area	Scoring system	Weight
Species Mobility Capacity			
Habitat connectivity	Habitat patch	Habitat within which the site is located has: 0 = Poor connectivity: There is little or no opportunity for movement/dispersal of animals between areas of suitable habitat 2.5 = Reasonable connectivity: movement between habitat areas possible but limited or somewhat constrained 5 = Good connectivity: movement between habitat areas subject to few, if any, constraints	100%
Threats to the Species			
Clearing / fragmentation	Habitat cleared within 3 km radius from the site	Out of 25, in accordance with the Threat Matrix (DES, 2020) and converted to a score out of 15.	30%
Overgrazing by livestock	Habitat patch		35%
Predation by Introduced pests (feral cats, European foxes, wild dogs etc.)	Habitat patch		35%

Species Stocking Rate

Species Stocking Rate for the squatter pigeon (southern) is to be assessed in accordance with the MHQA method. While populations within and adjacent to the Project are considered unlikely to comprise an 'important population' (as per DCCEEW Species Profiles and Threats database), occurrences of the species may still be considered key source sub-populations for breeding and dispersal.

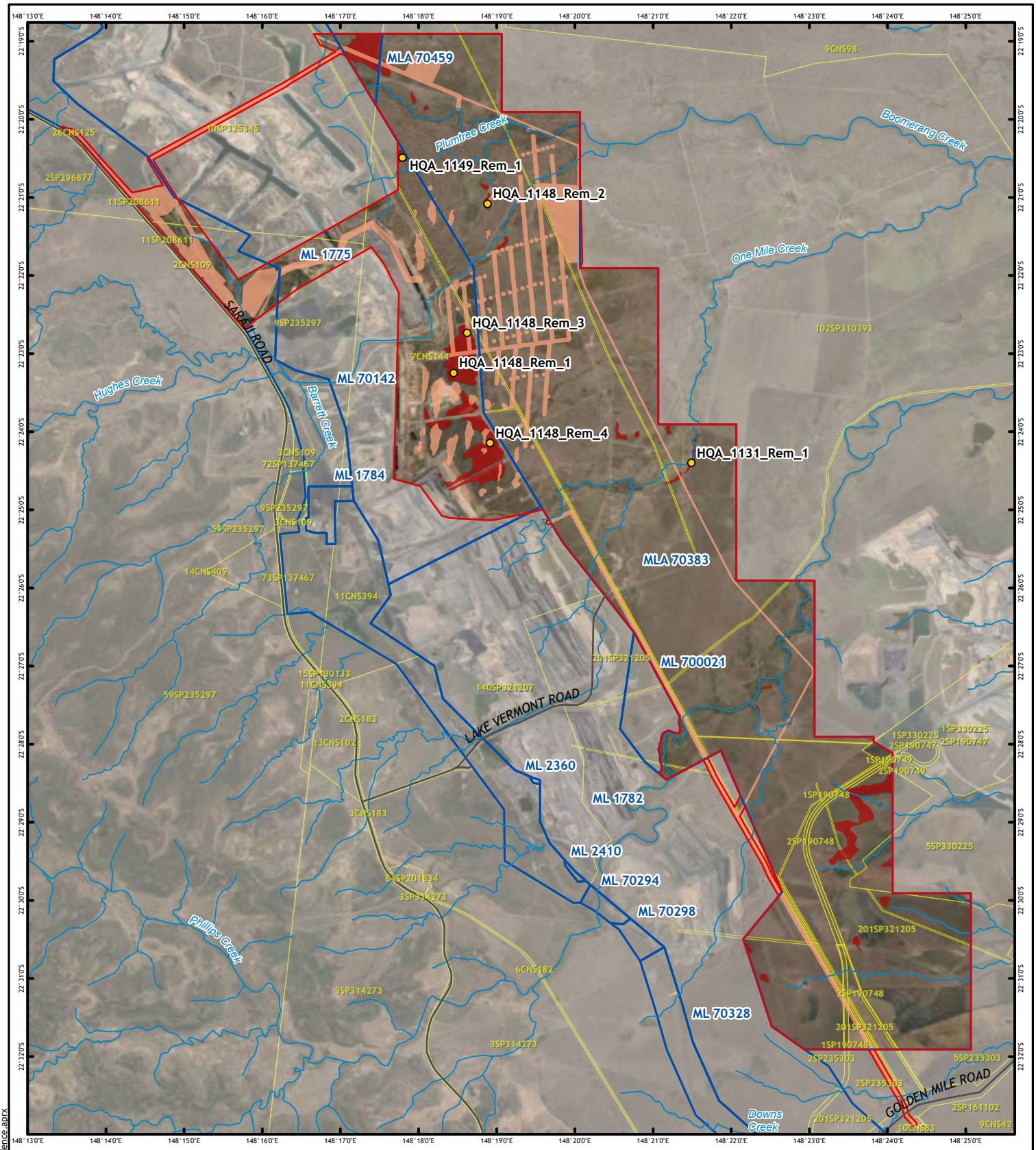
For the assessment of approximate densities, the social organisation is poorly known, with flock sizes varying depending on the season (BirdLife Australia, 2023). The species has been recorded in larger flock sizes up to 20 individuals, however commonly recorded as pairs or smaller family groups during the breeding season (BirdLife Australia, 2023). Due to the recorded fluctuation in flock sizes over seasons, the approximate density scoring within Species Stocking Rate is to be excluded for the species (i.e. maximum score of 40).

SQUATTER PIGEON (SOUTHERN) SCORING

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
Site Condition	30%	BioCondition	80%	Recruitment of woody perennial species in EDL	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%
				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					
		Quality and availability of food and foraging habitat	10%	Proportion of seed-producing native grasses and forbs within ground layer	100 x 50 m plot	0	Seed-producing native grasses and forbs absent or extremely limited (<30% of ground cover)	/10	25%
						2.5	Seed-producing native grasses and forbs comprising 30% to 50% of ground stratum		
						5	Ground layer dominated by seed-producing native grasses and forbs (comprising >50% of ground stratum)		
				Ground cover (%)	100 x 50 m plot	0	Ground layer absent (<1%) OR very dense (>70%)	/10	25%
						1	Ground layer very sparse (1-5%) OR moderately dense (61-70%)		
						3	Ground layer mid-dense (31-60%)		
						5	Ground layer patchy (6-10%) or sparse to mid-dense (11-30%)		
				Ground cover height	100 x 50 m plot	0	Ground layer median height >0.7 m	/10	25%
						2.5	Ground layer median height 0.4-0.7 m		
						5	Ground layer low median height < 0.4 m		
				Distance to permanent or seasonal water source (including dams, troughs, seasonal wetlands, and pools along watercourses).	Radius from the habitat assessment site	0	Site >2 km (<3km) from a suitable water source	/10	25%
						2.5	Site 1-2 km from a suitable water source		
						5	Site <1 km from a suitable water source		
		Quality and availability of shelter	10%	Abundance of low trees (<15 m height) suitable for roosting	HQ site scale	0	Overstorey does not include low trees suitable for roosting	/10	40%
						2.5	Very few low trees suitable for roosting in overstorey (1-2 per plot)		
						5	Overstorey includes a reasonable number of low trees suitable for roosting (>3 per plot)		
				Density of nest trees (i.e. tree or shrub >2m in height with horizontal or near horizontal branching at canopy level)	HQ site scale	0	Site >2 km from a suitable water source	/10	60%
						2.5	Site 1-2 km from a suitable water source		
						5	Site <1 km from a suitable water source		
Site Context	30%	Size of patch	17.86%	The size of the habitat patch assessed and associated directly with connected AUs containing habitat (contiguous habitat patch)	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/10	100%
		Context	8.93%	The percentage of suitable habitat within a buffer of the habitat patch	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Connectedness	8.93%	The proportion of the habitat patch boundary that is connected to suitable habitat	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)			/5	100%
		Ecological Corridors	10.71%	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%
		Species mobility	17.86%	Connectivity to suitable habitat that may support individuals	0 = Poor connectivity: There is little or no opportunity for movement/dispersal of animals between areas of suitable habitat 2.5 = Reasonable connectivity: movement between habitat areas possible but limited or somewhat constrained 5 = Good connectivity: movement between habitat areas subject to few, if any, constraints			/10	100%
		Role of site location for the population in the State	8.93%	Role of site location to overall population score	As per the MHQA			/5	100%
		Threats to species	26.78%	Clearing / fragmentation	Habitat cleared within 3 km radius from the site	As per the MHQA (i.e. in accorddance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017). Assessed based on the scope and severity factor for each threat at a site. Scope considers the proportion of the species' habitat or local population within the matter area that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends (IUCN-CMP, 2007). These factors include: 1 = Very high (threat affects all or most (80-100%) of the species occurrence or population within the site/habitat patch 2 = High (threat affects the majority (60-79%) of the species occurrence or population within the site/habitat patch 3 = Medium (threat affects some (40-59%) of the species occurrence or population within the site/habitat patch 4 = Low (threat affects a small proportion (20-39%) or the species occurrence of population within the site/habitat patch 5 = Very low (threat affects a negligible proportion (1-19%) of the species occurrence or population within the site/habitat patch Severity assesses the level of damage from the threat to the species' habitat/local population that can reasonably be expected given the continuation of current circumstances and trends (IUCNCMP, 2007). Severity factors comprise: 1 = Very high (threat to destroy or reduce the species' habitat/local population by 80-100% within ten years or three generations) 2 = High (threat seriously degrades or reduces the species' habitat/local population by 40-79% within ten years or three generations) 3 = Medium (threat to moderately degrade or reduce the species' habitat/local population by 11-39% within ten years or three generations)			/15	30%
				Overgrazing by livestock	Habitat patch			/15	35%

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score scale	Score options	Scoring guidance	Score	Weight
				Predation by Introduced pests (feral cats, European foxes, wild dogs etc.)	Habitat patch	4 = Low (threat slightly degrade or reduce the species' habitat/local population by 6-10% within ten years or three generations) 5 = Very low (threat to have a negligible damage or will only degrade or reduce the species' habitat/local population by 1-5% within ten years or three generations) The scores for each threat at a site are then weighted and added to give a score out of 25. These scores are then adjusted to a to a score out of 15.		/15	35%
Species Stocking Rate	**40%**	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	**25.00%**	As per the MHQA				/10	100%
		Species usage of the site (habitat type)	**37.50%**					/15	100%
		Approximate density	**na**	na	na			na	na
		Role/importance of species population on site*	**37.50%**	As per the MHQA				/15	100%

Appendix B MNES Habitat Quality sites



Legend

- Associated HQA Sites (Brigalow TEC)
- Brigalow TEC
- Road
- Watercourse
- Study Area
- Disturbance Area
- Mining Lease
- Cadastre

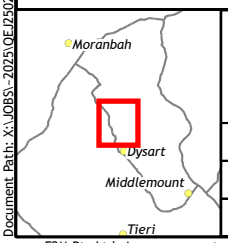
N

Scale 1:123,000 (A4)

0 2,000 4,000 6,000

Metres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Cadastre: © DNRMMRRD 2022
Ordered Drainage: © DNRMMRRD 2025
Road: © DNRMMRRD 2021

Rev	Description	Drawn	Approved	Date
0	Issued for Review	JY	PW	19/06/2025
B	Issued for Review	HM	KK	04/06/2025

FIGURE 2: BRIGALOW TEC

Saraji East Habitat Quality Assessment BMA

Map Number	Job Number	Rev
1 of 1	QEJ25022	0

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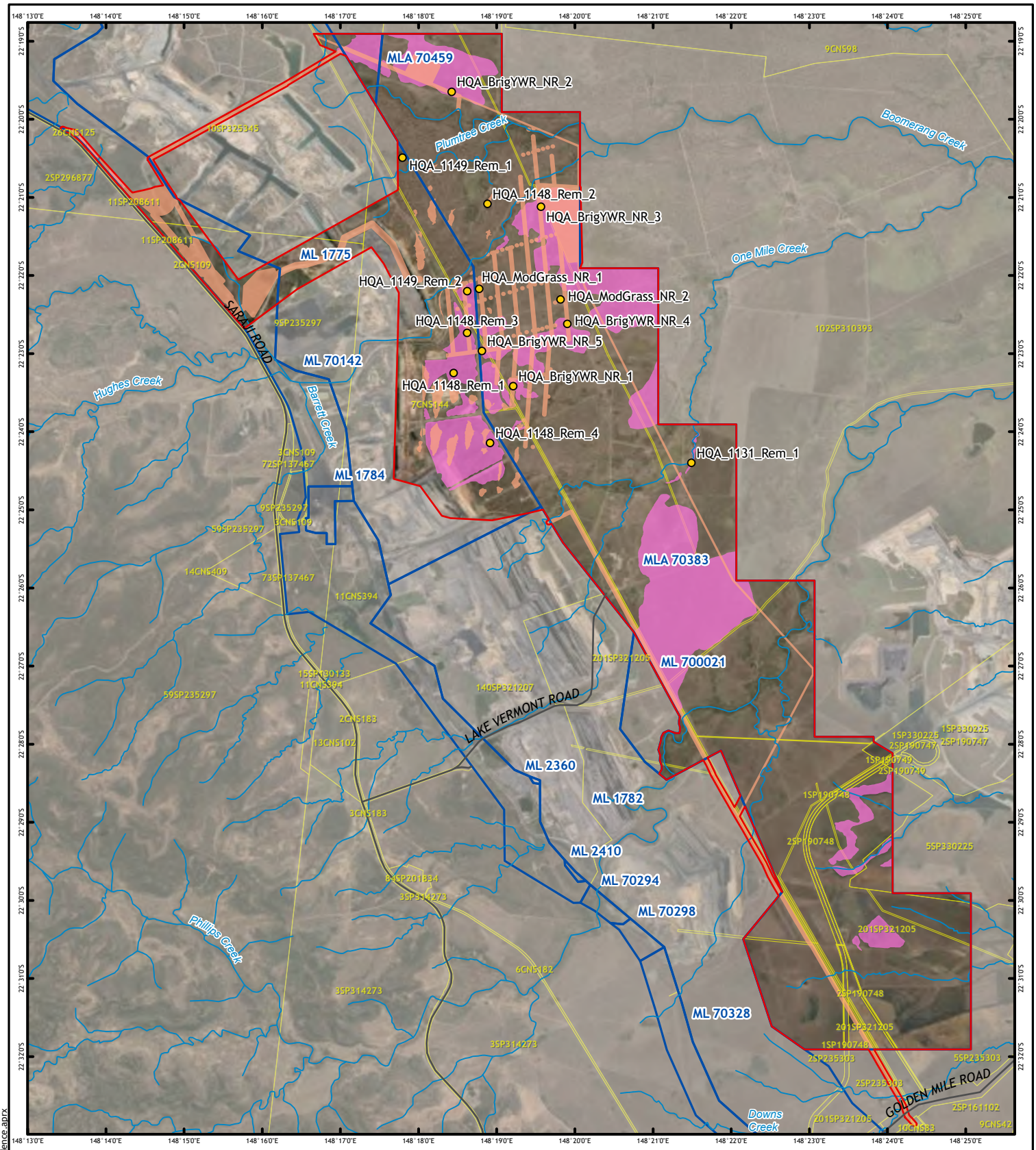

Legend

- Associated HQA Sites (Ornamental Snake)
- Ornamental Snake Habitat
- Road
- Watercourse
- Study Area
- Disturbance Area
- Mining Lease
- Cadastre

N

Scale 1:123,000 (A4)

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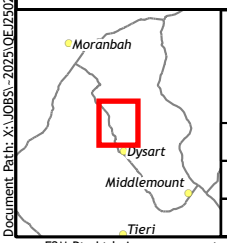
Metres

Coordinate System: GDA2020



Notes:
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Rev	Description	Drawn	Approved	Date
0	Issued for Review	JY	PW	19/06/2025
B	Issued for Review	HM	KK	04/06/2025

FIGURE 3: ORNAMENTAL SNAKE HABITAT

Saraji East Habitat Quality Assessment
BMA

Map Number	Job Number	Rev
1 of 1	QEJ25022	0

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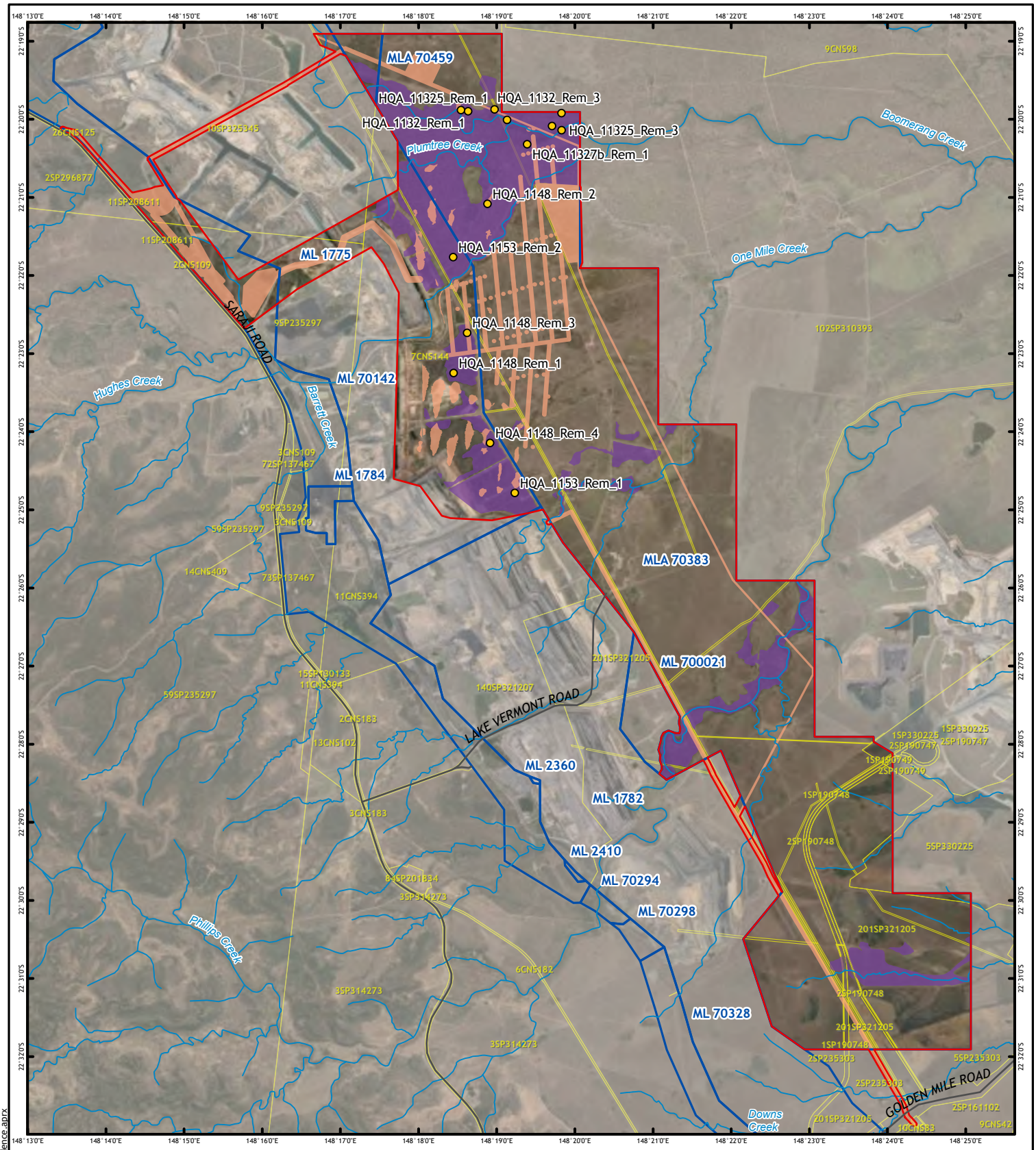

Legend

- Associated HQA Sites (Koala)
- Koala Habitat
- Road
- Watercourse
- Study Area
- Disturbance Area
- Mining Lease
- Cadastre

N

Scale 1:123,000 (A4)

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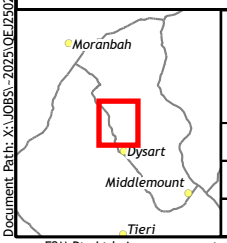
Metres

Coordinate System: GDA2020



Notes:
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Ordered Drainage: © DNRMMRRD 2025
Road: © DNRMMRRD 2021

Rev	Description	Drawn	Approved	Date
0	Issued for Review	JY	PW	19/06/2025
B	Issued for Review	HM	KK	04/06/2025

FIGURE 4: KOALA HABITAT

Saraji East Habitat Quality Assessment
BMA

Map Number	Job Number	Rev
1 of 1	QEJ25022	0

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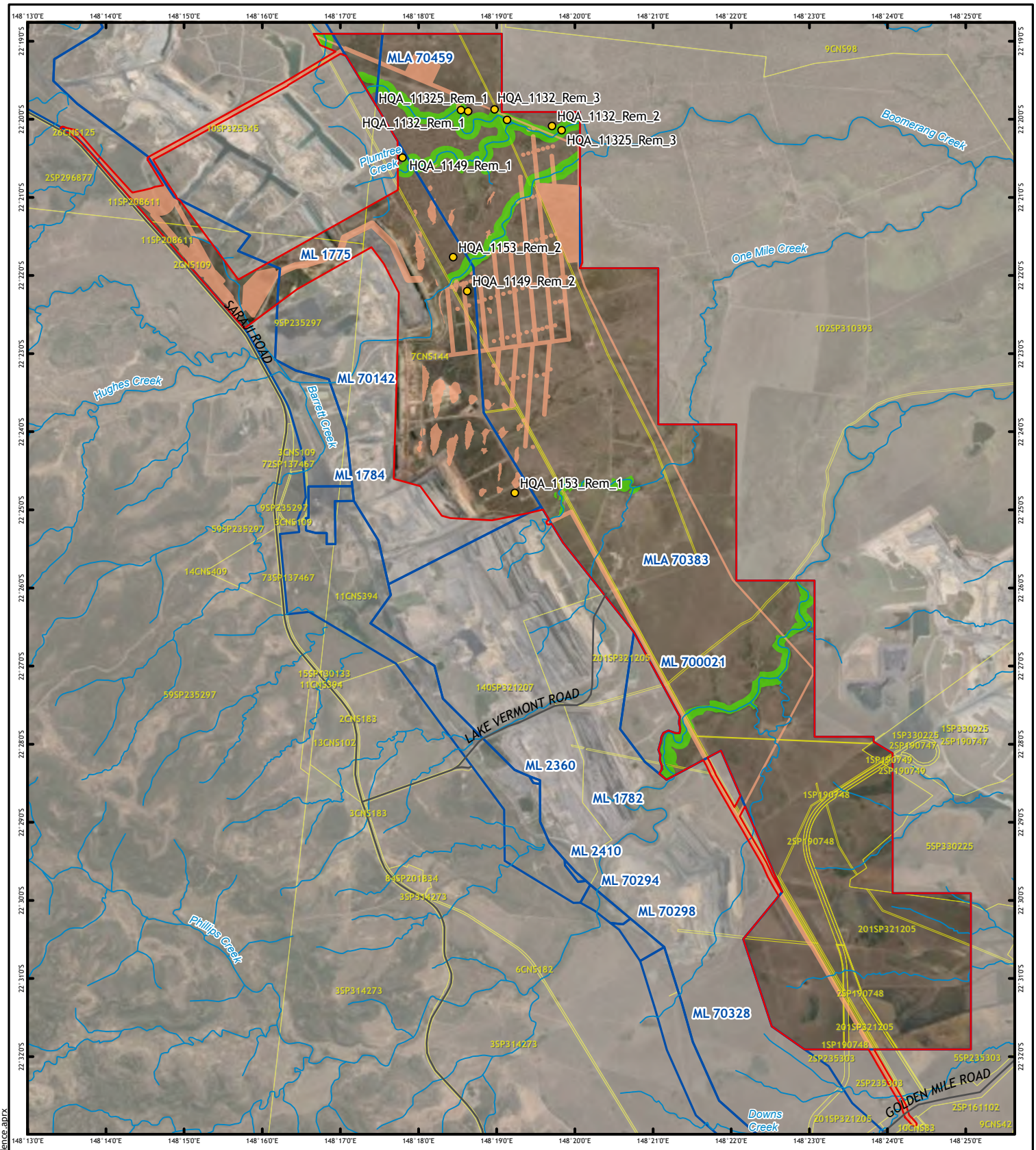

Legend

- Associated HQA Sites (Greater Glider)
- Greater Glider Habitat
- Road
- Watercourse
- Study Area
- Disturbance Area
- Mining Lease
- Cadastre

N

Scale 1:123,000 (A4)

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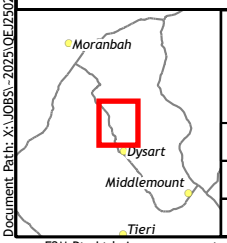
Metres

Coordinate System: GDA2020



Notes:
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Cadastre: © DNRMMRRD 2022
Ordered Drainage: © DNRMMRRD 2025
Road: © DNRMMRRD 2021

Rev	Description	Drawn	Approved	Date
0	Issued for Review	JY	PW	19/06/2025
B	Issued for Review	HM	KK	04/06/2025

FIGURE 5: GREATER GLIDER HABITAT

Saraji East Habitat Quality Assessment
BMA

Map Number	Job Number	Rev
1 of 1	QEJ25022	0

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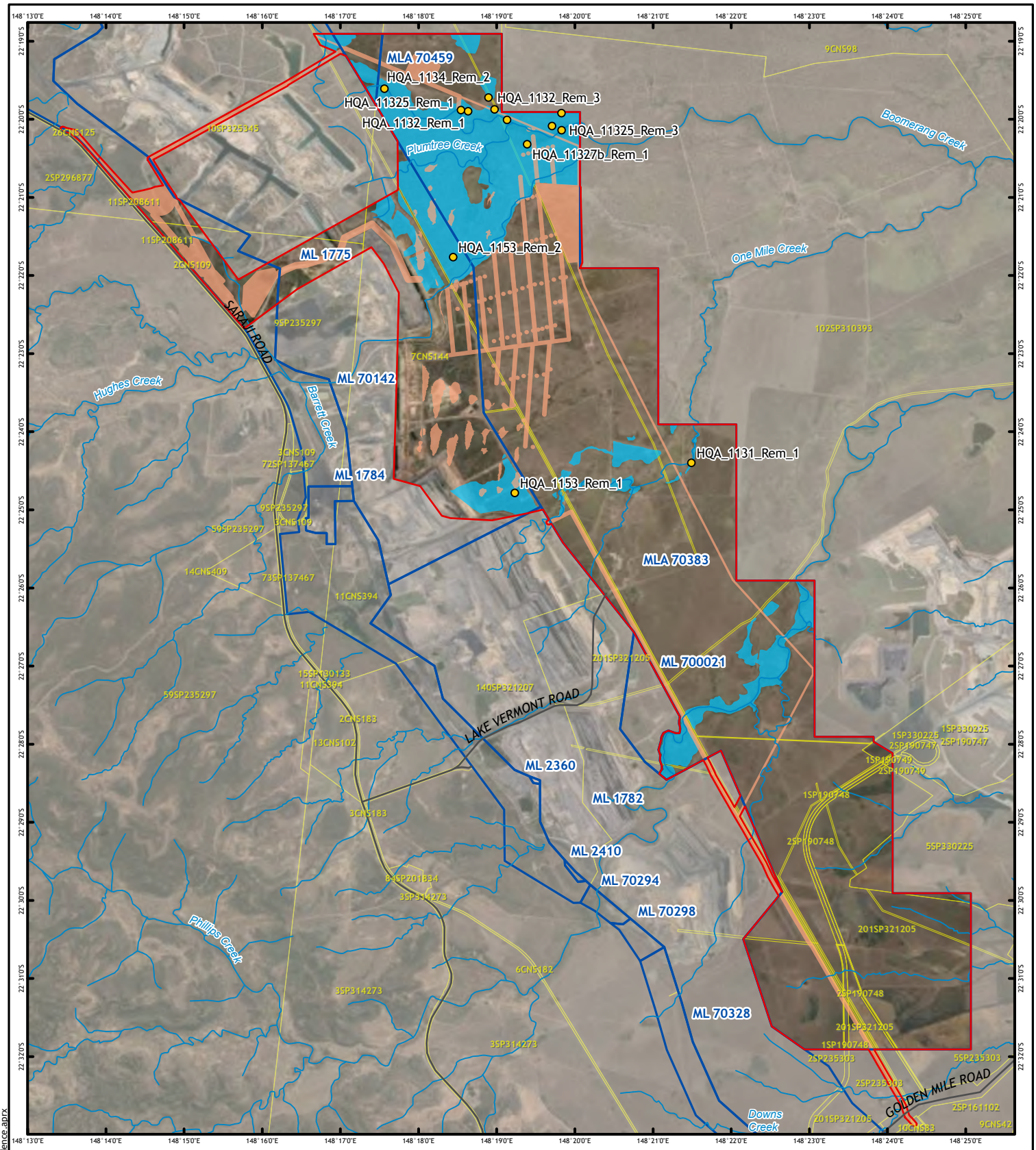


Legend

- Associated HQA Sites (Squatter Pigeon)
- Squatter Pigeon Habitat
- Road
- Watercourse
- Study Area
- Disturbance Area
- Mining Lease
- Cadastre

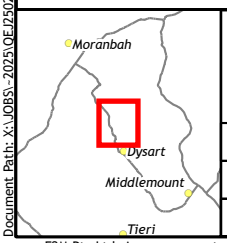
N

Scale 1:123,000 (A4)

0 2,000 4,000 6,000

Metres

Coordinate System: GDA2020



Notes:
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Road: © DNRMMRRD 2021

Rev	Description	Drawn	Approved	Date
0	Issued for Review	JY	PW	19/06/2025
B	Issued for Review	HM	KK	04/06/2025

FIGURE 6: SQUATTER PIGEON HABITAT

Saraji East Habitat Quality Assessment
BMA

Map Number	Job Number	Rev
1 of 1	QEJ25022	0

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Appendix C Habitat Quality Scores

C.1 Brigalow TEC

Commonwealth TEC scores

Current Commonwealth habitat quality score

Assessment Unit (AU)	AU14 (TEC)	AU2 (TEC)	AU8 (TEC)
Average site condition score (out of 70)	40.69	47.25	48.13
Average site context score (out of 30)	18.55	17.90	14.47
Habitat quality score (out of 10)	5.92	6.51	6.26
AU area (ha)	0.46	0.17	62.70
Size weighting	0.01	0.00	0.99
Weighted habitat quality score	0.04	0.02	6.20
Average site condition score	**45.35**		
Average site context score	**16.97**		
MNES weighted habitat quality score (out of 10)	**6.26**		

SEMLP Project

Brigalow TEC

Assessment Unit		AU14 (TEC)			AU2 (TEC)		
Site		HQA_1131_Rem_1			HQA_1149_Rem_1		
Regional ecosystem		11.3.1			11.4.9		
Broad condition state		Remnant			Remnant		
Biocondition attribute	Weighting %	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition							
Recruitment of woody perennial species (%)		100	100	5	100	100	5
Native plant species richness - trees (No.)		4	8	5	2	8	5
Native plant species richness - shrubs (No.)		4	8	5	5	12	5
Native plant species richness - grasses (No.)		6	4	2.5	5	9	5
Native plant species richness - forbs (No.)		10	13	5	10	20	5
Tree height - average		15	9	1.5	10	8	5
Tree cover - average	100	35	24	3.5	25	52	4
Native shrub canopy cover (%)		15	16	5	5	74	3
Native perennial grass cover (%)		33	5	1	16	2.8	1
Organic litter (%)		30	12.6	3	45	19	3
Large trees/ha - total		53	6	5	47	4	5
Coarse woody debris (m/ha)		1520	670	2	980	1090	5
Non-native plant cover (%)		0	25	3	0	35	3
Quality/availability of food/foraging habitat score			-			-	
Quality/availability of shelter score			-			-	
Commonwealth site condition score fauna	-	70	-	40.69	70	-	47.25
Site context (Commonwealth)							
Size of patch score	21.73913043	10	-	2	10	-	10
Connectedness score	10.86956522	5	-	5	5	-	2
Context score	10.86956522	5	-	0	5	-	0
Distance to permanent water score	43.47826087	20	-	0	20	-	0
Ecological corridors score	13.04347826	6	-	6	6	-	0
Threats score	32.60869565	15	-	10.44	15	-	10.44
Species mobility capacity score	0		-			-	
Role of site location to overall population score	10.86956522	5	-	5	5	-	5
Commonwealth site context score	-	30	-	18.55	30	-	17.90

Assessment Unit			AU8 (TEC)			AU8 (TEC)			AU8 (TEC)
Site			HQA_1148_Rem_1			HQA_1148_Rem_2			HQA_1148_Rem_3
Regional ecosystem			11.4.8			11.4.8			11.4.8
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	100	5	100	100	5
Native plant species richness - trees (No.)	3	9	5	3	9	5	3	12	5
Native plant species richness - shrubs (No.)	10	5	2.5	10	6	2.5	10	13	5
Native plant species richness - grasses (No.)	9	14	5	9	10	5	9	14	5
Native plant species richness - forbs (No.)	7	20	5	7	20	5	7	9	5
Tree height - average	17	17	5	17	21	5	17	22	5
Tree cover - average	40	56	5	40	36	5	40	20	5
Native shrub canopy cover (%)	5	34	3	5	38.5	3	5	61	3
Native perennial grass cover (%)	20	10.2	3	20	9.2	1	20	21	5
Organic litter (%)	37	24.4	5	37	35	5	37	17	3
Large trees/ha - total	70	8	5	70	18	5	70	14	5
Coarse woody debris (m/ha)	813	570	5	813	480	5	813	390	2
Non-native plant cover (%)	0	15	5	0	10	5	0	10	5
Quality/availability of food/foraging habitat score		-			-			-	
Quality/availability of shelter score		-			-			-	
Commonwealth site condition score fauna	70	-	51.19	70	-	49.44	70	-	50.75
Site context (Commonwealth)									
Size of patch score	10	-	5	10	-	10	10	-	5
Connectedness score	5	-	0	5	-	2	5	-	0
Context score	5	-	0	5	-	0	5	-	0
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	10.44	15	-	10.44	15	-	10.44
Species mobility capacity score		-			-			-	
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	13.33	30	-	17.90	30	-	13.33

Assessment Unit			AU8 (TEC)
Site			HQA_1148_Rem_4
Regional ecosystem			11.4.8
Broad condition state			Remnant
Biocondition attribute	Benchmark	Current value	Current score
Site condition			
Recruitment of woody perennial species (%)	100	70	3
Native plant species richness - trees (No.)	3	7	5
Native plant species richness - shrubs (No.)	10	4	2.5
Native plant species richness - grasses (No.)	9	8	2.5
Native plant species richness - forbs (No.)	7	18	5
Tree height - average	17	22	5
Tree cover - average	40	35	5
Native shrub canopy cover (%)	5	36	3
Native perennial grass cover (%)	20	23.6	5
Organic litter (%)	37	11	3
Large trees/ha - total	70	0	0
Coarse woody debris (m/ha)	813	410	5
Non-native plant cover (%)	0	30	3
Quality/availability of food/foraging habitat score		-	
Quality/availability of shelter score		-	
Commonwealth site condition score fauna	70	-	41.13
Site context (Commonwealth)			
Size of patch score	10	-	5
Connectedness score	5	-	0
Context score	5	-	0
Distance to permanent water score	20	-	0
Ecological corridors score	6	-	0
Threats score	15	-	10.44
Species mobility capacity score		-	
Role of site location to overall population score	5	-	5
Commonwealth site context score	30	-	13.33

C.2 Ornamental snake

Commonwealth Fauna scores

Current Commonwealth habitat quality score

Assessment Unit (AU)	AU1	AU12	AU13	AU14 (TEC)	AU2 (TEC)	AU4	AU8 (TEC)
Average site condition score (out of 30)	15.36	5.75	20.40	**18.81**	**21.30**	**11.12**	**19.74**
Average site context score (out of 30)	16.15	6.41	16.33	**21.15**	**20.61**	**17.66**	**17.94**
Species stocking rate score (out of 40)	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Habitat quality score (out of 10)	6.15	4.22	6.67	7.00	7.19	5.88	6.77
AU area (ha)	163.22	0.00	6.56	0.42	0.14	163.22	52.62
Size weighting	0.42	0.00	0.02	0.00	0.00	0.42	0.14
Weighted habitat quality score	2.60	0.00	0.11	0.01	0.00	2.48	0.92
Average site condition score	**16.07**						
Average site context score	**16.61**						
Average species stocking rate	**30.00**						
MNES weighted habitat quality score (out of 10)	**6.13**						

SEMLP Project

Ornamental Snake

Assessment Unit		AU1			AU1		
Site		HQA_BrigYWR_NR_1			HQA_BrigYWR_NR_4		
Regional ecosystem		11.4.9			11.4.9		
Broad condition state		Non-remnant			Non-remnant		
Biocondition attribute	Weighting %	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition							
Recruitment of woody perennial species (%)	80	100	100	5	100	100	5
Native plant species richness - trees (No.)		2	5	5	2	2	5
Native plant species richness - shrubs (No.)		5	7	5	5	3	2.5
Native plant species richness - grasses (No.)		5	4	2.5	5	10	5
Native plant species richness - forbs (No.)		10	10	5	10	18	5
Tree height - average		10	4	1.5	10	4	1.5
Tree cover - average		25	14	2.5	25	61	1.5
Native shrub canopy cover (%)		5	43	3	5	4	5
Native perennial grass cover (%)		16	5.4	1	16	9	3
Organic litter (%)		45	8	3	45	31	5
Large trees/ha - total		47	0	0	47	0	0
Coarse woody debris (m/ha)		980	0	0	980	0	0
Non-native plant cover (%)		0	65	0	0	60	0
Quality/availability of food/foraging habitat score	10	10	-	6	10	-	10
Quality/availability of shelter score	10	10	-	6.4	10	-	6.4
Commonwealth site condition score fauna	-	30	-	13.77	30	-	16.47
Site context (Commonwealth)							
Size of patch score	17.85714286	10	-	2	10	-	5
Connectedness score	8.928571429	5	-	0	5	-	0
Context score	8.928571429	5	-	4	5	-	4
Distance to permanent water score	35.71428571	20	-	0	20	-	0
Ecological corridors score	10.71428571	6	-	0	6	-	0
Threats score	26.78571429	15	-	6.96	15	-	6.96
Species mobility capacity score	17.85714286	10	-	10	10	-	10
Role of site location to overall population score	8.928571429	5	-	5	5	-	5
Commonwealth site context score	-	30	-	14.98	30	-	16.59

Assessment Unit			AU1			AU12			AU12
Site			HQA_BrigYWR_NR_5			HQA_ModGrass_NR_2			HQA_ModGrass_NR_1
Regional ecosystem			11.4.9			11.5.3			modgrass
Broad condition state			Non-remnant			Non-remnant			Non-remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	0	0	100	100	5
Native plant species richness - trees (No.)	2	6	5	6	0	0	6	6	5
Native plant species richness - shrubs (No.)	5	88	5	6	4	2.5	6	4	2.5
Native plant species richness - grasses (No.)	5	7	5	6	0	0	6	3	2.5
Native plant species richness - forbs (No.)	10	16	5	10	3	2.5	10	4	2.5
Tree height - average	10	5	1.5	16	0	0	16	8	3
Tree cover - average	25	37	2.5	20	0	0	20	0	0
Native shrub canopy cover (%)	5	38	3	3	6.5	3	3	1	3
Native perennial grass cover (%)	16	2	1	19	0	0	19	13.2	3
Organic litter (%)	45	14	3	20	8	3	20	0	0
Large trees/ha - total	47	0	0	10	0	0	10	0	0
Coarse woody debris (m/ha)	980	40	0	314	10	0	314	0	0
Non-native plant cover (%)	0	70	0	0	90	0	0	90	0
Quality/availability of food/foraging habitat score	10	-	10	10	-	0	10	-	0
Quality/availability of shelter score	10	-	6.8	10	-	0.8	10	-	0
Commonwealth site condition score fauna	30	-	15.84	30	-	3.54	30	-	7.95
Site context (Commonwealth)									
Size of patch score	10	-	5	10	-	0	10	-	0
Connectedness score	5	-	0	5	-	0	5	-	0
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	7.5	15	-	6.96	15	-	6.96
Species mobility capacity score	10	-	10	10	-	0	10	-	0
Role of site location to overall population score	5	-	5	5	-	1	5	-	1
Commonwealth site context score	30	-	16.88	30	-	6.41	30	-	6.41

Assessment Unit	AU13			AU14 (TEC)			AU2 (TEC)		
Site	HQA_1149_Rem_2			HQA_1131_Rem_1			HQA_1149_Rem_1		
Regional ecosystem	11.4.9			11.3.1			11.4.9		
Broad condition state	Remnant			Remnant			Remnant		
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	75	5	100	100	5	100	100	5
Native plant species richness - trees (No.)	2	6	5	4	8	5	2	8	5
Native plant species richness - shrubs (No.)	5	11	5	4	8	5	5	12	5
Native plant species richness - grasses (No.)	5	8	5	6	4	2.5	5	9	5
Native plant species richness - forbs (No.)	10	15	5	10	13	5	10	20	5
Tree height - average	10	14	5	15	9	1.5	10	8	5
Tree cover - average	25	64	4	35	24	3.5	25	52	4
Native shrub canopy cover (%)	5	32	3	15	16	5	5	74	3
Native perennial grass cover (%)	16	3.6	1	33	5	1	16	2.8	1
Organic litter (%)	45	40.6	5	30	12.6	3	45	19	3
Large trees/ha - total	47	4	5	53	6	5	47	4	5
Coarse woody debris (m/ha)	980	930	5	1520	670	2	980	1090	5
Non-native plant cover (%)	0	10	5	0	25	3	0	35	3
Quality/availability of food/foraging habitat score	10	-	6	10	-	10	10	-	10
Quality/availability of shelter score	10	-	4	10	-	6.2	10	-	7
Commonwealth site condition score fauna	30	-	20.40	30	-	18.81	30	-	21.30
Site context (Commonwealth)									
Size of patch score	10	-	2	10	-	2	10	-	10
Connectedness score	5	-	0	5	-	5	5	-	5
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	6	6	-	0
Threats score	15	-	9.48	15	-	9.48	15	-	9.48
Species mobility capacity score	10	-	10	10	-	8	10	-	5
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	16.33	30	-	21.15	30	-	20.61

Assessment Unit			AU4			AU4			AU8 (TEC)
Site			HQA_BrigYWR_NR_2			HQA_BrigYWR_NR_3			HQA_1148_Rem_1
Regional ecosystem			11.4.8			11.4.8			11.4.8
Broad condition state			Non-remnant			Non-remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	100	5	100	100	5
Native plant species richness - trees (No.)	3	3	5	3	2	2.5	3	9	5
Native plant species richness - shrubs (No.)	10	3	2.5	10	4	2.5	10	5	2.5
Native plant species richness - grasses (No.)	9	5	2.5	9	4	2.5	9	14	5
Native plant species richness - forbs (No.)	7	13	5	7	10	5	7	20	5
Tree height - average	17	2	0	17	0	0	17	17	5
Tree cover - average	40	0	0	40	0	0	40	56	5
Native shrub canopy cover (%)	5	63	3	5	58	3	5	34	3
Native perennial grass cover (%)	20	1	0	20	1	0	20	10.2	3
Organic litter (%)	37	5	3	37	4.6	3	37	24.4	5
Large trees/ha - total	70	0	0	70	0	0	70	8	5
Coarse woody debris (m/ha)	813	20	0	813	20	0	813	570	5
Non-native plant cover (%)	0	80	0	0	60	0	0	15	5
Quality/availability of food/foraging habitat score	10	-	10	10	-	10	10	-	6
Quality/availability of shelter score	10	-	0.8	10	-	3.8	10	-	2.8
Commonwealth site condition score fauna	30	-	11.04	30	-	11.19	30	-	20.19
Site context (Commonwealth)									
Size of patch score	10	-	7	10	-	7	10	-	5
Connectedness score	5	-	0	5	-	0	5	-	0
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	6.96	15	-	6.96	15	-	9.48
Species mobility capacity score	10	-	10	10	-	10	10	-	7.5
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	17.66	30	-	17.66	30	-	16.60

Assessment Unit			AU8 (TEC)			AU8 (TEC)			AU8 (TEC)
Site			HQA_1148_Rem_2			HQA_1148_Rem_3			HQA_1148_Rem_4
Regional ecosystem			11.4.8			11.4.8			11.4.8
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	100	5	100	70	3
Native plant species richness - trees (No.)	3	9	5	3	12	5	3	7	5
Native plant species richness - shrubs (No.)	10	6	2.5	10	13	5	10	4	2.5
Native plant species richness - grasses (No.)	9	10	5	9	14	5	9	8	2.5
Native plant species richness - forbs (No.)	7	20	5	7	9	5	7	18	5
Tree height - average	17	21	5	17	22	5	17	22	5
Tree cover - average	40	36	5	40	20	5	40	35	5
Native shrub canopy cover (%)	5	38.5	3	5	61	3	5	36	3
Native perennial grass cover (%)	20	9.2	1	20	21	5	20	23.6	5
Organic litter (%)	37	35	5	37	17	3	37	11	3
Large trees/ha - total	70	18	5	70	14	5	70	0	0
Coarse woody debris (m/ha)	813	480	5	813	390	2	813	410	5
Non-native plant cover (%)	0	10	5	0	10	5	0	30	3
Quality/availability of food/foraging habitat score	10	-	2	10	-	10	10	-	6
Quality/availability of shelter score	10	-	3.2	10	-	9.2	10	-	4
Commonwealth site condition score fauna	30	-	18.51	30	-	23.16	30	-	17.10
Site context (Commonwealth)									
Size of patch score	10	-	10	10	-	5	10	-	5
Connectedness score	5	-	5	5	-	0	5	-	0
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	9.48	15	-	9.48	15	-	9.48
Species mobility capacity score	10	-	5	10	-	7.5	10	-	10
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	20.61	30	-	16.60	30	-	17.94

C.3 Koala

Commonwealth Fauna scores

Current Commonwealth habitat quality score

Assessment Unit (AU)	AU5	AU6	AU7	AU8 (TEC)	AU9
Average site condition score (out of 30)	20.90	21.66	22.05	**22.03**	**21.38**
Average site context score (out of 30)	24.68	21.25	27.33	**18.26**	**23.85**
Species stocking rate score (out of 40)	25.71	25.71	25.71	25.71	25.71
Habitat quality score (out of 10)	7.13	6.86	7.51	6.60	7.09
AU area (ha)	19.04	75.65	14.83	23.76	3.05
Size weighting	0.14	0.55	0.11	0.17	0.02
Weighted habitat quality score	1.00	3.81	0.82	1.15	0.16
Average site condition score	**21.60**				
Average site context score	**23.07**				
Average species stocking rate	**25.71**				
MNES weighted habitat quality score (out of 10)	**6.93**				

SEMLP Project

Koala

Assessment Unit		AU5			AU5		
Site		HQA_1132_Rem_1			HQA_1132_Rem_3		
Regional ecosystem		11.3.2			11.3.2		
Broad condition state		Remnant			Remnant		
Biocondition attribute	Weighting %	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition							
Recruitment of woody perennial species (%)		100	100	5	100	100	5
Native plant species richness - trees (No.)		2	8	5	2	14	5
Native plant species richness - shrubs (No.)		2	3	5	2	5	5
Native plant species richness - grasses (No.)		9	10	5	9	5	2.5
Native plant species richness - forbs (No.)		15	17	5	15	11	2.5
Tree height - average		18	18	2.5	18	18	5
Tree cover - average	80	37	35	5	37	44	4
Native shrub canopy cover (%)		4	0	0	4	0	0
Native perennial grass cover (%)		26	18.4	3	26	2.4	0
Organic litter (%)		35	40.2	5	35	15.6	3
Large trees/ha - total		18	8	5	18	14	10
Coarse woody debris (m/ha)		281	610	2	281	420	5
Non-native plant cover (%)		0	60	0	0	80	0
Quality/availability of food/foraging habitat score	10	10	-	9.5	10	-	10
Quality/availability of shelter score	10	10	-	10	10	-	10
Commonwealth site condition score fauna	-	30	-	20.10	30	-	20.10
Site context (Commonwealth)							
Size of patch score	17.85714286	10	-	10	10	-	10
Connectedness score	8.928571429	5	-	5	5	-	5
Context score	8.928571429	5	-	4	5	-	4
Distance to permanent water score	35.71428571	20	-	0	20	-	0
Ecological corridors score	10.71428571	6	-	0	6	-	4
Threats score	26.78571429	15	-	13.11	15	-	10.08
Species mobility capacity score	17.85714286	10	-	10	10	-	10
Role of site location to overall population score	8.928571429	5	-	5	5	-	5
Commonwealth site context score	-	30	-	25.24	30	-	25.76

Assessment Unit			AU5			AU6			AU6
Site			HQA_1132_Rem_2			HQA_1153_Rem_1			HQA_1153_Rem_2
Regional ecosystem			11.3.2			11.5.3			11.5.3
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	66	3	100	100	5	100	100	5
Native plant species richness - trees (No.)	2	3	5	6	11	5	6	6	5
Native plant species richness - shrubs (No.)	2	3	5	6	8	5	6	10	5
Native plant species richness - grasses (No.)	9	5	2.5	6	9	5	6	8	5
Native plant species richness - forbs (No.)	15	12	2.5	10	18	5	10	15	5
Tree height - average	18	18	4	16	17	5	16	20	5
Tree cover - average	37	12	3.5	20	24	5	20	36	5
Native shrub canopy cover (%)	4	3	5	3	w		3	2	5
Native perennial grass cover (%)	26	2	0	19	4	1	19	7.8	1
Organic litter (%)	35	27	5	20	29	5	20	14.4	5
Large trees/ha - total	18	22	15	10	2	5	10	2	5
Coarse woody debris (m/ha)	281	350	5	314	320	5	314	620	5
Non-native plant cover (%)	0	90	0	0	80	0	0	60	0
Quality/availability of food/foraging habitat score	10	-	9.5	10	-	8.2	10	-	9.2
Quality/availability of shelter score	10	-	10	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	22.50	30	-	20.76	30	-	22.56
Site context (Commonwealth)									
Size of patch score	10	-	10	10	-	5	10	-	10
Connectedness score	5	-	5	5	-	5	5	-	5
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	9	15	-	9.18	15	-	11.16
Species mobility capacity score	10	-	10	10	-	6.8	10	-	9.2
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	23.04	30	-	18.74	30	-	23.76

Assessment Unit			AU7			AU7			AU7
Site			HQA_11325_Rem_1			HQA_11325_Rem_2			HQA_11325_Rem_3
Regional ecosystem			11.3.25			11.3.25			11.3.25
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	50	3	100	100	5	100	100	5
Native plant species richness - trees (No.)	4	10	5	4	10	5	4	9	5
Native plant species richness - shrubs (No.)	4	7	5	4	1	2.5	4	4	5
Native plant species richness - grasses (No.)	8	6	2.5	8	1	0	8	1	0
Native plant species richness - forbs (No.)	13	12	5	13	14	5	13	11	2.5
Tree height - average	23	20	5	23	26	5	23	25	5
Tree cover - average	34	31	5	34	86	4	34	91	4
Native shrub canopy cover (%)	7	2	3	7	0	0	7	0	0
Native perennial grass cover (%)	35	4	1	35	0	0	35	0	0
Organic litter (%)	21	15.6	5	21	55.4	3	21	19.2	5
Large trees/ha - total	32	28	10	32	42	15	32	64	15
Coarse woody debris (m/ha)	473	370	5	473	420	5	473	760	5
Non-native plant cover (%)	0	80	0	0	10	5	0	80	0
Quality/availability of food/foraging habitat score	10	-	10	10	-	10	10	-	10
Quality/availability of shelter score	10	-	10	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	22.35	30	-	22.35	30	-	21.45
Site context (Commonwealth)									
Size of patch score	10	-	10	10	-	10	10	-	10
Connectedness score	5	-	5	5	-	5	5	-	5
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	6	6	-	6	6	-	6
Threats score	15	-	12.03	15	-	12.03	15	-	9
Species mobility capacity score	10	-	10	10	-	10	10	-	10
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	27.87	30	-	27.87	30	-	26.25

Assessment Unit			AU8 (TEC)			AU8 (TEC)			AU8 (TEC)
Site			HQA_1148_Rem_1			HQA_1148_Rem_2			HQA_1148_Rem_3
Regional ecosystem			11.4.8			11.4.8			11.4.8
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	100	5	100	100	5
Native plant species richness - trees (No.)	3	9	5	3	9	5	3	12	5
Native plant species richness - shrubs (No.)	10	5	2.5	10	6	2.5	10	13	5
Native plant species richness - grasses (No.)	9	14	5	9	10	5	9	14	5
Native plant species richness - forbs (No.)	7	20	5	7	20	5	7	9	5
Tree height - average	17	17	5	17	21	5	17	22	5
Tree cover - average	40	56	5	40	36	5	40	20	5
Native shrub canopy cover (%)	5	34	3	5	38.5	3	5	61	3
Native perennial grass cover (%)	20	10.2	3	20	9.2	1	20	21	5
Organic litter (%)	37	24.4	5	37	35	5	37	17	3
Large trees/ha - total	70	8	5	70	18	5	70	14	5
Coarse woody debris (m/ha)	813	570	5	813	480	5	813	390	2
Non-native plant cover (%)	0	15	5	0	10	5	0	10	5
Quality/availability of food/foraging habitat score	10	-	9.5	10	-	9.5	10	-	9.5
Quality/availability of shelter score	10	-	10	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	23.40	30	-	22.80	30	-	23.25
Site context (Commonwealth)									
Size of patch score	10	-	5	10	-	10	10	-	5
Connectedness score	5	-	0	5	-	5	5	-	0
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	10.68	15	-	13.11	15	-	9.18
Species mobility capacity score	10	-	6	10	-	8.4	10	-	7.2
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	16.44	30	-	24.38	30	-	16.28

Assessment Unit			AU8 (TEC)			AU9			AU9
Site			HQA_1148_Rem_4			HQA_11327b_Rem_1			HQA_11327b_Rem_2
Regional ecosystem			11.4.8			11.3.27b_wooded			11.3.27b_wooded
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	70	3	100	100	5	100	75	5
Native plant species richness - trees (No.)	3	7	5	2	10	5	2	8	5
Native plant species richness - shrubs (No.)	10	4	2.5	1	1	5	1	0	0
Native plant species richness - grasses (No.)	9	8	2.5	2	1	2.5	2	8	5
Native plant species richness - forbs (No.)	7	18	5	7	9	5	7	19	5
Tree height - average	17	22	5	15	32	5	15	25	5
Tree cover - average	40	35	5	42	37	5	42	25	5
Native shrub canopy cover (%)	5	36	3	7	1	3	7	0	0
Native perennial grass cover (%)	20	23.6	5	10	9.4	5	10	1.6	1
Organic litter (%)	37	11	3	12	40	3	12	3	3
Large trees/ha - total	70	0	0	34	22	10	34	10	5
Coarse woody debris (m/ha)	813	410	5	484	570	5	484	90	2
Non-native plant cover (%)	0	30	3	0	70	0	0	40	3
Quality/availability of food/foraging habitat score	10	-	9.2	10	-	10	10	-	10
Quality/availability of shelter score	10	-	6	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	18.66	30	-	23.55	30	-	19.20
Site context (Commonwealth)									
Size of patch score	10	-	5	10	-	10	10	-	10
Connectedness score	5	-	0	5	-	5	5	-	5
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	8.55	15	-	12.03	15	-	9
Species mobility capacity score	10	-	7.2	10	-	10	10	-	10
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	15.94	30	-	24.66	30	-	23.04

C.4 Greater glider (central and southern)

Commonwealth Fauna scores

Current Commonwealth habitat quality score

Assessment Unit (AU)	AU13	AU2 (TEC)	AU5	AU6	AU7
Average site condition score (out of 30)	18.00	16.20	20.20	**20.25**	**21.55**
Average site context score (out of 30)	4.74	15.01	16.82	**16.08**	**22.46**
Species stocking rate score (out of 40)	25.71	25.71	25.71	25.71	25.71
Habitat quality score (out of 10)	4.85	5.69	6.27	6.20	6.97
AU area (ha)	0.01	0.03	13.08	13.88	11.55
Size weighting	0.00	0.00	0.34	0.36	0.30
Weighted habitat quality score	0.00	0.00	2.13	2.23	2.09
Average site condition score	**19.24**				
Average site context score	**15.02**				
Average species stocking rate	**25.71**				
MNES weighted habitat quality score (out of 10)	**6.46**				

SEMLP Project

Greater Glider

Assessment Unit		AU13			AU2 (TEC)		
Site		HQA_1149_Rem_2			HQA_1149_Rem_1		
Regional ecosystem		11.4.9			11.4.9		
Broad condition state		Remnant			Remnant		
Biocondition attribute	Weighting %	Benchmark	Current	Current score	Benchmark	Current	Current score
Site condition							
Recruitment of woody perennial species (%)	80	100	75	5	100	100	5
Native plant species richness - trees (No.)		2	6	5	2	8	5
Native plant species richness - shrubs (No.)		5	11	5	5	12	5
Native plant species richness - grasses (No.)		5	8	5	5	9	5
Native plant species richness - forbs (No.)		10	15	5	10	20	5
Tree height - average		10	14	5	10	8	5
Tree cover - average		25	64	4	25	52	4
Native shrub canopy cover (%)		5	32	3	5	74	3
Native perennial grass cover (%)		16	3.6	1	16	2.8	1
Organic litter (%)		45	40.6	5	45	19	3
Large trees/ha - total		47	4	5	47	4	5
Coarse woody debris (m/ha)		980	930	5	980	1090	5
Non-native plant cover (%)		0	10	5	0	35	3
Quality/availability of food/foraging habitat score	10	10	-	2	10	-	0
Quality/availability of shelter score	10	10	-	0	10	-	0
Commonwealth site condition score fauna	-	30	-	18.00	30	-	16.20
Site context (Commonwealth)							
Size of patch score	17.85714286	10	-	2	10	-	10
Connectedness score	8.928571429	5	-	0	5	-	0
Context score	8.928571429	5	-	2	5	-	2
Distance to permanent water score	35.71428571	20	-	0	20	-	0
Ecological corridors score	10.71428571	6	-	0	6	-	0
Threats score	26.78571429	15	-	0.6	15	-	8.61
Species mobility capacity score	17.85714286	10	-	3.25	10	-	6.4
Role of site location to overall population score	8.928571429	5	-	1	5	-	1
Commonwealth site context score	-	30	-	4.74	30	-	15.01
State fauna habitat quality							

Assessment Unit			AU5			AU5			AU5
Site			HQA_1132_Rem_1			HQA_1132_Rem_3			HQA_1132_Rem_2
Regional ecosystem			11.3.2			11.3.2			11.3.2
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current	Current score	Benchmark	Current	Current score	Benchmark	Current	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	100	5	100	66	3
Native plant species richness - trees (No.)	2	8	5	2	14	5	2	3	5
Native plant species richness - shrubs (No.)	2	3	5	2	5	5	2	3	5
Native plant species richness - grasses (No.)	9	10	5	9	5	2.5	9	5	2.5
Native plant species richness - forbs (No.)	15	17	5	15	11	2.5	15	12	2.5
Tree height - average	18	18	2.5	18	18	5	18	18	4
Tree cover - average	37	35	5	37	44	4	37	12	3.5
Native shrub canopy cover (%)	4	0	0	4	0	0	4	3	5
Native perennial grass cover (%)	26	18.4	3	26	2.4	0	26	2	0
Organic litter (%)	35	40.2	5	35	15.6	3	35	27	5
Large trees/ha - total	18	8	5	18	14	10	18	22	15
Coarse woody debris (m/ha)	281	610	2	281	420	5	281	350	5
Non-native plant cover (%)	0	60	0	0	80	0	0	90	0
Quality/availability of food/foraging habitat score	10	-	9	10	-	8	10	-	5
Quality/availability of shelter score	10	-	10	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	19.95	30	-	19.50	30	-	21.15
Site context (Commonwealth)									
Size of patch score	10	-	10	10	-	10	10	-	10
Connectedness score	5	-	0	5	-	0	5	-	0
Context score	5	-	2	5	-	2	5	-	2
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	4	6	-	0
Threats score	15	-	8.88	15	-	2.4	15	-	2.4
Species mobility capacity score	10	-	8.5	10	-	8.5	10	-	8.5
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	18.42	30	-	17.09	30	-	14.95
State fauna habitat quality									

Assessment Unit			AU6			AU6			AU7
Site			HQA_1153_Rem_1			HQA_1153_Rem_2			HQA_11325_Rem_1
Regional ecosystem			11.5.3			11.5.3			11.3.25
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current	Current score	Benchmark	Current	Current score	Benchmark	Current	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	100	5	100	50	3
Native plant species richness - trees (No.)	6	11	5	6	6	5	4	10	5
Native plant species richness - shrubs (No.)	6	8	5	6	10	5	4	7	5
Native plant species richness - grasses (No.)	6	9	5	6	8	5	8	6	2.5
Native plant species richness - forbs (No.)	10	18	5	10	15	5	13	12	5
Tree height - average	16	17	5	16	20	5	23	20	5
Tree cover - average	20	24	5	20	36	5	34	31	5
Native shrub canopy cover (%)	3	w		3	2	5	7	2	3
Native perennial grass cover (%)	19	4	1	19	7.8	1	35	4	1
Organic litter (%)	20	29	5	20	14.4	5	21	15.6	5
Large trees/ha - total	10	2	5	10	2	5	32	28	10
Coarse woody debris (m/ha)	314	320	5	314	620	5	473	370	5
Non-native plant cover (%)	0	80	0	0	60	0	0	80	0
Quality/availability of food/foraging habitat score	10	-	8	10	-	8	10	-	9
Quality/availability of shelter score	10	-	10	10	-	2	10	-	10
Commonwealth site condition score fauna	30	-	20.70	30	-	19.80	30	-	22.05
Site context (Commonwealth)									
Size of patch score	10	-	5	10	-	10	10	-	10
Connectedness score	5	-	0	5	-	0	5	-	0
Context score	5	-	2	5	-	2	5	-	2
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	6
Threats score	15	-	10.05	15	-	8.97	15	-	12.36
Species mobility capacity score	10	-	3.5	10	-	8.5	10	-	10
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	13.69	30	-	18.47	30	-	24.30
State fauna habitat quality									

Assessment Unit			AU7			AU7
Site			HQA_11325_Rem_2			HQA_11325_Rem_3
Regional ecosystem			11.3.25			11.3.25
Broad condition state			Remnant			Remnant
Biocondition attribute	Benchmark	Current	Current score	Benchmark	Current	Current score
Site condition						
Recruitment of woody perennial species (%)	100	100	5	100	100	5
Native plant species richness - trees (No.)	4	10	5	4	9	5
Native plant species richness - shrubs (No.)	4	1	2.5	4	4	5
Native plant species richness - grasses (No.)	8	1	0	8	1	0
Native plant species richness - forbs (No.)	13	14	5	13	11	2.5
Tree height - average	23	26	5	23	25	5
Tree cover - average	34	86	4	34	91	4
Native shrub canopy cover (%)	7	0	0	7	0	0
Native perennial grass cover (%)	35	0	0	35	0	0
Organic litter (%)	21	55.4	3	21	19.2	5
Large trees/ha - total	32	42	15	32	64	15
Coarse woody debris (m/ha)	473	420	5	473	760	5
Non-native plant cover (%)	0	10	5	0	80	0
Quality/availability of food/foraging habitat score	10	-	8	10	-	8
Quality/availability of shelter score	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	21.75	30	-	20.85
Site context (Commonwealth)						
Size of patch score	10	-	10	10	-	10
Connectedness score	5	-	0	5	-	0
Context score	5	-	2	5	-	2
Distance to permanent water score	20	-	0	20	-	0
Ecological corridors score	6	-	6	6	-	6
Threats score	15	-	7.2	15	-	7.2
Species mobility capacity score	10	-	10	10	-	10
Role of site location to overall population score	5	-	5	5	-	5
Commonwealth site context score	30	-	21.54	30	-	21.54
State fauna habitat quality						

C.5 Squatter pigeon (southern)

Commonwealth Fauna scores

Current Commonwealth habitat quality score

Assessment Unit (AU)	AU11	AU14 (TEC)	AU5	AU6	AU7	AU9
Average site condition score (out of 30)	16.05	19.58	19.50	**19.91**	**20.75**	**19.80**
Average site context score (out of 30)	21.87	22.67	24.46	**22.40**	**26.96**	**23.74**
Species stocking rate score (out of 40)	25.00	25.00	25.00	25.00	25.00	25.00
Habitat quality score (out of 10)	6.29	6.72	6.90	6.73	7.27	6.85
AU area (ha)	0.01	0.44	19.04	76.98	14.07	3.04
Size weighting	0.00	0.00	0.17	0.68	0.12	0.03
Weighted habitat quality score	0.00	0.03	1.16	4.56	0.90	0.18
Average site condition score	**19.26**					
Average site context score	**23.68**					
Average species stocking rate	**25.00**					
MNES weighted habitat quality score (out of 10)	**6.83**					

SEMLP Project

Squatter Pigeon

Assessment Unit		AU11			AU11		
Site		HQA_1134_Rem_1			HQA_1134_Rem_2		
Regional ecosystem		11.3.4			11.3.4		
Broad condition state		Remnant			Remnant		
Biocondition attribute	Weighting %	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition							
Recruitment of woody perennial species (%)		100	50	3	100	100	5
Native plant species richness - trees (No.)		4	13	5	4	7	5
Native plant species richness - shrubs (No.)		3	4	5	3	3	5
Native plant species richness - grasses (No.)		11	1	0	11	8	2.5
Native plant species richness - forbs (No.)		17	14	2.5	17	17	5
Tree height - average		24	21	4	24	18	5
Tree cover - average	80	30	31	3.5	30	47	3.5
Native shrub canopy cover (%)		3	0	0	3	0	0
Native perennial grass cover (%)		55	1.4	0	55	36.8	3
Organic litter (%)		37	21.4	5	37	26.6	5
Large trees/ha - total		19	6	5	19	4	5
Coarse woody debris (m/ha)		509	30	0	509	310	5
Non-native plant cover (%)		0	60	0	0	80	0
Quality/availability of food/foraging habitat score	10	10	-	2.5	10	-	2.5
Quality/availability of shelter score	10	10	-	10	10	-	10
Commonwealth site condition score fauna	-	30	-	13.65	30	-	18.45
Site context (Commonwealth)							
Size of patch score	17.85714286	10	-	7	10	-	10
Connectedness score	8.928571429	5	-	0	5	-	5
Context score	8.928571429	5	-	4	5	-	4
Distance to permanent water score	35.71428571	20	-	0	20	-	0
Ecological corridors score	10.71428571	6	-	0	6	-	6
Threats score	26.78571429	15	-	10.32	15	-	10.32
Species mobility capacity score	17.85714286	10	-	5	10	-	10
Role of site location to overall population score	8.928571429	5	-	5	5	-	5
Commonwealth site context score	-	30	-	16.78	30	-	26.96

Assessment Unit			AU14 (TEC)			AU5			AU5
Site			HQA_1131_Rem_1			HQA_1132_Rem_1			HQA_1132_Rem_3
Regional ecosystem			11.3.1			11.3.2			11.3.2
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	100	5	100	100	5	100	100	5
Native plant species richness - trees (No.)	4	8	5	2	8	5	2	14	5
Native plant species richness - shrubs (No.)	4	8	5	2	3	5	2	5	5
Native plant species richness - grasses (No.)	6	4	2.5	9	10	5	9	5	2.5
Native plant species richness - forbs (No.)	10	13	5	15	17	5	15	11	2.5
Tree height - average	15	9	1.5	18	18	2.5	18	18	5
Tree cover - average	35	24	3.5	37	35	5	37	44	4
Native shrub canopy cover (%)	15	16	5	4	0	0	4	0	0
Native perennial grass cover (%)	33	5	1	26	18.4	3	26	2.4	0
Organic litter (%)	30	12.6	3	35	40.2	5	35	15.6	3
Large trees/ha - total	53	6	5	18	8	5	18	14	10
Coarse woody debris (m/ha)	1520	670	2	281	610	2	281	420	5
Non-native plant cover (%)	0	25	3	0	60	0	0	80	0
Quality/availability of food/foraging habitat score	10	-	8.75	10	-	5.5	10	-	5.25
Quality/availability of shelter score	10	-	10	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	19.58	30	-	18.90	30	-	18.68
Site context (Commonwealth)									
Size of patch score	10	-	2	10	-	10	10	-	10
Connectedness score	5	-	5	5	-	5	5	-	5
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	6	6	-	0	6	-	4
Threats score	15	-	10.32	15	-	10.32	15	-	10.32
Species mobility capacity score	10	-	10	10	-	10	10	-	10
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	22.67	30	-	23.74	30	-	25.89

Assessment Unit			AU5			AU6			AU6
Site			HQA_1132_Rem_2			HQA_1153_Rem_1			HQA_1153_Rem_2
Regional ecosystem			11.3.2			11.5.3			11.5.3
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	66	3	100	100	5	100	100	5
Native plant species richness - trees (No.)	2	3	5	6	11	5	6	6	5
Native plant species richness - shrubs (No.)	2	3	5	6	8	5	6	10	5
Native plant species richness - grasses (No.)	9	5	2.5	6	9	5	6	8	5
Native plant species richness - forbs (No.)	15	12	2.5	10	18	5	10	15	5
Tree height - average	18	18	4	16	17	5	16	20	5
Tree cover - average	37	12	3.5	20	24	5	20	36	5
Native shrub canopy cover (%)	4	3	5	3	w		3	2	5
Native perennial grass cover (%)	26	2	0	19	4	1	19	7.8	1
Organic litter (%)	35	27	5	20	29	5	20	14.4	5
Large trees/ha - total	18	22	15	10	2	5	10	2	5
Coarse woody debris (m/ha)	281	350	5	314	320	5	314	620	5
Non-native plant cover (%)	0	90	0	0	80	0	0	60	0
Quality/availability of food/foraging habitat score	10	-	4.25	10	-	1.75	10	-	6.5
Quality/availability of shelter score	10	-	10	10	-	7.5	10	-	10
Commonwealth site condition score fauna	30	-	20.93	30	-	18.08	30	-	21.75
Site context (Commonwealth)									
Size of patch score	10	-	10	10	-	5	10	-	10
Connectedness score	5	-	5	5	-	5	5	-	5
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0	6	-	0
Threats score	15	-	10.32	15	-	10.32	15	-	10.32
Species mobility capacity score	10	-	10	10	-	10	10	-	10
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	23.74	30	-	21.06	30	-	23.74

Assessment Unit			AU7			AU7			AU7
Site			HQA_11325_Rem_1			HQA_11325_Rem_2			HQA_11325_Rem_3
Regional ecosystem			11.3.25			11.3.25			11.3.25
Broad condition state			Remnant			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition									
Recruitment of woody perennial species (%)	100	50	3	100	100	5	100	100	5
Native plant species richness - trees (No.)	4	10	5	4	10	5	4	9	5
Native plant species richness - shrubs (No.)	4	7	5	4	1	2.5	4	4	5
Native plant species richness - grasses (No.)	8	6	2.5	8	1	0	8	1	0
Native plant species richness - forbs (No.)	13	12	5	13	14	5	13	11	2.5
Tree height - average	23	20	5	23	26	5	23	25	5
Tree cover - average	34	31	5	34	86	4	34	91	4
Native shrub canopy cover (%)	7	2	3	7	0	0	7	0	0
Native perennial grass cover (%)	35	4	1	35	0	0	35	0	0
Organic litter (%)	21	15.6	5	21	55.4	3	21	19.2	5
Large trees/ha - total	32	28	10	32	42	15	32	64	15
Coarse woody debris (m/ha)	473	370	5	473	420	5	473	760	5
Non-native plant cover (%)	0	80	0	0	10	5	0	80	0
Quality/availability of food/foraging habitat score	10	-	5.25	10	-	4.25	10	-	7.5
Quality/availability of shelter score	10	-	10	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	20.93	30	-	20.63	30	-	20.70
Site context (Commonwealth)									
Size of patch score	10	-	10	10	-	10	10	-	10
Connectedness score	5	-	5	5	-	5	5	-	5
Context score	5	-	4	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0	20	-	0
Ecological corridors score	6	-	6	6	-	6	6	-	6
Threats score	15	-	10.32	15	-	10.32	15	-	10.32
Species mobility capacity score	10	-	10	10	-	10	10	-	10
Role of site location to overall population score	5	-	5	5	-	5	5	-	5
Commonwealth site context score	30	-	26.96	30	-	26.96	30	-	26.96

Assessment Unit			AU9			AU9
Site			HQA_11327b_Rem_1			HQA_11327b_Rem_2
Regional ecosystem			11.3.27b_wooded			11.3.27b_wooded
Broad condition state			Remnant			Remnant
Biocondition attribute	Benchmark	Current value	Current score	Benchmark	Current value	Current score
Site condition						
Recruitment of woody perennial species (%)	100	100	5	100	75	5
Native plant species richness - trees (No.)	2	10	5	2	8	5
Native plant species richness - shrubs (No.)	1	1	5	1	0	0
Native plant species richness - grasses (No.)	2	1	2.5	2	8	5
Native plant species richness - forbs (No.)	7	9	5	7	19	5
Tree height - average	15	32	5	15	25	5
Tree cover - average	42	37	5	42	25	5
Native shrub canopy cover (%)	7	1	3	7	0	0
Native perennial grass cover (%)	10	9.4	5	10	1.6	1
Organic litter (%)	12	40	3	12	3	3
Large trees/ha - total	34	22	10	34	10	5
Coarse woody debris (m/ha)	484	570	5	484	90	2
Non-native plant cover (%)	0	70	0	0	40	3
Quality/availability of food/foraging habitat score	10	-	5.25	10	-	4.25
Quality/availability of shelter score	10	-	10	10	-	10
Commonwealth site condition score fauna	30	-	22.13	30	-	17.48
Site context (Commonwealth)						
Size of patch score	10	-	10	10	-	10
Connectedness score	5	-	5	5	-	5
Context score	5	-	4	5	-	4
Distance to permanent water score	20	-	0	20	-	0
Ecological corridors score	6	-	0	6	-	0
Threats score	15	-	10.32	15	-	10.32
Species mobility capacity score	10	-	10	10	-	10
Role of site location to overall population score	5	-	5	5	-	5
Commonwealth site context score	30	-	23.74	30	-	23.74