



Offset Strategy and Management Plan

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6	17 July 2025	Final	TK	JF

DECLARATION OF ACCURACY

I declare that:

1. To the best of my knowledge, all the information contained in, or accompanying this Grosvenor Coal Mine Offset Strategy 2007/3785 (Revision 0, 31 August 2022) is complete, current and correct.
2. I am the designated proponent or the approval holder for this action.
3. I am aware that:
 - a) Section 490 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.
 - b) Section 491 of the EPBC Act makes it an offence for a person to provide information or documents to specified persons who are known by the person to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth) where the person knows the information or document is false or misleading.
 - c) The above offences are punishable on conviction by imprisonment, a fine or both.



Signed

Jason Fittler

Full name (please print)

Anglo American

Organisation (please print)

Date 17/07/2025

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TABLE OF CONTENTS

1. INTRODUCTION 5

 Purpose 5

 Responsible Party 5

 The Project 6

PART A: OFFSET STRATEGY 7

2. PROJECT DETAILS 8

3. EPBC ACT APPROVAL CONDITIONS (EPBC 2007/3785) 10

4. EPBC ACT ENVIRONMENTAL OFFSET POLICY 12

 Offsets Assessment Guide 12

 Key Principles 12

5. MNES IMPACTS 14

 Impact area – desktop and field survey methodology 14

6. PROPOSED OFFSETS 15

 Delivering a conservation gain 15

 Suitability of Offset Areas 15

 Connectivity 16

7. OFFSET ECOLOGICAL VALUES 19

 Site assessment methodology to determine ecological values 19

 Offset sites start values 19

 General description and vegetation habitat values 19

 Brigalow TEC 20

 Poplar box TEC 20

 Ornamental snake 21

 Koala 21

 Greater glider 22

 Squatter pigeon 23

 Australian painted snipe 23

8. OFFSET AREAS 24

9. LEGALLY BINDING MECHANISM 26

 Addressing relevant EPBC plans and advice 27

10. RISK ASSESSMENT 34

PART B: OFFSET MANAGEMENT PLAN (OMP) 38

11. OFFSET MANAGEMENT 39

12. OFFSET COMPLETION AND PERFORMANCE TARGETS 39

13. MANAGEMENT ACTIONS 41

14. ADDITIONAL MANAGEMENT AND PROTECTION 46

15. MONITORING AND REPORTING 47

16. REFERENCES 50

Appendix A1: Grosvenor Mine MNES Impact Assessment	52
Appendix A2: Intermediate disturbance area BioCondition survey	52
Appendix A3: Impact site field derived ecology data	52
Appendix B1: Offset Assessment Report – Ellensfield ecological surveys	52
Appendix B2: Ellensfield Additional Offsets Area Ecology Survey Report	52
Appendix B3: Targeted Ornamental Snake Survey Report Ellensfield Offset Area.....	52
Appendix B4: Ellensfield ecological survey locations and habitat areas	52
Appendix C: Habitat Quality Spreadsheets	52
Appendix D: Offset Assessment Guide Calculations	52

1. INTRODUCTION

This Offsets Strategy and Management Plan describes how Anglo American proposes to secure and manage offsets required for the Grosvenor Coal Mine Project (**the Project**).

It describes how significant residual impacts (**SRI**) to Matters of National Environmental Significance (**MNES**) will be offset consistent with the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), the EPBC Act Environmental Offsets Policy and the EPBC Act approval for the project (EPBC 2007/3785).

This document is in two parts:

Part A: is the Offset Strategy as required by Condition 3A of the EPBC Act approval.

Part B: is the Offset Management Plan as required by Condition 3B of the EPBC Act approval.

Due to coincidental timing the two requirements have been combined in a single document.

Purpose

The purposes of this Offsets Strategy (Part A) are to:

- a. Commit to securing environmental offsets that satisfy the requirements of the Environmental Offsets Policy and identify possible locations for environmental offsets for the residual significant impacts on the protected matters specified in Table 1 of approval EPBC 2007/3785.
- b. Include summary information on the impacted sites and information on the residual significant impacts. This summary information must include the areas of habitat for protected matters and their condition and quality at all impacted sites which the particular environmental offset or offsets is/are to address.
- c. Include a framework that outlines proposed management and monitoring actions and responsibilities for the proposed environmental offsets, and commitments to delivering ecological benefits that will meet the requirements of the Environmental Offsets Policy.
- d. Detail how the proposed environmental offsets are proposed to be legally secured.

The purpose of the Offset Management Plan (OMP) (Part B) is to detail the on-ground management and monitoring measures necessary to ensure the objectives and intent of the offset Strategy and approval conditions are described and subsequently implemented.

Responsible Party

The proponent for the Project is Anglo Coal (Moranbah North Management) Pty Ltd¹ a wholly owned subsidiary of Anglo American Steelmaking Coal Holdings Limited (**AASMC**). AASMC is, in turn, a wholly owned subsidiary of Anglo American plc, which is one of the largest diversified mining companies in the world with operations in Africa, Asia, the Americas, Europe and Australia. In Australia, Anglo American's focus is on producing highest-quality hard coking coal for steel production with five metallurgical coal operations in Central Queensland and also joint venture interests in metallurgical coal and manganese. Anglo American are the third largest seaborne exporter of metallurgical coal in the world and the largest underground coal miner in Australia.

Anglo Coal (Moranbah North Management) Pty Ltd will be responsible for the implementation of this Strategy and the OMP. Actions in this Strategy and in the OMP will be measured, monitored, audited and enforced by Anglo Coal (Moranbah North Management) Pty Ltd and its contracted agents, namely the land manager.

¹ In 2021, Anglo American sought the Minister's consent for the transfer of the EPBC Act approvals held by Anglo Coal (Grosvenor) Pty Ltd to Anglo Coal (Moranbah North Management) Pty Ltd in view of the sale of the Grosvenor Mine to the Moranbah North Joint Venture Participants. That consent has been provided on 3 November 2023.

The Project

The Grosvenor Mine is an underground metallurgical coal mine, located near Moranbah in the Bowen Basin of Central Queensland (Figure 1). The Project is located on Mining Lease 70378 and the Project area is shown in Figure 2.

Activities at the Grosvenor Mine are undertaken pursuant to two approvals under the EPBC Act:

- EPBC No. 2007/3785 dated 14 November 2011 (**G100s Approval**); and
- EPBC No. 2016/7796 dated 28 August 2017 (**G200s Approval**).

The G100s Approval includes the construction and operation of a new underground coal mine using the longwall mining method and associated surface facilities in accordance with the referral received on 18 October 2007, the project variation received on 16 February 2010 and the Environmental Impact Statement dated February 2011.

A variation to the conditions of the G100s Approval was approved on 30 September 2021.

PART A: OFFSET STRATEGY

2. PROJECT DETAILS

The Project is located in central and south west Queensland within the Brigalow Belt Bioregion. A range of EPBC Act listed threatened species and threatened ecological communities (TECs) are known to occur across the bioregion and potentially within the Project area, mainly in areas of remnant vegetation.

Field studies and analysis have been undertaken which have identified that seven (7) MNES may be significantly impacted by the Project. The MNES impacted and the area of impacts are detailed in Table 1.

Table 1: MNES significant residual impacts from the Project

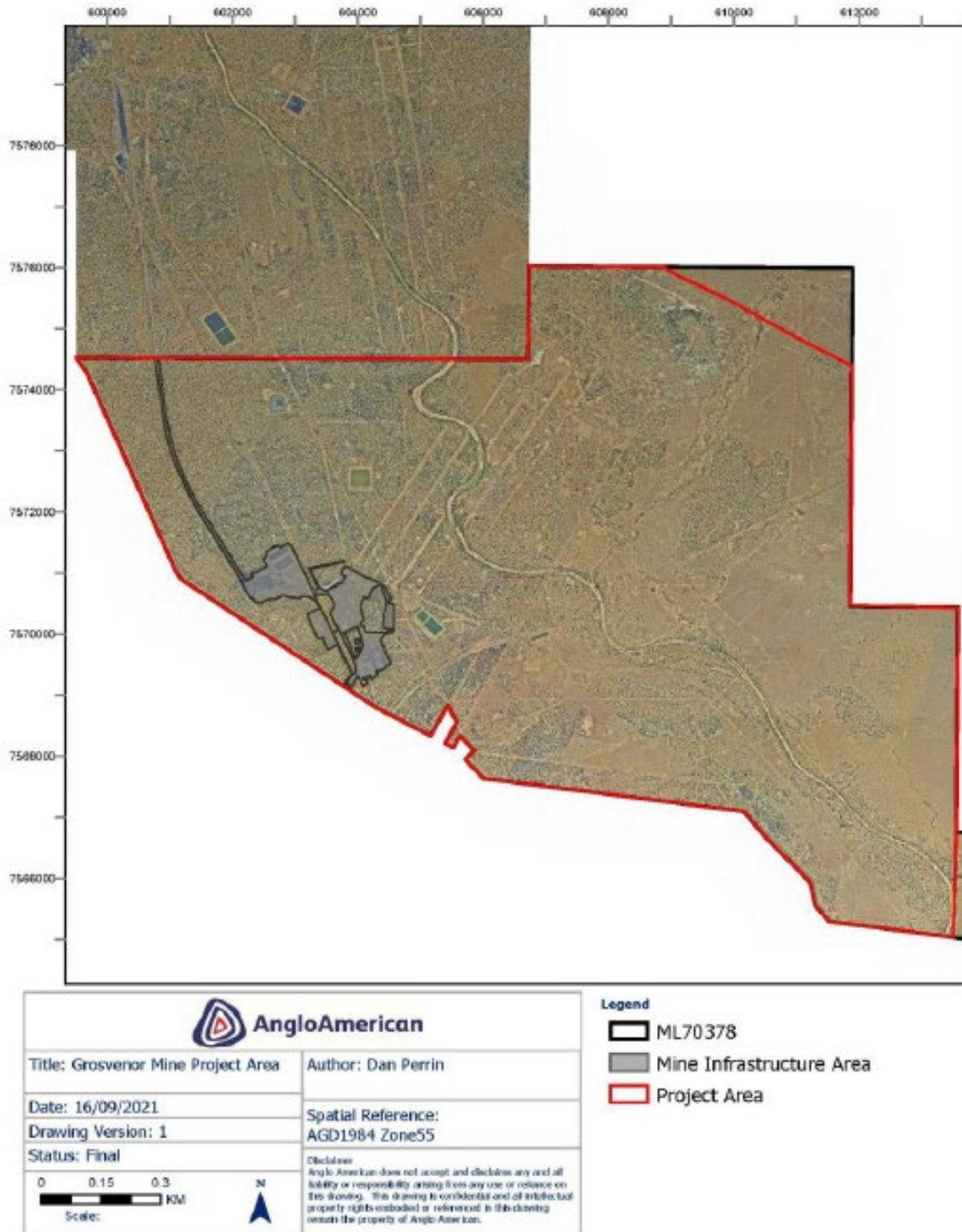
Protected Matter	Maximum Disturbance Limit (ha)	Average Habitat Quality Score
Brigalow TEC	1.12	5
Poplar Box TEC	79.8	5
Squatter Pigeon Habitat	164.9	4
Koala Habitat	264.4	5
Greater Glider Habitat	264.4	5
Ornamental Snake Habitat	131.7	3
Australian Painted Snipe Habitat	35.3	2
Total* area of protected matters	282.7	-

*Noting the total area is not the sum of the combined areas as there are overlapping protected matters.

Figure 1: Location Grosvenor Coal Mine Project and Offset Area



Figure 2: Grosvenor Coal Mine Project Area



3. EPBC ACT APPROVAL CONDITIONS (EPBC 2007/3785)

The G100s Approval (as per the variation dated 30 September 2021) contains a number of conditions related to the delivery of offsets, as provided in Table 2. Condition 3A is particularly relevant to this Strategy.

Additionally, an Offset Management Plan (OMP) as required by Condition 3B is contained at Part B of this document.

Table 2: EPBC 2007/3785 approval conditions

Condition	
<p>3. In order to minimise the impacts of the project on EPBC Act listed ecological communities and threatened species, the person taking the action must:</p> <ul style="list-style-type: none"> (a) undertake clearing for surface facilities, tension crack rehabilitation, seismic survey works and mitigation measures as set out in section 16.6.1 and 16.7.1 of the Grosvenor Project Environmental Impact Statement Addendum (June 2011) or as otherwise approved by the Minister; and (b) comply with the maximum disturbance limits for areas of protected matters as specified in Table 1 for surface disturbance associated with gas drainage and ventilation infrastructure, seismic survey works, exploration activities and infrastructure projects. 	
<p>Table 2: Maximum disturbance limits</p>	
Protected Matter	Maximum Disturbance Limits (ha)
Brigalow TEC	1.12
Poplar Box TEC	79.8
Squatter Pigeon Habitat	164.9
Koala Habitat	264.4
Greater Glider Habitat	264.4
Ornamental Snake Habitat	131.7
Australian Painted Snipe Habitat	35.3
Total* area of protected matters	282.7

*Noting the total area is not the sum of the combined areas as there are overlapping protected matters.

Offsets Strategy

3A. To compensate for the residual significant impact on the **protected matters** specified in Table 1, within 6 months of the date of the variation decision that inserts this condition 3A, the approval holder must submit an Offsets Strategy for approval by the **Minister**.

The Offsets Strategy must:

- (a) Commit to securing environmental offsets that satisfy the requirements of the **Environmental Offsets Policy** and identify possible locations for environmental offsets for the residual significant impacts on the **protected matters** specified in Table 1.
- (b) Include summary information on the impacted sites and information on the residual significant impacts. This summary information must include the areas of habitat for **protected matters** and their condition and quality at all impacted sites which the particular environmental offset or offsets is/are to address.
- (c) Include a framework that outlines proposed management and monitoring actions and responsibilities for the proposed environmental offsets, and commitments to delivering ecological benefits that will meet the requirements of the **Environmental Offsets Policy**;
- (d) Detail how the proposed environmental offsets are proposed to be **legally secured**.

If the Offsets Strategy has not been approved by the **Minister** in writing within 9 months of the date of the variation decision that inserts this condition 3A, and the **Minister** notifies the approval holder that the Offsets Strategy is not suitable for approval, the **Minister** may, at least two months after so notifying the approval holder, approve a version of the Offsets Strategy revised by the **Department**. The approval holder must implement the approved Offsets Strategy.

3B. Within 9 months of the date of the **Minister's** approval of the Offsets Strategy, the approval holder must submit, for the written approval of the **Minister**, one or more Offset Management Plan to satisfy the requirements of the **Environmental Offsets Policy** in respect of the residual significant impacts on the **protected matters** specified in

Table 1. The Offset Management Plan(s) must be prepared in accordance with the **Environmental Management Plan Guidelines** and include:

- (a) A summary of the residual significant impacts to **protected matters** that will be compensated for by the particular offset (or combination of offsets). This summary must include the areas of habitat for the **protected matters** and its condition and quality at all impact sites which the particular offset is to address.
- (b) A summary of the relevant **protected matters** and a reference to the **EPBC Act** approval conditions to which the particular Offset Management Plan relates.
- (c) A description and map (including **shapefiles**) to clearly define the location and boundaries of the proposed offset area(s), accompanied by the **offset attributes**.
- (d) Information about how the proposed offset area(s) provide connectivity with other relevant habitats and biodiversity corridors.
- (e) A description of the management measures (including timing, frequency and longevity) that will be implemented in each proposed offset area.
- (f) Details of how proposed management measures take into account relevant **approved conservation advices** and are consistent with the measures contained in relevant **recovery plans** and **threat abatement plans**;
- (g) A table summary of the commitments made in the Offset Management Plan to achieve the ecological benefit(s) for the relevant protected matters, and a reference to where the commitments are detailed in the Offset Management Plan.
- (h) An assessment of risks to achieving the ecological benefit(s) and what risk management strategies will be applied to address these.
- (i) A monitoring program, which must include:
 - I. evidence that effectively determine progress towards, attainment of and maintenance of the ecological benefits for the **protected matters**;
 - II. measurable performance indicators to monitor attainment of the ecological benefits for the **protected matters**;
 - III. trigger values for corrective actions; and
 - IV. the timing and frequency of monitoring to detect trigger values and changes in the performance indicators;
- (j) Proposed corrective actions to ensure ecological benefits for the **protected matters** are attained or maintained, if trigger values are reached or performance indicators not attained.
- (k) Reporting and review mechanisms on the:
 - I. monitoring program (as required by condition 3B.i.);
 - II. implementation of management actions; and
 - III. effectiveness of any corrective actions taken to demonstrate progress in attaining ecological benefits.
- (l) Links to referenced plans and applicable conditions of approval (including State approval conditions) if any.

The approval holder must implement each approved Offset Management Plan.

Note: A single Offset Management Plan providing the above in respect of all offset areas specified in the approved Offsets Strategy may be submitted in place of multiple Offset Management Plans.

3C. If, after 9 months after the date of the approval of the Offsets Strategy, the Minister notifies the approval holder in writing that a submitted Offset Management Plan is not suitable for approval, the Minister may, after 2 months of providing such notice, approve a version of the Offset Management Plan revised by the Department. The approved Offset Management Plan must be implemented.

3D. The approval holder must legally secure the offset areas proposed in the approved Offset Management Plan within two (2) years of the day the Offset Management Plan is approved by the Minister.

4. EPBC ACT ENVIRONMENTAL OFFSET POLICY

The EPBC Act does not have specific provisions for the delivery of offsets. However, the Minister can attach conditions to the approval of an action (under s134 of the EPBC Act) that are necessary for protecting and/or repairing or mitigating damage to a protected matter. In this way, offsets are often used in conditions of approval to address significant residual impacts on MNES.

The *EPBC Act Environmental Offsets Policy* (SEWPaC 2012) describes the current approach to environmental offsets for protected matters under the EPBC Act. The policy states that offsets are required if an ‘action’ is going to have a ‘significant residual impact’ to a protected matter (i.e. only where residual, unavoidable, impacts are considered significant). Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment, which is impacted, and the intensity, duration, magnitude and geographic extent of the impacts.

Offsets Assessment Guide

The *EPBC Act Environmental Offsets Policy* (SEWPaC 2012) is accompanied by the Offsets Assessment Guide (**OAG**). The OAG includes an Excel spreadsheet with an embedded formula which is used to calculate the indicative offset area. The OAG provides the assessment tool for determining the suitability and quantification of proposed offsets required to compensate for residual significant impacts to EPBC Act protected matters.

Anglo American is committed to using the OAG to calculate the offset area required to compensate and provide a conservation gain for the significant residual impacts from the Project. Completed OAGs for the significant residual impacts of the action are provided at Appendix D.

Key Principles

The *EPBC Act Environmental Offsets Policy* (SEWPaC 2012) sets out eight key overarching principles to determine the suitability of offsets. Table 3 outlines each of these policy principles and how they will be addressed in the delivery of offsets for the Project.

Table 3: EPBC Act Environmental Offset Policy Principles

Policy Principle	Proposed Approach
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matters.	The offset will deliver a conservation outcome by protecting habitat for the following TECs and species: Brigalow TEC, Poplar Box TEC, koala, greater glider, squatter pigeon, Australian painted snipe and ornamental snake. The habitat will be managed to improve the habitat values and a legally binding mechanism will be in place to ensure legal protection of the area. Offset areas will be managed to deliver ecological improvements over time, these will be measured against interim and final condition criteria using scientific surveying methods and data.
Suitable offsets must be built around direct offsets but may include other compensatory measures.	100% of the Project's MNES offset obligations will be acquitted by the proposed direct land-based offsets.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.	The status of the impacted TECs and species has been taken into account by the offset assessment guide that has been used to calculate the offset area requirements.
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter.	The extent of the offset has been calculated using ecological reports that include both flora and fauna surveys, for both the impact and offset sites to inform inputs into the offset assessment guide (OAG). Details and justification for data inputs and OAG calculations are provided in this Strategy.
Suitable offsets must effectively account for and	The risks associated with establishing and maintaining the offset have been assessed and mitigation and appropriate management actions developed to reduce risk to acceptable levels. In addition,

<p>manage the risks of the offset not succeeding.</p>	<p>uncertainty, and therefore risk, associated with averted loss and net gain in habitat quality were addressed by applying the offset assessment guide.</p>
<p>Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs.</p>	<p>Vegetation clearing as a Native Forest Practice, or a Forest Practice; and grazing on the offset site; is not currently prohibited by legal mechanisms at either the local, state or federal government level. The proposed offset area is zoned rural and has been used for timber harvesting and cattle grazing previously. Areas of the offset property have been subject to vegetation clearing since the late 1970s as part of the Brigalow Development Scheme. Future timber harvesting will be banned (excluding thinning recommended by a suitably qualified ecologist) and grazing will be used only as a means to control exotic grasses and reduce fuel loads. Other threats, such as fire, pest animals and erosion will be actively managed. The vegetation will be secured via a legally binding mechanism.</p>
<p>Suitable offsets must be efficient, timely, transparent, scientifically robust and reasonable</p>	<p>The proposed offsets will be efficient and timely as the offset will be established and implemented within two years of the approval of the OMP. The offsets' scale and suitability are transparent, and the offsets are based on the terrestrial ecology reports prepared by suitably qualified ecologists for the impact and offset sites. They have been prepared using the EPBC Act OAG inputs and calculators.</p>
<p>Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.</p>	<p>Habitat quality assessments were conducted in accordance with the <i>Guide to Determining Terrestrial Habitat Quality Version 1.3, 2020</i>, which involved collecting spatial data; and conducting in situ vegetation surveys, assessing site condition, spatial context as well as targeted species habitat criteria. Monitoring and reporting will be detailed in the OMP, along with a monitoring and reporting schedule.</p>

5. MNES IMPACTS

The Project is located in central Queensland within the Brigalow Belt Bioregion. A range of EPBC Act listed threatened species and threatened ecological communities (**TECs**) are known to occur across the bioregion and potentially within the Project area, mainly in areas of remnant vegetation.

Field studies and analysis have been undertaken which have identified that seven (7) MNES may be significantly impacted by the Project. The MNES areas of impact are detailed in Table 1.

Table 4: MNES significant residual impacts from the Project

Protected Matter	Maximum Disturbance Limit (ha)	Average Habitat Quality Score
Brigalow TEC	1.12	5
Poplar Box TEC	79.8	5
Squatter Pigeon Habitat	164.9	4
Koala Habitat	264.4	5
Greater Glider Habitat	264.4	5
Ornamental Snake Habitat	131.7	3
Australian Painted Snipe Habitat	35.3	2
Total* area of protected matters	282.7	-

* Noting the total area is not the sum of the combined areas as there are overlapping protected matters.

Impact area – desktop and field survey methodology

Vegetation and habitat mapping of the project area has occurred over many years. Relevant studies undertaken include:

- *Grosvenor Project Amended Flora and Fauna Assessment* (Ecotone Environmental Services and Hansen Bailey 2011). This included field-validated regional ecosystem (RE) mapping undertaken for the entire Grosvenor Project ML in 2006, 2007, 2008 and 2010.
- *G200s Project Terrestrial Ecology Assessment* (Ecological Survey & Management 2016). The G200s survey area is adjacent to the project area, therefore additional species identified or considered likely to occur as part of the terrestrial ecological assessment for G200s were assessed for their potential to be present in the G100s project site.

In 2020 in order to update these studies and provide more recent habitat mapping to inform an approval variation request Ecological Survey & Management was engaged to further assess habitat features in the project area, their report (**Appendix A1**) includes:

- TEC maps and habitat maps for the EPBC Act species and ecological communities that had been listed as at the date of the original approval (14 November 2011) and that may potentially occur
- refinement through field validation of specific habitat features
- calculation of likely impacts from the surface gas drainage activities from the G100s longwall area (noting that minor adjustment to this analysis occurred as part of the variation process as the project footprint was further refined).

Additional work was then undertaken to assess the BioCondition of the impact areas, which is described in the letter style report titled “*Intermediate disturbance area BioCondition Survey*” (EcoSM 2021) (**Appendix A2**). The information in this report is based on BioCondition field surveys undertaken by two qualified ecologists on 19 to 24 October 2021.

The field survey methods were developed in order to:

- assess ecological condition by collecting a number of site based condition parameters in accordance with the methodology prescribed in the ‘*BioCondition: A Condition Assessment*

Framework for Terrestrial Biodiversity in Queensland, Assessment Manual, Version 2.2'
(BioCondition Methodology) (Eyre et al., 2015)

- assess habitat quality in accordance with the Queensland 'Guide to determining terrestrial habitat quality – Methods for assessing habitat quality under the Queensland Environmental Offsets Policy, Version 1.3' (Habitat Quality Guide) (DES, 2020).

A total of 49 survey plots were established throughout the intermediate disturbance area in REs representative of TECs and/or habitat for each of the MNES listed above.

This data was then used to determine habitat quality for the purposes of the EPBC Act Offset Assessment Guide (OAG) in line with the approach recommended by the Department of Agriculture, Water and the Environment (DAWE). The field derived data are provided in Appendix A3 and the habitat quality scores are included in Appendix C.

6. PROPOSED OFFSETS

Delivering a conservation gain

Under the EPBC Act Environmental Offsets Policy, offsets can comprise direct offsets and other compensatory measures. Direct offsets are those that provide a measurable 'conservation gain' for an impacted protected matter. A conservation gain is a benefit which maintains or increases the viability of a protected matter or reduces any threats of damage, destruction or extinction.

Direct offsets will be secured as the preferred mechanism to address significant residual impacts to threatened species and TECs from the Project.

These direct offsets will be protected using a legally binding mechanism and will be managed and maintained to ensure a long-term improvement of ecological values.

By providing a direct offsets-based package, a conservation gain will be provided for those threatened species and TECs that are significantly impacted by the Project. It is also anticipated there will be additional benefits for threatened species and TECs that are not impacted but are also located within offset areas and will experience an associated conservation gain.

The conservation gain for threatened species and TECs will be delivered in a number of ways including via careful planning of the overall offset areas and on ground protection and management. For example:

- offsets can be co-located to create larger parcels of protected conservation land
- combining offsets allows for whole-of-property management and monitoring thereby delivering most holistic outcomes
- working with landholders will achieve social and cultural benefit, as well as conservation outcomes.

Within a particular offset area, a conservation gain will be achieved by activities including:

- improving existing habitat for the protected matter
- reducing threats to the protected matter
- averting actions that may cause impacts to the ecological values.

Suitability of Offset Areas

To fulfil the requirements of the approval a combination of habitat areas has been identified on a single offset property:

- **Ellensfield** the entire property being 19,450 ha in area, 20 km north-north-east of the Project area.

The property location is shown in Figure 1. The Ellensfield property can provide offsets for Koala, Greater glider, Squatter pigeon, Ornamental snake, Brigalow TEC, Poplar Box TEC and the Australian painted snipe.

The property was selected for its suitability, primarily:

- Delivery of the offset in close proximity to the impact site – 20 km (Figure 1).
- Location within biodiversity corridors and linking to other areas of conservation. The Ellensfield offset area is located within a corridor of State significance (Figure 3).
- Field verified biodiversity values present (Appendices B1-B3 and Figure 4).
- The ability to locate all project offsets on the one property, reducing legal and administrative risks.
- Ecological data that shows that improvements to habitat quality can be achieved with active land management measures (Appendices B1-B3).
- Anglo American already has an established legal and working arrangement with the land holder for the delivery of offsets.
- The potential to locate future offsets² on the same property for other projects thus creating larger areas of biodiversity offsets and achieving a better environmental outcome.

Connectivity

The Ellensfield offset site will improve the regional biodiversity value at the landscape level, by enhancing the quality of habitat within the state recognised biodiversity corridor (Figure 3).

The Ellensfield property will be utilised for further offset projects over time, which will further enhance the connectivity and quality of the habitat in the bioregional corridor. The ground verified regional ecosystems are illustrated in Figure 4.

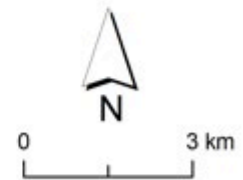
² At time of preparation of this Strategy, Anglo American are proposing to use the property for further EPBC Act related offsets for the Grosvenor Mine and Moranbah North Mine as well as for State based offsets. In addition two other resource companies have offset areas identified on the property that border the Anglo American offset areas.

Figure 3: State biodiversity corridors - Ellensfield



State biodiversity corridors - Ellensfield

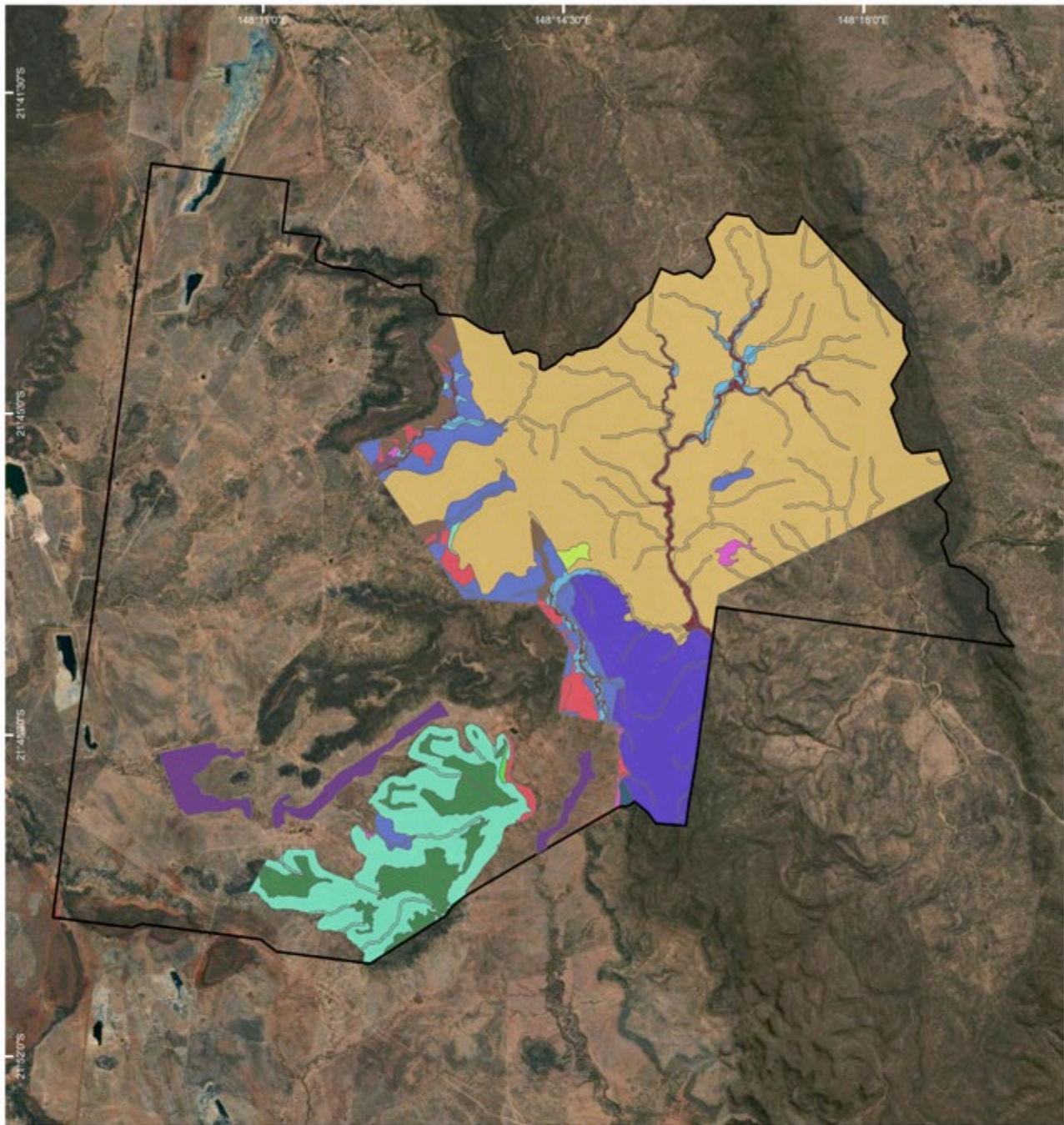
- Terrestrial centrelines *Terrestrial Centrelines*
- Riparian centrelines *Riparian Centrelines*
- State
- Regional

















Data Projection:
GDA 1994 MGA Zone 55

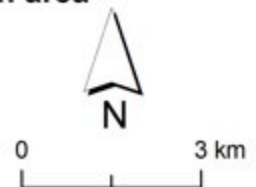
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 4: Field-verified regional ecosystems – Ellensfield offset investigation area



Field-verified regional ecosystems – Ellensfield offset investigation area

	11.10.7		11.3.25		11.9.5
	11.10.7/11.10.4a		11.3.4		11.9.7
	11.10.8		11.5.9		11.9.9
	11.10.8/11.10.4a/11.10.7		11.5.9c		N/A
	11.3.2		11.7.2		



Data Projection:
GDA 1994 MGA Zone 55

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus OS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

7. OFFSET ECOLOGICAL VALUES

Site assessment methodology to determine ecological values

BioCondition assessments were conducted in accordance with the *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland Assessment Manual* (Eyre et al., 2015), which involved the collection of spatial data and in situ vegetation surveys, assessing site condition, and spatial context.

Habitat quality assessments were undertaken in accordance with the Guide to determining terrestrial habitat quality - A toolkit for assessing land-based offsets under the Queensland Environmental Offsets Policy (2020) within vegetation suitable for offsetting MNES and MSES values.

The Ellensfield Offset Investigation Area ecological survey was undertaken by E2M Consulting in March and May 2021 (E2M 2021)(**Appendix B1**).

These surveys were followed by a further ecological assessment survey undertaken by Earthtrade in in September 2021 (**Appendix B2**)(Earthtrade 2021) focussed on lower country vegetation communities, including areas of Poplar box woodland, and an Ornamental snake survey by EcoSmart in March 2022 (**Appendix B3**)(EcoSmart 2022). Ecological survey locations and habitat areas on the Ellensfield property are shown in the maps at Appendix B4.

In summary the ecological surveys included:

- a desktop review of available vegetation mapping and environmental database records
- ground-truthing of the Department of Natural Resources Mines and Energy (now Department of Resources) mapped REs and identifying MNES TECs
- targeted surveys and habitat assessments for MNES and MSES threatened fauna requiring offsets
- observations regarding the ecological function and suitability of vegetation communities as an offset site.

Targeted surveys and habitat assessments were undertaken to inform the habitat suitability for threatened fauna species. Habitat assessments included these attributes:

- density of tree hollows >10 cm diameter (per ha)
- tree stem density
- composition and cover (%) of koala food tree species
- gilgai presence and depth
- presence of woody debris.

Targeted surveys included:

- active, diurnal searches for koala, greater glider, squatter pigeon and ornamental snake presence within suitable habitat. A total survey effort of 140 person hours were undertaken.
- nocturnal, spotlighting transects were undertaken over two nights, targeting the koala and greater glider. Transects were undertaken by vehicle and on foot and totalled approximately 24 person-hours.
- opportunistic observations for the detection of threatened flora and fauna species (i.e. squatter pigeon).

Offset sites start values

Field data is provided within the ecology reports and the habitat quality score sheets at **Appendix C**. The areas of offset have been determined based on the OAG calculation provided at **Appendix D**.

General description and vegetation habitat values

The Ellensfield offset area contains both range country, dominated by eucalypt woodland with numerous drainage lines and small creeks, combined with lower country dominated by creek lines and riparian vegetation.

A number of tributaries (stream order 1 and 2 watercourses) are included in the Ellensfield offset area, these flow into the larger creek systems, further strengthening connectivity associated with watercourses and the

broader landscape. Carborough Creek, within the Ellensfield property, has permanent water holes, seasonal bed flow in the creek and additionally, there are several farm dams that provide suitable areas to support Squatter pigeon breeding habitat, and additional drinking sources for other species in times of drought.

Koala, Greater glider, Squatter pigeon and Ornamental snake presence has been confirmed during surveys. As has the presence of TECs for Brigalow and Poplar box. Australian painted snipe have not been recorded but habitat for the species is present, the intermittent usage of habitat by this species means that it could be present at any time irrespective of survey results.

Brigalow TEC

Indicative offset area: 5 hectares.

Patches of Brigalow vegetation in Queensland must meet the following characteristics and thresholds to be considered eligible as the EPBC Act-listed Brigalow TEC (DoE 2013):

- The presence of *Acacia harpophylla* as one of the most abundant tree species in the patch. *A. harpophylla* is either dominant in the tree layer, or co-dominant with other species (notably *Casuarina cristata*, other species of acacia, or species of eucalyptus).
- The patch must be located in the Brigalow Belt Bioregion, and meet the Queensland Herbarium description of REs 11.3.1, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.5.16, 11.9.1, 11.9.5, 11.9.6, 11.11.14 and 11.12.21.
- The patch must be larger than 0.5 ha in size.

Exotic perennial plants must comprise less than 50% of the total vegetation cover of the patch. Regrowth Brigalow vegetation can qualify as Brigalow TEC if it is more than 15 years old and has the species composition and structural elements broadly typical of one of the identified REs.

The 5 ha Brigalow offset falls within the mapped distribution area of the TEC. The area of offset for the Brigalow TEC is contained within a larger area of Brigalow vegetation that extends along the north south valley at the base of an escarpment that leads to the Koala, Greater glider and Squatter pigeon offset. The larger patch of Brigalow vegetation has been assessed as having the potential to achieve TEC status. The 160 ha of Brigalow vegetation is available to Anglo American for use as future offsets that will ultimately result in the whole area being protected and managed for its biodiversity values.

Poplar box TEC

Indicative offset area: 282 hectares.

A number of extended patches of RE 11.3.2 (*Eucalyptus populnea* woodland on alluvial plains) have been field validated and mapped along the lower country water courses in the west of the property. Regional ecosystem 11.3.2 is a component ecosystem of the Poplar box TEC when it meets the key diagnostic criteria for Class A, B or C quality contained in the conservation advice for the TEC (DEE 2019).

The sites surveyed on the Ellensfield property did not meet the key diagnostic criteria, as all sites had <50% native vegetation in the ground layer and <20 native species in the ground layer. However, the timing of the ecology survey was not optimal for identification of native ground species, being the end of the dry season. The remnant patches of RE 11.3.2 do however, have the potential to be able to meet the Poplar box TEC criteria with improved management of cattle grazing and fire, leading to a gain in TEC extent.

The mapped areas of poplar box woodlands also provide habitat for Koalas, Greater gliders, Ornamental snake, Squatter pigeon and the Australian painted snipe.



Poplar box woodland at Ellensfield

Ornamental snake

Indicative offset area: 229 hectares, actual area 282 ha which is an OAG percentage of 123.44%.

Ornamental snake habitat is defined as:

gilgai mounds and depressions with cracking-clay soils, moist areas (particularly within, or close to, habitat that is known to be favoured by its prey [frogs]) with microhabitat features (i.e. logs, woody debris and leaf litter), and Brigalow TEC (SPRAT, DAWE 2022).

The 282 ha offset area selected for the Ornamental snake is located within a patch of remnant vegetation that has been ground-truthed as Poplar box woodland on alluvial soils (RE 11.3.2). Ornamental snake were recorded on site during April 2022 surveys (EcoSmart 2022).

The Ornamental snake offset area will be managed to restrict cattle access, enable the Poplar box TEC to recover, reduce the amount of exotic weeds, reduce bank erosion and enable the accumulation of woody debris over time.

Koala

Indicative offset area: 612 hectares, actual area 765 ha which is an OAG percentage of 125.10%.

The ecological values of the offset site have been selected to be consistent with the definition of Koala habitat contained in the *EPBC Act Referral Guidelines for the vulnerable koala* (DoE 2014), which define koala habitat as:

“any forest or woodland containing species that are known Koala food trees, or shrubland with emergent food trees. This can include remnant and non- remnant vegetation in natural, agricultural, urban and peri-urban environments.”

Koala food trees, particularly *Eucalyptus populnea*, *E. camaldulensis* and *E. tereticornis* occur within the riparian woodlands in the ‘lower country’ of the property (i.e. RE 11.3.2, 11.3.4 and 11.3.25); whereas *E. crebra* is the dominant species in RE 11.10.7 in the ‘range country’. The property provides approximately 7,161 ha of suitable koala habitat. Evidence of koala were observed at numerous locations within the

property (E2M 2021) and subsequently confirmed by Earthtrade (2021) through confirmation of male koala calls during evening spotlighting.



Koala scratches observed on the trunk of an *E. tereticornis* during field survey.

Some areas of habitat returned low-moderate condition scores due to the lack of large trees, a largely absent shrub layer, and reduced species recruitment. This is consistent with the impact from previous timber harvesting, chemical treatment (Tordon) of large trees to enable more pasture growth and using hot fires to manage regrowth.

Offsets are provided in both the Poplar box woodlands (282 ha) and the *E. cerbra* woodlands (483 ha). The offset site will be managed to reduce the number of predatory animals present, prohibit timber harvesting and mitigate the risk of hot fires.

Greater glider

Indicative offset area: 765 hectares.

The offset site was selected to be consistent with the definition of greater glider habitat in the *Guide to greater glider habitat in Queensland* (Eyre et al 2022), which defines greater glider habitat as: woodland areas within the known distribution that contain suitable hollow bearing trees, dominated by *Corymbia citriodora*, *Eucalyptus moluccana*, *E. tereticornis*, *E. crebra*, *C. intermedia* and *E. portuensis*.

Offsets are provided in both the Poplar box woodlands (282 ha) and the *E. cerbra* woodlands (483 ha). In the range country the Greater glider habitat offset is collocated with the Koala and Squatter pigeon offsets, the lower country area has overlapping offsets for Koalas, Ornamental snake, Squatter pigeon and the Australian painted snipe.

Greater gliders were observed at three locations within the property during the field surveys. Suitable habitat for greater glider throughout the property is provided by remnant vegetation comprising RE 11.3.2, RE 11.3.4, RE 11.3.25, RE 11.5.9, RE 11.9.7, RE 11.9.9 and RE 11.10.7.

A number of large, hollow bearing trees, ranging from 1-12 hollows/ha, were observed throughout the offset area in association with eucalypt dominated woodlands.

The offset site will be managed to increase the number of hollows available by prohibiting timber harvesting and the use of hot fires. Thinning of areas that have too high a stem density will also be undertaken to enable the faster growth of the remaining trees to develop hollows.



Greater gliders observed within the Ellensfield property during field survey

Squatter pigeon

Indicative offset area: 477 hectares, actual area 765 ha which is an OAG percentage of 160.47%.

The Squatter pigeon offset is collocated with the Koala and Greater glider offset areas.

Squatter Pigeon (southern) habitat is generally defined (Squatter Pigeon Workshop 2011) as: open-forests to sparse, open-woodlands and scrub that are:

- mostly dominated in the overstorey by Eucalyptus, Corymbia, Acacia or Callitris species
- remnant, regrowth or partly modified vegetation communities, and
- within 3 km of water bodies or courses.

Squatter pigeon were recorded at two locations during the field survey within the property. Suitable habitat for squatter pigeon occurs throughout the property in vegetation dominated by Eucalypt species.



Squatter pigeon observed within the Ellensfield property during field survey

Australian painted snipe

Indicative offset area: 50 hectares, actual area 282 ha which is an OAG percentage of 283.19%.

Australian Painted Snipe habitat consist of (SPRAT; DAWE 2022):

Shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. Also inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with emergent tussocks of grass, sedges, rushes or reeds,

or samphire; often with scattered clumps of lignum Muehlenbeckia or canegrass or sometimes tea-tree (Melaleuca). The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber.

The 282 ha of Australian painted snipe offset area is contained within the Poplar box woodlands which is also an offset for the Poplar box TEC, Koalas, Greater gliders, Ornamental snake and Squatter pigeon.

8. OFFSET AREAS

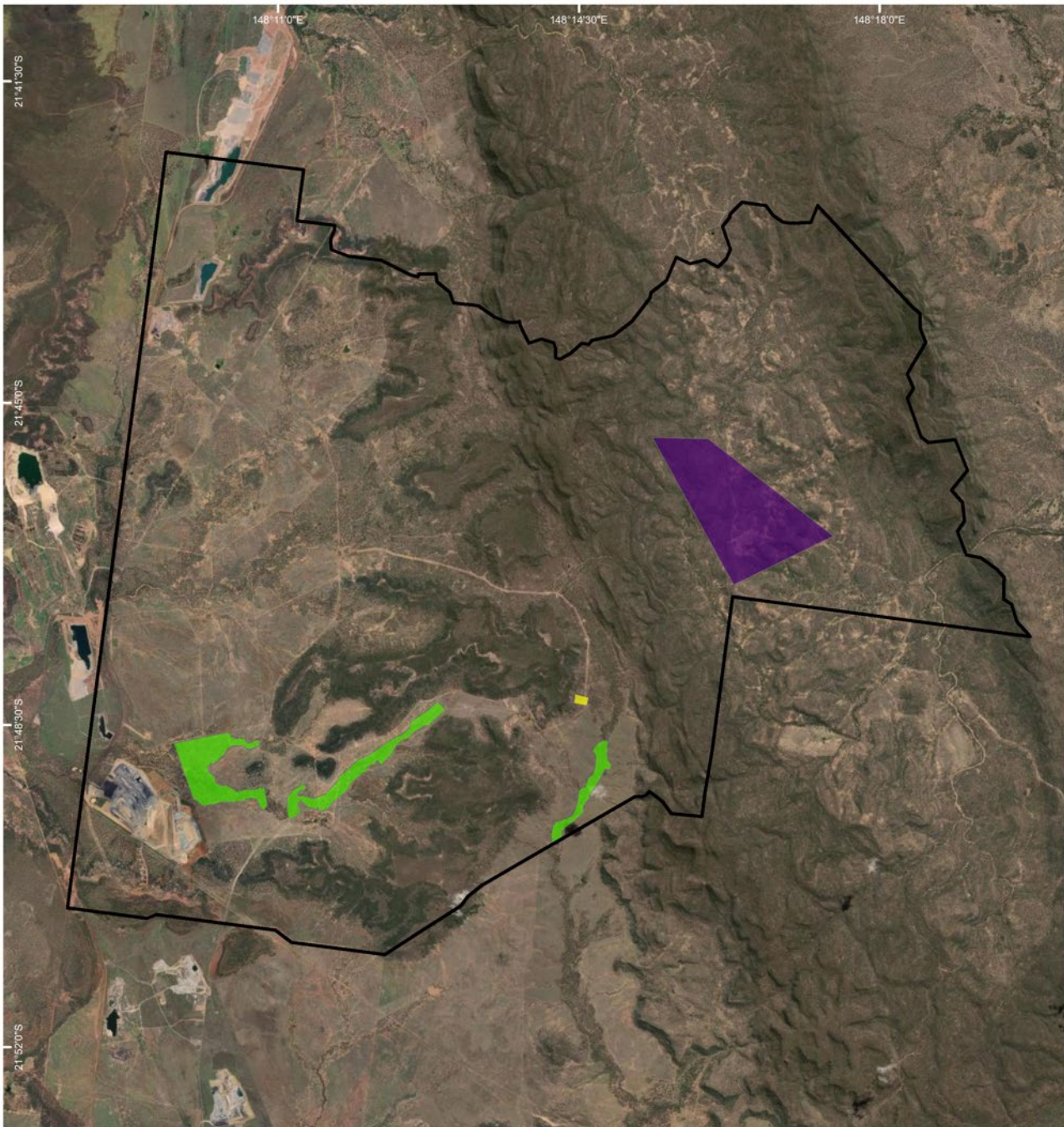
The extent of impacts and associated offsets for threatened species and TECs for the Project have been calculated based on the maximum disturbance limits. Offset areas have been derived using habitat Quality Scores (**Appendix C**) and the OAG supporting spreadsheet/calculator (**Appendix D**). These values provide the basis of this overarching offsets strategy.

The allocation of offsets based on field verified data and using the OAG results are provided in Table 5; the allocated areas are shown in Figure 5. Five separate areas of the Ellensfield property will be used, these contain differing combinations of TECs and species habitats that make up the area extents. For three of the species 100% of the OAG calculation is provided, these same areas provide for the other four species and as a result substantially exceed the 100% requirement.

Table 5: Offset areas and habitat quality

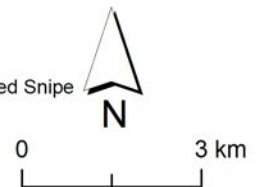
Protected Matter	Impact area (ha)	Impact area habitat quality score	Remnant/Regrowth	Indicative OAG Offset (ha)	Actual Offset area (ha)	Offset habitat quality start score	Habitat quality completion score	% Offset Score
Brigalow TEC	1.12	5	Remnant	5	5	5	7	101.28
Poplar box TEC	79.8	5	Remnant	282	282	4	6	100.22
Greater glider	264.4	5	Remnant	765	765	5	7	100.08
Koala	264.4	4	Remnant	612	765	5	7	125.10
Squatter pigeon	164.9	5	Remnant	477	765	5	7	160.47
Ornamental snake	131.7	3	Remnant	229	282	4	6	123.44
Australian painted snipe	35.3	2	Remnant	50	282	3	4	283.19

Figure 5: Ellensfield Offset Areas



G100 Ellensfield Offset Area

- G100 Brigalow TEC, Ornamental snake
- G100 Offset Poplar Box TEC, Ornamental snake, Koala, Greater Glider, Squatter pigeon, Australian Painted Snipe
- G100 Offset Koala, Greater Glider, Squatter pigeon



Data Projection:
GDA 1994 MGA Zone 55

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

9. LEGALLY BINDING MECHANISM

Under the EPBC Act approval, the approval holder must legally secure the offset areas within 2 years from the date that the OMP is approved in writing by the Minister. This will be achieved through the declaration of an area of high nature conservation value with an attached management plan.

The offsets will be secured by the offset site being declared as an area of high nature conservation value under either the *Vegetation Management Act 1999* (Qld) (**VM Act**) or the *Nature Conservation Act 1992* (Qld) (**NC Act**). In either instance, the declaration of the offset site and the existence of a declared area management plan will be shown on the title to the land. In addition, the offset areas will be mapped as a category A area on a property map of assessable vegetation (**PMAV**). An area mapped as category A on a PMAV is described as an 'area subject to compliance notices, offsets and declarations'.

Addressing relevant EPBC plans and advice

The EPBC Act Environmental Offsets Policy states that an offset should address key priority actions for the impacted MNES in any approved recovery plans, threat abatement plans, conservation advice, ecological character description or approved Commonwealth Management Plan. Table 6 summarises how management will address the relevant Conservation Advices and Threat Abatement Plans.

Table 6: Conservation Advice and Threat Abatement Plans

Document	Key threats	Comment/Relevant Section in document
<p>Approved Conservation Advice for <i>Phascolarctos cinereus</i> (Koala), Canberra: Department of the Environment, 2022.</p> <p>NB. At the time of the approval the Koala was listed as Vulnerable under the EPBC Act. Subsequently the Koala has been re-listed as Endangered and the Conservation advice updated.</p>	<p>Vegetation clearing for cropping and pasture and grazing Land clearing was a significant cause of mortality to koalas, particularly in the Brigalow Belt Bioregion (Cogger et al. 2003). Habitat fragmentation may also impede post-drought recovery of koala populations.</p>	<p>Section 13</p> <p>Broad scale native vegetation clearing will not be permitted. No forestry or timber harvesting activities will be undertaken during the period of the declared area. Forestry and native timber harvesting practices in the offset area is considered a potential threat to the quality of the vegetation community and habitat due to a reduction in cover and fragmentation of habitat.</p>
	<p>Vehicle strike Dogs and cars are threats to koalas that are closely associated with urban expansion, with exposure to both increasing as land adjacent to koala habitat is developed and occupied. However, while these threats are most intense in the urban and peri-urban environment, they may be threats in rural areas (Crowther et al. 2010).</p>	<p>Section 13</p> <p>Access to the offset area will be restricted. Illegal access is not allowed and access will be managed by the landowner. Regular inspections will identify if fences are operational and preventing cattle and unauthorised people from accessing the offset area. The offset area is on a large privately owned agricultural property in a remote area with access to the area restricted to the land managers. The offset areas are contained on the back portions of the properties and there are no public access points to the offset areas. There is no known treatment for disease that is prevalent in the populations naturally. The establishment of the offset area, increasing the extent and condition of the habitat, may act to reduce some of the environmental stresses that are thought to accentuate diseases.</p>
	<p>Disease The most well-known disease present in koala populations until recently is associated with chlamydia (Natural Resource Management Ministerial Council 2010). Many koalas carry chlamydia, but do not always show clinical symptoms (known as chlamydiosis). There is circumstantial evidence that chlamydiosis might increase in response to environmental stresses such as overcrowding and poor nutrition (Melzer et al. 2000 and references therein), although the epidemiology of chlamydiosis is not well understood. Koala Retrovirus (KoRV) was recently identified and is thought to be responsible for a range of conditions, including leukaemia (Tarlinton et al. 2005) and an immunodeficiency syndrome.</p>	<p>Section 13</p> <p>Feral animals – will be monitored and controlled. Management measures will minimise the presence of feral animals and control of existing populations of feral animals (feral cats, dogs and pigs) within the offset areas. Regular inspections will be conducted by the landholder to record the presence of wallow holes, tracks and visual incidents in the offset area.</p>
<p>Predation by dogs Dogs and cats are threats to koalas that are closely associated with urban expansion, with exposure to both increasing as land adjacent to koala habitat is developed and occupied. However, while these threats are most intense in the urban and peri-urban environment, both may also be threats in rural areas (Crowther et al. 2010).</p>	<p>Section 13</p> <p>Feral animals – will be monitored and controlled. Management measures will minimise the presence of feral animals and control of existing populations of feral animals (feral cats, dogs and pigs) within the offset areas. Regular inspections will be conducted by the landholder to record the presence of wallow holes, tracks and visual incidents in the offset area.</p>	

<p>Approved Conservation Advice for <i>Petauroides volans</i> (Greater Glider), Canberra: Threatened Species Scientific Committee (2016).</p>	<p>Habitat loss (through clearing, clearfell logging and the destruction of senescent trees due to prescribed burning) and fragmentation. The species is absent from cleared areas and has little dispersal ability to move between fragments through cleared areas; low reproductive output and susceptibility to disturbance ensures low viability in small remnants.</p>	<p>Section 13</p> <p>Forestry and native vegetation clearing will not be allowed. No forestry or timber harvesting activities are to be conducted during the period of the declared area. Forestry and native timber harvesting practices in the offset area remove large trees that provide shelter and food and may also contain hollows and deadwood. It is therefore considered a potential threat to the quality of the habitat.</p>
	<p>Too intense or frequent fires Population loss or declines documented in and after high intensity fires (Lindenmayer et al., 2013). Studies show that hot, unplanned fires are a main threat to greater glider habitat through increased mortality due to overheating and loss of hollows.</p>	<p>Section 13</p> <p>Fire will not be permitted in the offset area unless for fuel reduction purposes, and then not for more than 30% of the area at any one time (as per Queensland Department of Environment, Tourism, Science and Innovation (DETSI) regional ecosystem descriptions fire management guidelines). Fuel reduction burns will be used as a last resort, and if utilised will be planned to be cool burns of low intensity with no canopy scorch, with the aim to reduce fuel load in the ground cover layer. This practice aims to prevent unplanned high intensity burns that result from a build-up of fuel.</p>
	<p>Timber production Prime habitat coincides largely with areas suitable for logging; the species is highly dependent on forest connectivity and large mature trees. Glider populations could be maintained post-logging if 40% of the original tree basal area is left (Kavanagh 2000). There is a progressive decline in numbers of hollow-bearing trees in production forests as logging rotations become shorter and as dead stags collapse (Ross 1999; Ball et al., 1999;</p>	<p>Section 13</p> <p>Forestry and native vegetation clearing will not be permitted. No forestry or timber harvesting activities are to occur during the period of the declared area. Forestry and native timber harvesting practices in the offset area remove large trees that provide shelter and food and may also contain hollows and deadwood. It is therefore considered a potential threat to the quality of the vegetation community and habitat.</p>
	<p>Climate change Biophysical modelling indicates a severe range contraction for the northern subspecies (Kearney et al., 2010). Occupancy modelling indicates that the degree of site occupancy is associated with vegetation lushness and terrain wetness (Lumsden et al., 2013). Water stress affects growth in forest eucalypts (Matusick et al., 2013) and the availability of browse, and higher temperatures may cause heat stress and mortality (Vic SAC 2015).</p>	<p>Section 6 and 13</p> <p>At a property level climate change is best addressed through the building of resilience within natural ecosystems. A key element of this is protecting and managing larger areas of good condition native vegetation and habitat. The offset site was selected for its potential to provide a substantial increase to the habitat, connectivity and other ecological values within the surrounding area. Protecting these Eucalypt forests from native timber harvesting and fire will add significant value to the area by improving the condition of the habitat. Additionally, the offset is located adjacent to existing and other future offset areas on the property, which will further assist in improving landscape connectivity and overall habitat value.</p>

	<p>Barbed wire fencing (entanglement). There are occasional losses of individuals.</p>	<p>Section 13</p> <p>Fencing – internal fences will not be constructed in the offset area unless deemed necessary for grazing management. Any new fences will have a non-barbed wire top strand to protect wildlife. Current fencing is all external to the offset.</p>
<p>Approved Conservation Advice for <i>Geophaps scripta scripta</i> (Squatter Pigeon southern), Canberra: Threatened Species Scientific Committee (2015).</p>	<p>Ongoing vegetation clearance and fragmentation Birds do not move far from woodland trees that provide protection from predatory birds, and do not typically forage further than 100 m from remnant trees or patches of wooded habitat (TSSC 2015). The population declined rapidly during the late 19th and early 20th centuries and continued to decline in NSW and southern Queensland where it is now very rare (Cooper et al., 2014). In NSW, the disappearance of the subspecies has been attributed to overgrazing at times of drought, followed by clearing of vegetation. Current threats include ongoing vegetation clearance and fragmentation,</p>	<p>Section 13</p> <p>Forestry and native vegetation clearing will not be permitted. No forestry or timber harvesting activities will be undertaken during the period of the declared area. Forestry and native timber harvesting practices in the offset area is considered a potential threat to the quality of the vegetation community and habitat due to a reduction in cover and fragmentation of habitat.</p>
	<p>Overgrazing of habitat by livestock and feral herbivores; trampling of nests by domestic stock. The population declined rapidly during the late 19th and early 20th centuries and continued to decline in NSW and southern Queensland where the species is now very rare (Cooper et al., 2014). In NSW, the disappearance of the subspecies has been attributed to overgrazing at times of drought, followed by clearing of vegetation.</p>	<p>Section 13</p> <p>Grazing – Stock will be grazed in the offset areas for fuel reduction purposes during April to October (inclusive), or until the wet season starts.</p>
	<p>Introduction of weeds Squatter pigeons have a mainly granivorous diet, mostly feeding on the seeds of legumes in the family Fabaceae (45% of food volume) including those of exotic pasture plants such as <i>Stylosanthes</i> spp., and native grasses in the family Poaceae (23% of food volume) (Crome 1976; Higgins and Davies 1996). They occasionally forage in sown grasslands and pastures, feeding on exotic legumes such as <i>Stylosanthes</i> spp. (Crome 1976). A high weed cover results in competition for the bird's diet.</p>	<p>Section 13</p> <p>Pest plants – will be reduced to less than 10% of total cover. Weed control will be undertaken throughout the offset areas and then periodically, as required, to treat the weeds at the optimum time in their life cycles. The practices will control and minimise the spread of existing weed species.</p>
	<p>Inappropriate fire regimes Hot fires that impact vegetation community structure and increase the likelihood of weed invasion after the initial reduction in groundcover.</p>	<p>Section 13</p> <p>Fire – fire is not permitted in the offset area unless for fuel reduction purposes and then not for more than 30% of the area in any year (this is restricted to the Eucalypt areas). Fire will not be allowed in the Brigalow TEC area.</p>
	<p>Predation by feral animals including cats and foxes</p>	<p>Section 13</p> <p>Feral animals – will be monitored and controlled. The presence of feral animals will be minimised and existing populations of feral animals (feral cats, dogs and pigs) controlled within the offset areas.</p>
	<p>Illegal shooting</p>	<p>Section 13</p>

		<p>Access – access by unauthorised personnel will not be permitted. Regular inspections will confirm fences are preventing cattle and unauthorised people from accessing the offset area. The offset area is on a large privately owned agricultural property in a remote area with access to the area restricted to the land managers.</p>
<p>Approved Conservation Advice for <i>Denisonia maculata</i> (Ornamental Snake), Canberra: Department of the Environment, 2014.</p>	<p>Vegetation clearing for cropping and pasture and grazing The main identified threat to the ornamental snake is a continued legacy of past broadscale land clearing and habitat degradation.</p>	<p>Section 13</p> <p>Forestry and native vegetation clearing will not be permitted. No forestry or timber harvesting activities will be authorised during the period of the declared area. Forestry and native timber harvesting practices in the offset is considered a potential threat to the quality of the vegetation community and habitat due to a reduction in cover and fragmentation of habitat.</p>
	<p>Potential poisoning resulting from the ingestion of cane toads</p>	<p>Section 13 and 15</p>
	<p>Destruction of wetland habitat by feral pigs Destruction of wetland habitat by feral pigs (<i>Sus scrofa</i>) is also a threat, along with the associated destruction of frog habitat and direct competition for their food source (frogs) (WWF-Australia/QMDC, 2008).</p>	<p>The landholder will undertake feral animals monitoring and control. The presence of feral animals will be monitored and control of existing populations of feral animals (feral cats, dogs and pigs) will be undertaken within the offset areas.</p>
<p>Approved Conservation Advice for <i>Rostratula australis</i> (Australian painted snipe), Canberra: Department of the Environment, 2013.</p>	<p>Loss and degradation of wetlands, through drainage and the diversion of water for agriculture and reservoirs.</p>	<p>Section 13</p> <p>These activities will not be permitted in the offset area.</p>
	<p>Grazing and the associated trampling of wetland vegetation/nests, nutrient enrichment and disturbance to substrate by livestock may threaten the Australian painted snipe in certain regions, particularly where grazing is concentrated around wetlands during dry seasons (Johnstone and Storr, 1998; Rogers et al., 2005;</p>	<p>Section 13</p> <p>Stock will be grazed in the offset areas for fuel reduction purposes during April to October (inclusive), or until the wet season starts.</p>
<p>Threat Abatement Plan for predation by the European red fox Australian Government, 2008</p>	<p>Predation by foxes (applies to each fauna species)</p>	<p>Section 13</p>
<p>Threat Abatement Plan for predation by feral cats. Australian Government, 2015</p>	<p>Predation by cats (applies to each fauna species)</p>	<p>Feral animals – monitoring and control will be undertaken.</p>
<p>Threat Abatement plan for competition and land degradation by rabbits. Australian Government, 2016</p>	<p>Presence of rabbits (applies to each fauna species and each TEC)</p>	<p>The presence of feral animals will be monitored and control of existing populations of feral animals (feral cats, rabbits, foxes, dogs and pigs) will be undertaken within the offset areas.</p>

<p>Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (<i>Sus scrofa</i>). Australian Government, 2017.</p>	<p>Presence of wild pigs (applies to each fauna species and each TEC)</p>	
<p>Approved Conservation Advice for the Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) ecological community</p>	<p>Clearing The Brigalow ecological community was listed as endangered on the basis of extensive clearing. This has altered the ecological community's typical landscape context, with most remnants now occurring as fragments within substantially modified landscapes, or on small clay pans or the toe-slopes of jump-ups and escarpments.</p>	<p>Section 13 Forestry and native vegetation clearing will not be permitted. No forestry or timber harvesting activities will be authorised during the period of the declared area. Forestry and native timber harvesting practices in the offset is considered a potential threat to the quality of the vegetation community and habitat due to a reduction in cover and fragmentation of habitat.</p>
	<p>Fire The low density of herbage in most types of Brigalow vegetation suggests that fire has been historically rare in the Brigalow ecological community. It becomes a serious threat to remnant Brigalow where fuel characteristics have been changed (e.g. by the presence of high biomass introduced grass pasture species such as buffel grass. Generally, the most appropriate fire regime for Brigalow stands is fire-exclusion (Butler, 2007). It is possible that grazing can be used to manage grass fuel loads. It may also be possible in some cases to develop techniques with cool fires that reduce fuel loads without killing Brigalow.</p>	<p>Section 13 Fire is not allowed in the Brigalow TEC area.</p>
	<p>Weeds Pest plants can alter the structure and function of Brigalow ecosystems and affect their suitability as habitat for native species. Introduced grasses, such as buffel grass, Rhodes grass and green panic grass, pose the greatest threat by drawing fires into the Brigalow ecological community and increasing fire severity (Butler, 2007). Particularly vulnerable are fragmented remnants (such as those adjacent to roadsides), patchy regrowth and patches in low rainfall areas.</p>	<p>Section 13 and 15 Pest plants – will be reduced to less than 10% of total cover to ensure the offset achieves TEC status. Weed control will be undertaken throughout the offset areas and then periodically, as required, to treat the weeds at the optimum time in their life cycles. The practices will control and minimise the spread of existing weed species.</p>
	<p>Pest animals Feral pigs are probably the most widespread and problematic pest animal in the ecological community, although goats, cane toads, cats and foxes are also serious threats (Butler, 2007). All are responsible for key threatening processes (KTP) listed as under the EPBC Act.</p>	<p>Section 13 and 15 Feral animals – will be monitored and controlled by the landholder. The plan will minimise the presence of feral animals and control of existing populations of feral animals (feral cats, dogs and pigs) within the offset areas. Regular inspections by the landholder will be conducted to record the presence of wallow holes, tracks and visual incidents in the offset area.</p>

	<p>Inappropriate grazing regimes Trampling and grazing by large herbivores has a number of impacts. Trampling compresses soil, can reduce the amount of leaf litter and woody debris, and alters the composition and density of herbs and shrubs in the understorey of the Brigalow ecological community.</p>	<p>Section 13 Grazing – Stock will be grazed in the offset areas for fuel reduction purposes during April to October (inclusive), or until the wet season starts.</p>
	<p>Climate change The broad environmental tolerance of <i>Acacia harpophylla</i> and its associated species gives them some capacity to cope with climate change (Butler, 2007). However, the rate of change is expected to be higher than previously experienced and future climate may differ from that which the Brigalow ecological community was subject to in the past. Furthermore, the landscapes within which the Brigalow ecological community faces climate change are radically different from those within which it endured preceding changes and this may compromise adaptability.</p>	<p>Section 6 At a property level climate change is best addressed through the building of resilience within natural ecosystems. A key element of this is protecting and managing larger areas of good condition native vegetation and habitat.</p>
<p>Conservation Advice (including listing advice) for the Poplar Box Grassy Woodland on Alluvial Plains TEC</p>	<p>Clearance and fragmentation Historically mainly from agricultural development and currently includes mining and gas development.</p>	<p>Section 13 Forestry and native vegetation clearing will not be permitted. No forestry or timber harvesting activities will be authorised during the period of the declared area. Forestry and native timber harvesting practices in the offset is considered a potential threat to the quality of the vegetation community and habitat due to a reduction in cover and fragmentation of habitat.</p>
	<p>Weeds Weeds compete with locally indigenous flora species for available resources (water, light, nutrients) and lead to a decline in the diversity and regenerative capacity of native vegetation.</p>	<p>Section 13 Pest plants – will be reduced to less than 10% of total cover. Weed control will be undertaken throughout the offset areas and then periodically, as required, to treat the weeds at the optimum time in their life cycles. The practices will control and minimise the spread of existing weed species.</p>
	<p>Inappropriate fire and grazing Fire intensity, frequency, seasonality and patchiness in addition to grazing by domestic stock and pest animals, influence vegetation composition and structure as well as the success of weeds. More intense and frequent fires, as a result of introduced grasses for grazing, can substantially reduce the understorey diversity within the Poplar Box Grassy Woodland and further their spread into the ecological community.</p>	<p>Section 13 Fire will not be permitted in the offset area unless for fuel reduction purposes and then no more than 30% of the area in any year (this is restricted to the Eucalypt areas). Grazing is not permitted during the wet season; ground cover levels will be monitored and managed. Stock will be grazed in the offset areas for fuel reduction purposes during April to October (inclusive), or until the wet season starts.</p>
	<p>Invasive fauna The Poplar Box Grassy Woodland provides habitat for many ground-dwelling birds and animals. Pest species such as foxes and cats impact these small to medium native animal species through predation and also compete for resources. Rabbits can selectively remove the most palatable herbs and</p>	<p>Section 13 Feral animals – will be monitored and controlled.</p>

	<p>grasses and suppress regeneration. Goats damage trees and can cause erosion, while pigs damage ground layer vegetation by digging and turning over soil thus impacting on the structure and integrity of the ecological community.</p>	<p>The plan will minimise the presence of feral animals and control of existing populations of feral animals (feral cats, dogs and pigs) within the offset areas.</p>
	<p>Climate change Climate change is a potential threat across the distribution of Poplar Box Grassy Woodland. It will likely involve increases in temperatures, seasonality and intensity of rainfall, with unknown compounding effects on other disturbances such as fire. In addition to directly threatening species that cannot adapt, climate change can alter resource availability and the competitive relationships between species, plus can exacerbate existing threats such as habitat loss, fire, dieback and invasive species.</p>	<p>Section 6 At a property level climate change is best addressed through the building of resilience within natural ecosystems. A key element of this is protecting and managing larger areas of good condition native vegetation and habitat.</p>

10. RISK ASSESSMENT

The delivery of biodiversity offsets is not without risk. A number of factors will influence the final outcomes and delivery of a proposed offset, including legal arrangements, climate, management implementation, resourcing and compliance. Potential risks to delivering a direct biodiversity offset have been considered in the preparation of this Strategy. Specific ecological, climatic and management risk that may influence the delivery of ecological outcomes will be further assessed during the ongoing implementation of the OMP.

Establishment and planning risks have been assessed against the risk matrix that was supplied by DAWE. The risk matrix has been used to assess the risk that the Strategy can be implemented.

The risk assessment:

- a) identified events that will, may, or are likely to impact the establishment of the offsets
- b) assessed the likelihood and consequences of those events, and characterises residual risk levels, taking into consideration the mitigation of the risk by implementing mitigating actions
- c) identified the level of uncertainty in mitigating the risk to an acceptable level.

Table 7: Risk matrix

RISK MATRIX						
Qualitative measure of likelihood						
Highly likely		Is expected to occur in most circumstances				
Likely		Will probably occur during the life of the project				
Possible		Might occur during the life of the project				
Unlikely		Could occur but considered unlikely or doubtful				
Rare		May occur in exceptional circumstances				
Qualitative measure of consequences (what will be the consequence/result if the issue does occur)						
Minor		Minor incident that can be reversed (e.g. short-term delays to achieving objectives, implementing low-cost, well-characterised corrective actions)				
Moderate		Isolated but substantial instances that could be reversed with intensive efforts (e.g. implementing well-characterised, high-cost/effort corrective actions)				
High		Substantial instances that could be reversed with intensive efforts (e.g. medium-long term delays to achieving objectives, implementing uncertain, high-cost/effort corrective actions)				
Major		Major scientific or legal barrier and real danger of not being able to continue (e.g. objectives are unlikely to be achieved, with significant legislative, technical barriers)				
Critical		Severe widespread loss of environmental amenity and irrecoverable environmental damage (e.g. plan objectives are unable to be achieved, with no evidenced mitigation strategies)				
		Consequence				
Likelihood		Minor	Moderate	High	Major	Critical
	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Table 8: Risk assessment for the offset site

Note: The risk ranking codes relate to the risk matrix as follows: L = Likelihood C = Consequence R = Risk

Risk	Threats	Initial risk ranking			Mitigation Measure	Actions	Residual risk ranking		
		L	C	R			L	C	R
Legal risks									
Government (Federal) does not accept proposed offsets	Proposed offset areas are not considered suitable as offsets for the residual significant impacts of the project	Rare	High	Low	Strategy provided to Dept. as a draft.	Strategy prepared in line with Environmental Offsets Policy. Negotiation and amendment of Strategy to meet Government requirements.	Rare	Moderate	Low
VM Act declared area application rejected by Government (State)	Legal impediments may arise to the declaration of an area of high nature conservation value over the offset areas.	Rare	High	Low	Past experience and precedent	Preparation of the Declared Area Management Plan by experienced personnel. The selected property has been used for offsets previously.	Rare	Moderate	Low
Land owner withdraws offset for use	The land owner of the Ellensfield property withdraws the property from use as an offset.	Rare	Moderate	Medium	Legal agreement Existing offsets Replacement offset availability	The proponent has a legally enforceable right to secure offsets on the Ellensfield property. Anglo American and others have used the property for offsets in the past with ongoing arrangements in place. Anglo American has call options on other potential offset properties that could be used in a worst case scenario if the Ellensfield landowner seeks to withdraw from the offsets arrangement.	Rare	Minor	Low
Mining of the offset site	Potential for the grant of resource authorities over the proposed offset sites. Open cut mining may produce full clearing of the offset site.	Rare	Critical	High	Offset area declaration	No current permits cover the offset sites. The legal mechanism/ declaration under the VM Act over the offset site will make it known to third parties that the area is an offset. In accordance with section 19K of the VM Act, the declaration of the offset site as an area of high nature conservation value and the existence of a declared area management plan will be shown on the title to the land. A PMAV will also show the area as Category A vegetation. No available legal mechanism would render mining impossible on the offset site, however the declared area/ Declared Area Management Plan under the VM Act would significantly increase offset obligations upon any person proposing to impact the offset sites.	Rare	Critical	High

Risk	Threats	Initial risk ranking			Mitigation Measure	Actions	Residual risk ranking		
		L	C	R			L	C	R
Adjacent Mining Infrastructure	Haul road construction	Likely	Moderate	Medium	Buffer Restricted access Erosion controls	A haul road is proposed in the vicinity of the Ornamental snake and Poplar box TEC offsets. The haul road if built will dissect two areas of offset but will not directly impact the offset areas. Mitigation measures and monitoring is proposed should the haul road be built to ensure the offsets maintain viability.	Likely	Low	Medium
Ecological risks									
Failure to achieve offset improvements	The threat posed by drought, fire and other external factors could significantly delay or restrict the ability to deliver an improved ecological outcome.	Likely	Moderate	Medium	Offset area management Grazing management Fire management including fuel load reductions	Development of an Offset Management Plan that builds resilience and reduces stresses on ecological features. Measures will include: <ul style="list-style-type: none"> Cattle will be excluded from the offset areas during times of drought. Weed control and reduction in pest animal pressures. Should the offset be deemed by the approval holder or the Department to be delayed due to external factors, both parties will work together to determine an appropriate response.	Likely	Moderate	Medium
Failure to achieve offset criteria	Failure of management measures or adverse climatic conditions restrict ability to achieve target criteria	Possible	Moderate	Medium	Offset area management Grazing management Fire management including fuel load reductions Alternative offset areas	Development of an Offset Management Plan that builds resilience and reduces stresses on ecological features. Measures will include: <ul style="list-style-type: none"> Cattle will be excluded from the offset areas during times of drought. Weed control and reduction in pest animal pressures. Should the offset be deemed by the approval holder or the Department to be delayed due to external factors, both parties will work together to determine an appropriate response.	Unlikely	Medium	Low
Degradation of habitat	The degradation of habitat due to the lack of environmental management of the offsets area including inappropriate grazing regimes, invasive plant incursions, fire, increase in feral animal numbers and/or poor infrastructure maintenance.	Possible	High	Medium	Offset area management Grazing management	Implementation of the management actions and adaptive management framework as outlined in the OMP. Legal and financial arrangements with the land holder to ensure implementation of the OMP in a timely manner.	Unlikely	Minor	Low

Risk	Threats	Initial risk ranking			Mitigation Measure	Actions	Residual risk ranking		
		L	C	R			L	C	R
Timber harvesting/ collection	Unauthorised access to the offset area may result in timber harvesting/collection	Unlikely	Moderate	Low	Offset area management Site access control	Complete the installation of signage at all vehicle accesses identifying the areas as an environmental offset. Complete the installation of any new planned fences. All field monitoring (rapid and detailed) will report on any evidence of timber harvesting.	Rare	Moderate	Low
Unplanned clearing	It is possible for unplanned / illegal clearing for agriculture activities but considered improbable as the offset site will be mapped as Category A on the PMAV.	Unlikely	Major	High	Offset area management Site access control	Complete the installation of signage at all vehicle accesses identifying the areas as an environmental offset. In accordance with section 19K of the VM Act, the declaration of the offset site as an area of high nature conservation value and the existence of a declared area management plan will be shown on the title to the land. A PMAV will also show the area as Category A vegetation. All monitoring will report on any evidence of clearing.	Rare	Major	Medium

PART B: OFFSET MANAGEMENT PLAN (OMP)

11. OFFSET MANAGEMENT

The offset area will be managed to abate identified threats to the TEC and species habitats and to achieve the performance targets outlined in Section 12.

The management actions include:

- limiting vegetation clearing to only those areas required for maintaining fencing and fire control lines - any vegetation clearing required will not reduce the full offset area
- prohibiting alternate land use and activities during the period of the declared area (e.g. timber harvesting, cropping)
- restricting unauthorised access
- excluding domestic livestock from the offset areas except for managed grazing associated with fuel reduction in dry periods
- controlling feral animals
- managing fire
- controlling weeds
- thinning of areas of high stem density to encourage larger trees and subsequently hollows when identified by a qualified ecologist.

The management schedule describes the actions to be undertaken on the offset site (Table 10). Management of the offset will occur for the duration of the EPBC Approval (ref: 2007/3785). Regular offset area reports will be prepared by the proponent. These will report against each of the management actions shown in Table 10.

12. OFFSET COMPLETION AND PERFORMANCE TARGETS

Offset completion criteria have been determined for each species based on an understanding of the specific habitat, connectivity and other ecological values (*Table 9*). These criteria were initially derived from detailed ecology survey information of the offset sites utilising an approach specified within the *Guide to determining terrestrial habitat quality* (DES, 2020). The targeted habitat quality meets guidelines published by ANZECC (2000), stating completion criteria should be:

- Specific enough to reflect unique set of environmental, social and economic circumstances.
- Flexible enough to adapt to changing circumstances without compromising objectives.
- Include environmental indicators suitable for demonstrating that rehabilitation trends are heading in the right direction.
- Undergo periodic review resulting in modification if required due to changed circumstances or improved knowledge.
- Based on targeted research which results in more informed decisions.

Over the course of the management period a set number of interim completion criteria have been proposed for each species to track the trajectory of habitat quality improvement towards the desired final completion criteria. The timing for these interim targets corresponds with the 5 yearly targeted species surveys and detailed ecological condition monitoring in years 2031, 2036 and 2041.

Interim targets were derived for each species by identifying the attributes expected to increase over the period of the approval. The values were determined by differentiating between specific attributes of which the majority were longer term targets (e.g. species richness, tree canopy cover, number of large trees) and those where an initial benefit could be realised early (e.g. recruitment of woody species, non-native plant cover).

The completion of management actions identified in *Section 13* will enable the offset site to improve and achieve the scores required, thus meeting and maintaining the completion criteria required of the offset. The annual reports will provide transparency regarding how the site management actions are being implemented, and where relevant, identify any *force majeure* events impacting the offset site, and any non-compliance with the management plan.

Table 9: Interim targets and completion score

Protected Matter	Impact area (ha)	Impact area habitat quality score	Offset area (ha)	Offset habitat quality start score	Yr 5 Target Score	Yr 10 Target Score	Yr 15 Target Score	Habitat quality completion score
Brigalow TEC	1.12	5	5	5	5.5	6	6.5	7
Poplar box TEC	79.8	5	282	4	4.5	5	5.5	6
Greater glider	264.4	5	765	5	5.5	6	6.5	7
Koala	264.4	4	765	5	5.5	6	6.5	7
Squatter pigeon	164.9	5	765	5	5.5	6	6.5	7
Ornamental snake	131.7	3	282	4	4	5	6	6
Australian painted snipe	35.3	2	282	3	3	3.5	3.5-4	4

13. MANAGEMENT ACTIONS

The following management actions will enable the offset site to improve to achieve the performance scores, thus attaining and maintaining the completion criteria required of the offset. Five yearly reports will provide transparency regarding how the site management actions are being implemented, and where relevant, identify any force majeure events impacting the offset site, and any non-compliance with the management plan. The management actions shown Table 10 are consistent with the risks identified in the listing advice, conservation advices, and threat abatement plans in Table 4. Actions are applicable to both offset properties unless stated otherwise.

Table 10: Management actions, triggers and corrective actions

Environmental aspect	Management objective	Management actions	Performance criteria	Monitoring	Trigger for adaptive management and corrective action(s)	Corrective offset management actions	Responsible Person
Habitat enhancement	Improve habitat for Ornamental snakes	Add fallen logs/woody debris to Ornamental snake offset areas to improve and support snake habitat. Opportunistic and annual collection and distribution of fallen woody debris into offset areas.	Aim is to achieve an abundance of logs (> 30 cm diameter) of >10 per 100m x 100m sample plot	Monitoring of sample plots in each ornamental snake offset area and recoding of annual log collection and placement event.	Failure to achieve performance criteria after 10 years.	Increase distribution of woody debris.	Landholder (or suitable qualified person appointed by the Landholder)
	Improve Greater glider habitat	Ensure habitat areas have a minimum 12 hollows per hectare Install artificial hollows if below 12 per hectare	12 hollows per hectare of suitable size for Greater glider	Monitoring of sample sites across Greater glider habitat area	Failure to achieve performance criteria after 10 years.	Increase hollow densities in consultation with the Department.	Landholder (or suitable qualified person appointed by the Landholder)
Degradation of habitat	Achieve the completion criteria and habitat quality improvements for offset values, which include the habitat quality scores in this OMP	Implementation of the management actions and adaptive management framework as outlined in this OMP.	Increase the habitat quality scores for each offset value at each habitat quality assessment site based on the results of baseline and subsequent monitoring events to achieve the scores in the completion criteria	Monitoring of offset value habitat quality scores will be undertaken in accordance with <i>Section 15</i> . The results of monitoring events will be compared against the habitat quality scores in the interim performance targets and completion criteria to determine the progress of the offset area and recorded as part of reporting.	Habitat quality scores for interim performance targets are not achieved for one or more offset values by: <ul style="list-style-type: none"> Year 5 Year 10 Year 15 Year 20 	<p>Step 1: Investigate cause of trigger:</p> <ul style="list-style-type: none"> Within one month after detection of the trigger, complete an investigation into the reasons why the interim performance targets or the completion criteria were not achieved within the specified timeframes. Within two months after detection of the trigger, complete a re-evaluation of the suitability of the relevant management measures in the OMP. The re-evaluation must identify appropriate corrective actions. <p>Step 2: Implementation of corrective action/s</p> <p>The appropriate corrective actions identified under Step 1 will be implemented as soon as practicable, and in any case within eight months after detection of the trigger. They may include (though are not limited to):</p> <ul style="list-style-type: none"> Third party review of the OMP to provide input on the effectiveness of the management actions. Increasing the frequency and intensity of pest animal and weed control measures or revising the type of measures to be implemented. For offset values that have not achieved interim performance targets by year 20, for those offset values, the approval holder will obtain advice from senior ecologists and land managers with the aim of identifying appropriate additional management interventions 	Grosvenor Environmental Superintendent
Habitat or vegetation loss through land clearing or thickening of native vegetation (noting the benchmark large trees/ha) and to reduce the number of immature trees/ha	Maintain the extent of offset value habitat within the offset area	Protection of the offset area via a voluntary declaration under Section 19E and 19F of the VMA, as described in <i>Section 9</i> , to be registered within six months of the approval of this OMP.	No unapproved and/or intentional clearing of vegetation within the offset area, except for clearing that is required for fencing, access, firebreaks and public safety. Ecological thinning may be carried out, but only on and in accordance with the advice of a Principal Ecologist with	Reporting to the Australian Government consistent with any and all EPBC Act approval(s).	Any activities in contravention of the Voluntary Declaration	<p>Step 1: Investigate cause of trigger (e.g. unauthorised access)</p> <ul style="list-style-type: none"> As soon as practicable, and in any case within one month of detection of the trigger, identify appropriate corrective actions. <p>Step 2: Implementation of corrective action/s</p> <ul style="list-style-type: none"> As soon as practicable, and in any case within two months of detection of the trigger, the appropriate corrective actions must be implemented. These may include (though are not limited to) additional fencing and/or signage and security for the offset area. 	Grosvenor Environmental Superintendent

Environmental aspect	Management objective	Management actions	Performance criteria	Monitoring	Trigger for adaptive management and corrective action(s)	Corrective offset management actions	Responsible Person
		<p>Comply with the restrictions on clearing established throughout this OMP.</p> <p>Construction and maintenance of access tracks, fencing and firebreaks will be undertaken as required to manage the offset sites.</p> <p>If vegetation clearing is required for fencing, access, firebreaks or public safety it must be undertaken in accordance with best practice management methods and any applicable legislative requirements.</p> <p>Thinning via chemical and/or mechanical means, including brushcutter, chainsaw and individual tractor.</p>	>15 years' experience in Central Queensland.	<p>Quarterly inspections will monitor and document if there is evidence of recent forestry or timber harvesting activities.</p> <p>Monthly and quarterly inspections will monitor and document vegetation clearing that has occurred for fire break, access road or fence line maintenance.</p>	<p>Detection of prohibited forestry operations, native timber harvesting or clearing outside of established access tracks, fire control lines and fence lines (existing infrastructure).</p> <p>Trigger for thinning is a minimum density of 750 immature trees/ha</p>	<ul style="list-style-type: none"> Step 1: Upon being notified or becoming aware of prohibited forestry operations, native timber harvesting or clearing outside of existing infrastructure, the Approval Holder is to assess how unauthorised persons accessed the site, review existing access restrictions, and inspect signage and offset area fencing within one fortnight of detection of the clearing. Step 2: All actions required to prevent recurrence of the prohibited clearing will be completed within one month of detection of the clearing. Thin immature trees to >300 stems/ha. All of the following must be retained: <ul style="list-style-type: none"> A full range of plant sizes and species typical of the <i>regional ecosystem</i> in the area distributed in a pattern that is as natural as possible All mature trees and habitat trees At least 300 <i>immature trees/ha</i>, that are species characteristic³ of the <i>regional ecosystem</i> At least 10% of target low shrub species 	Landholder (or suitable qualified person appointed by the Landholder)
Degradation of habitat by overgrazing	Ensure that any livestock grazing for fire management and weed control maintains and enhances the ground cover attributes for MNES and does not result in the degradation of habitat and vegetation	<p>Stock will be grazed only when required to reduce dry matter yield (i.e.: when dry matter yield exceeds 1200kg/ha), and only during the dry season.</p> <p>The dry season is normally between April and December; however, if unseasonal rainfall should occur, then grazing is to be restricted to areas outside the offset allocations.</p> <p>No grazing is permitted within any gilgai areas with the offset areas; these areas will be mapped and identified in Year 1 by a qualified ecologist.</p> <p>As necessary, internal fences should be constructed to manage cattle management and access. Any wire fencing should use a non-barbed top strand to protect gliders in flight.</p>	Increase the richness and average % cover of native perennial grasses at each habitat quality assessment site based on the results of baseline and subsequent monitoring events	<p>Habitat quality assessments will be undertaken in accordance with <i>Section 15</i>.</p> <p>These will include assessment of percentage cover of native perennial grasses</p>	<p>Detection of stock grazing outside of the dry season, or during the exclusion period.</p> <p>Decrease in the richness and average ground layer cover at one or more habitat quality assessment sites based on the results of baseline and subsequent monitoring events.</p>	<p>Upon being notified or becoming aware of prohibited stock grazing in the offset area, the Land Manager is to remove the stock from the area (if present) and assess the adequacy of fencing within 10 days. The Land Manager is to undertake fence maintenance and repairs to resecure the offset area within 10 days.</p>	Landholder (or suitable qualified person appointed by the Landholder)
Introduction, establishment and spread of non-native weeds including restricted invasive plants listed under the Biosecurity Act 2014 (Qld)	Manage restricted invasive plant species to reduce degradation of MNES habitat	<p>The primary weed control method for exotic grasses will be grazing by cattle and then maintaining dry matter yields and overall groundcover, which will be undertaken during the dry season (that is, from April to end of October each year).</p> <p><i>Parkinsonia</i> will require foliar spraying or cut stump methods initially.</p> <p>"Cool burns" (prescribed low-intensity ecological burns) can be used to control weed infestations and promote native species growth. Burns must be undertaken in accordance with local fire permits and restrictions.</p>	Weed cover must not exceed 10% cover of the offset area by year 20. No new restricted invasive plants listed under the <i>Biosecurity Act 2014</i> (Qld) are identified at any monitoring site (based on subsequent monitoring events).	<p>Monitoring of this management action will be undertaken by the Landholder or suitable qualified person appointed by the Landholder at least four times annually.</p> <p>Weed cover is to be monitored by the same methodology and at the same time as the ground cover measurements.</p> <p>Quarterly inspections will observe and record the presence of weeds and success of previously applied weed control measures. The inspection will include before and after photos of the weed control area.</p> <p>Quarterly inspections will be conducted by the Landholder or suitable qualified person appointed by</p>	<p>Pest plants dominate isolated area and or occur in an area greater than 10% of the offset area.</p> <p>A new declared pest weed species is identified at one or more monitoring sites, or opportunistically during any site inspection or other monitoring.</p>	<p>Step 1: Investigate cause of trigger</p> <p>Step 2: Implementation of corrective action(s)</p> <p>Upon being notified or becoming aware of pest plants dominating isolated areas and or occupying greater than 10% of the offset area, the Land Manager is to implement pest control measures within one month. These measures may include, and are not limited to:</p> <ul style="list-style-type: none"> foliar spraying basal bark spraying stem injection cut stump cut and swab stem scraper wick applicators. 	Landholder (or suitable qualified person appointed by the Landholder)

³ The Regional Ecosystem Description Database {REDD} at www.qld.gov.au describes characteristic species for each regional ecosystem.

Environmental aspect	Management objective	Management actions	Performance criteria	Monitoring	Trigger for adaptive management and corrective action(s)	Corrective offset management actions	Responsible Person
		Weed control will be undertaken as early as practicable within the natural regeneration process throughout the offset areas and then periodically as required to treat the weeds at the optimum time in their life cycles to control and minimise the spread of the existing weed species. Particular attention should be paid to infestations of Buffel grass.		the Landholder to record the ground cover in the offset area.			
Habitat loss due to construction and operation of a haul road	Avoid Ornamental snake habitat and Poplar box woodland degradation from indirect impacts associated with proposed haul road.	<p>Prior to the construction of the haul road:</p> <ol style="list-style-type: none"> 1. Install “no go” barrier fencing along the boundary between offset areas and haul road easement to ensure no inadvertent access and impact from construction vehicles. 2. Install sediment erosion barriers in areas of potential water flow between the offsets areas and haul road easement to trap sediment. 	No impacts or loss of habitat in offset area from road construction activities	Inspection of fencing and erosion control measures monthly during construction and yearly once construction is completed.	Signs of road related impacts. Fencing or erosion control measures in poor condition.	<ul style="list-style-type: none"> • Replace fencing and erosion control measures. • Liaise with haul road construction management to ensure they are aware of “no go areas”. • If impacts related to road construction have not naturally remediated within six months of completion of implementation of the control measures, the land manager is to undertake and complete all works required to remediate those impacts. 	Landholder and Grosvenor Environmental Superintendent
<p>Increased population of feral animals in the offset area.</p> <p>Wild cat, pig and dog populations are prevalent and highly transient, and therefore the scale of impact is potentially large. Major damage to the environment occurs when large numbers of animals congregate in the area.</p> <p>Can toads can pose a particular threat to Ornamental snake and native frog densities</p>	Minimise the introduction of pest animals and control of existing populations of pest animals (wild dogs, pigs, feral cats, foxes and cane toads) within the offset areas in accordance with the <i>Biosecurity Act 2014</i> (Qld).	<p>Implement control actions for pest animals.</p> <p>Prevention and removal of any cane toad concentrations should be a priority at the commencement of the wet season.</p> <p>Participate fully in, and cooperate with, any and all regional pest control programs, unless those would otherwise contravene a part of this OMP.</p>	<p>Detection of twelve or more wild pigs or dogs during any inspection.</p> <p>Detection of any cane toads particularly concentrations of juvenile toads at the commencement of the wet season.</p>	Undertake monitoring for pest animals.	<p>Any observed or suspected apparent substantial decline in squatter pigeon abundance detected during periodic full bio-condition assessments, or during quarterly site inspections (including site meander survey).</p> <p>Any observed evidence of feral animal increases above the baseline established in Year 1 or notable evidence of severe feral animal damage.</p>	<ul style="list-style-type: none"> • Upon being notified or becoming aware of pest animal populations exceeding the threshold, the Land Manager is to implement all necessary or appropriate control measures needed to reduce pest animal populations to below trigger thresholds. The land manager is to have completed implementation of all necessary or appropriate pest control measures within one month. • The Landholder may approach neighbouring landowners to discuss the increased pest animal presence and an integrated control program may be developed. If an integrated control program is considered appropriate, the land manager will make best endeavours to reach agreement with neighbouring landowners to implement such a program. • If impacts from the pest animal populations have not naturally remediated within six months of completion of implementation of the control measures, the land manager is to undertake and complete all works required to remediate those impacts. 	Landholder (or suitable qualified person appointed by the Landholder)
Degradation of habitat by feral pigs	Minimise degradation of MNES habitat by feral pigs.	Implement control actions for feral pigs. Participate fully in, and cooperate with, any and all regional pest control programs, unless those would otherwise contravene a part of this OMP.	Reduction in feral pig abundance from the first year of management.	Monitoring of this management action will be undertaken by the Landholder or suitable qualified person appointed by the Landholder at least four times annually. Quarterly inspections will involve traversing the offset area with	An increase in feral pig abundance from first year and subsequent monitoring events.		Landholder (or suitable qualified person appointed by the Landholder)

Environmental aspect	Management objective	Management actions	Performance criteria	Monitoring	Trigger for adaptive management and corrective action(s)	Corrective offset management actions	Responsible Person
				streams, low lying areas and vehicle access tracks being noted to record the presence of wallow holes, tracks and visual incidents in the offset area. If detected, these areas will be GPS-recorded and photographed and rechecked at the next quarterly inspection.			
<p>Fire</p> <p>The impact from uncontrolled fire would be a reduction in groundcover, thinning of the canopy and slowing of the offset site achieving the completion criteria.</p> <p>Due to the scale of the mapping products, site specific data is not available. Anecdotal evidence from the landholder indicates that unplanned fire results from fire encroaching from adjoining properties.</p>	No evidence of unplanned and uncontrolled fire in the offset area	<p>Implement fire management in accordance with requirements in this OMP.</p> <p>If one or more bushfires are current in the region and considered potentially threatening to the site, coordinate with all relevant fire authorities to determine the appropriate method of protecting the site (if the relevant fire authorities advise against seeking to protect the site from a specific fire, the approval holder may comply with that advice without needing approval or agreement from DAWE).</p> <p>The landholder will maintain firebreaks along all external boundaries of the offset area.</p> <p>Fire control lines must be inspected quarterly. Maintenance must be undertaken as required and at least once every two years.</p> <p>Please note: if fire damages the offset areas, that constitutes an incident for the purposes of <i>Section 15</i>.</p>	Uncontrolled fire does not occur in the offset area. Planned and controlled ecological burns are restricted to <25% of the offset area in any 12-month period.	<p>Monitoring of this management action will be undertaken by the Landholder or suitable qualified person appointed by the approval holder at least four times annually.</p> <p>Quarterly inspections will monitor and document if there is evidence of wildfire, prohibited burning or Force Majeure events.</p> <p>Quarterly inspections will monitor and document if a prescribed low-intensity ecological burn has occurred, and recorded in the Annual report with the written advice from an ecologist or other suitably qualified person (e.g. Fire Warden)</p> <p>Weed cover is to be monitored by the same methodology and at the same time as the dry matter yield and weed control undertaken post a fire event to ensure weed cover (WoNS) is <10%.</p> <p>Ground cover measurements must be in accordance with Methodology 2B as stated in the <i>Land Manager's Monitoring Guide</i> (Department of Environment and Resource Management, 2010) (DERM)⁴, or any subsequent published version of this document.</p> <p>The approval holder and the land manager will keep themselves informed of any bushfires in the region.</p>	<p>Destruction of, or significant damage to, regrowth or fallen timber.</p> <p>The occurrence of deliberately lit fires.</p>	<p>Step 1: Investigate cause of trigger</p> <ul style="list-style-type: none"> Within one month of detection of the trigger, complete an investigation into the reasons why the fire management measures have resulted in a decrease in habitat quality scores. That investigation must review adherence to the fire management measures and must identify appropriate corrective actions. <p>Step 2: Implementation of corrective action/s</p> <ul style="list-style-type: none"> Corrective action: upon being notified or becoming aware of a prohibited fire in the offset area, the landholder is to reassess and implement new access protocols for any lessees etc., signage and general access within one fortnight. Corrective action: subsequent to any occurrence of fire in the offset area, the Land Manager, Landholder or suitable qualified person appointed by the Landholder will: <ol style="list-style-type: none"> inspect and repair, and widen if necessary, all firebreaks; and reassess fuel load reduction practices; and exclude grazing until the ground cover present at the end of the dry season of that year is at a minimum of 60%. 	Landholder (or suitable qualified person appointed by the Landholder)
Offset fails to achieve the interim performance targets and completion criteria within the anticipated 5-, 10-, 15- and/or 20-year timeframes, respectively	Achieve the interim performance targets and completion scores at years 5, 10, 15 and 20 years, respectively.	All management actions outlined in in this OMP will be implemented to ensure that the interim performance targets and completion criteria are achieved.	The interim performance targets are achieved by year 5, 10 and 15. The completion criteria are achieved by year 20.	<p>Monitoring of the offset area will be undertaken in accordance with <i>Section 15</i>.</p> <p>The results of monitoring events will be compared against the interim performance targets and completion criteria to determine the progress of the offset area and recorded as part of reporting.</p>	<p>Interim performance targets are not achieved by year 5, 10 or 15.</p> <p>Completion criteria are not achieved by year 20.</p>	<p>Step 1: Investigate cause of trigger</p> <ul style="list-style-type: none"> Within one month of detection of the trigger, complete an investigation into the reasons why the interim performance targets or the completion criteria were not achieved within the specified timeframes. This investigation must re-evaluate the suitability of the relevant management measures in the OMP and must identify appropriate corrective actions. <p>Step 2: Implementation of corrective action/s</p> <p>As soon as practicable, and in any case within eight months of detection of the trigger, complete implementation of the corrective actions identified under Step 1. These may include (though are not limited to):</p> <ul style="list-style-type: none"> Increasing the frequency and intensity of pest animal and weed control measures or revising the type of measures to be implemented. 	Grosvenor Environmental Superintendent

⁴ *Land Manager's Monitoring Guide: Ground cover indicator*, Department of Environment and Resource Management, 2010, Queensland Government, Brisbane, available at <http://qldgov.softlinkhosting.com.au/liberty/opac/search.do#>

Environmental aspect	Management objective	Management actions	Performance criteria	Monitoring	Trigger for adaptive management and corrective action(s)	Corrective offset management actions	Responsible Person
						<ul style="list-style-type: none"> Modifying the fire management measures, to better support enhancement of offset values. <p>If the investigation under Step 1 recommends changes to the management regime, then as soon as possible, and in any case within six months of detection of the trigger, implement a revised OMP incorporating those recommended changes.</p>	
Site access	Unauthorised persons, vehicles, and/or stock are prevented from accessing the site, and authorised stock are prevented from incurring during exclusion times	Fences will be maintained to prevent unauthorised access and to control stock presence. Signs will be erected at all entrances and potential access points to the site stating that access to the site is forbidden. All signs and any new planned fences will be erected within six months of the approval of this OMP.	Public access to the offset area is prohibited. Access is restricted to those authorised persons required to undertake actions described in this management plan, including the landholder, and approval holder staff and their contractors and assigns. Fences and signage are erected at all necessary points and kept in good repair throughout the life of the offset.	Monitoring of this management action will be undertaken by the Landholder or suitable qualified person within 3 months of the offset area being legally secured and during quarterly inspections. Quarterly inspections will monitor and document evidence of unauthorised access to the offset area. Quarterly inspections will monitor and document if signage is fit for purpose.	Evidence of unauthorised persons, vehicles, and/or stock is detected at any point. Evidence of stock is detected at any point during exclusion times. Damage is detected to any fence or sign.	For evidence of unauthorised persons, vehicles, and/or stock; or evidence of stock in an exclusion area: Step 1: determine access method <ul style="list-style-type: none"> Upon being notified or becoming aware of prohibited access to the offset area, the Landholder is to reassess access protocols for any lessees etc., signage and general access within one fortnight. Damage to signage will be repaired within one fortnight of noting the damage. If there are areas that have been negatively impacted, the regeneration of those areas will be added to the monitoring sites and monitored during the quarterly inspections. Signage will be repaired and maintained as required by the Land Manager, Landholder or suitable qualified person appointed by the Landholder. 	Landholder (or suitable qualified person appointed by the Landholder)

14. ADDITIONAL MANAGEMENT AND PROTECTION

Securing the offset area will add additional protection for biodiversity values from clearing and provide additional management of weeds and pest animals that are additional to the general requirements for biosecurity.

The offset area is not protected from timber harvesting, the inappropriate use of hot fires or the under-sowing of exotic pasture species by either the VMA or the EPBC Act due to exemptions within the legislative frameworks for the continuing use of the land. Remnant vegetation areas are protected from broadscale clearing under the VMA, however the clearing of regrowth is permitted. Maintaining the existing condition of regulated vegetation and land for habitat values is not addressed under the VMA.

The Biosecurity Act 2014 (Qld) (the **Biosecurity Act**) imposes a 'general biosecurity obligation' on all Queenslanders to manage biosecurity risks that are under their control and that they know about or could reasonably be expected to know about.⁵ In practical terms, this means that:

- If you are a livestock owner, you are expected to stay informed about pests and diseases that could affect or be carried by your animals, as well as weeds and pest animals that could be on your property. You are also expected to manage them appropriately.
- If you are a landowner, you are expected to stay informed about the weeds and pest animals (such as wild dogs) that could be on your property. You are also expected to manage them appropriately.

The Biosecurity Act assigns the pests identified in the offset areas as Restricted Matters in Categories 3-6 and requires the following management as shown below in Table 11.

Table 11: Biosecurity Act 2014 (Qld) obligations

Category	What is required	Examples
3	Must not distribute, be traded or released into the environment	Most invasive weeds, pest animals, noxious fish
4	Must not move	Certain weeds, pest animals, noxious fish such as feral pigs, feral deer, rabbits, Hudson pear and jumping cholla cactus
5	Must not possess or keep	Rabbits, carp, bunny ears cactus
6	Must not feed (except if undertaking a control program)	Feral deer, wild dogs, rabbits, foxes, noxious fish (tilapia, gambusia)

The obligations in the OMP are additional to these general obligations. For example, there is a requirement to control wild pigs if numbers in excess of 12 are observed in any one property inspection; this is above and beyond the requirements of the Biosecurity Act, as is the reduction of weed species to 10% of the offset area over the life of the management plan.

The Isaac Regional Council identifies the offset areas as Rural in their planning scheme and offers no protection from the current ongoing land use. The council does not have a Biosecurity Plan and only refers to the Biosecurity Act.

⁵ See <https://www.daf.qld.gov.au/business-priorities/biosecurity/policy-legislation-regulation/biosecurity-act-2014/general-biosecurity-obligation>

15. MONITORING AND REPORTING

The monitoring methods (Table 12) will enable comparative changes in vegetation condition against baseline data collected on the offset site, as well as attainment and maintenance of the offset completion criteria. Furthermore, the monitoring will measure changes resulting from the management actions and variability due to climatic conditions. This will inform the nature and frequency of management actions required and if trigger levels are reached, the use of corrective actions to bring the offset back into compliance.

Note that the methodologies listed, and the regional ecosystem benchmarks used in the establishment of the baseline data, must be used consistently throughout the reporting period to enable the comparison of data.

At the completion of each 5 yearly ecological survey, a monitoring report will be published on the Anglo coal website, within 6 months from completing the survey.

Commonwealth threatened species survey guidelines used to inform the requirements of the terrestrial flora and fauna surveys will include:

- Survey guidelines for Australia’s threatened birds (DEWHA 2010a)
- Survey guidelines for Australia’s threatened mammals (SEWPaC 2011c)
- EPBC Act referral guidelines for the vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DoE 2014)
- Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (SEWPaC 2011a)
- SPRAT databases for relevant EPBC Act listed species and communities

Table 12: Monitoring schedule and methodology

Monitoring	Attributes monitored	Timing	Method	Location/s
Surveys undertaken by ecologists every 5 years				
Regular inspections and incidental observations of the offset area	Evidence of: unauthorised clearing or timber harvesting; feral animal and weed incursions; observe and record Dry Matter Yields and particular fire risks.	Quarterly	The Landholder or a suitably qualified person appointed by the Landholder will undertake quarterly inspections of the offset area. Dry Matter Yields are to be assessed as per the Brigalow Belt pasture photo standards https://futurebeef.com.au/knowledge-centre/brigalow-belt-pasture-photo-standards	Across the offset area
Audit of existing weed infestations	Presence and extent of weed and feral animal presence (baseline)	Year 1 (2026)	Field observation and GPS mapping	Across the offset area
Targeted habitat quality assessments of habitat Targeted surveys for koala, greater glider, squatter pigeon and ornamental snake	Nature and quality of habitat attributes for koala and greater glider (i.e. nature and health of Koala food trees, shelter for Koalas, presence of hollows and threats such as dogs). Presence of koalas greater glider, squatter pigeon and ornamental snake in the offset area, including estimated	2031, 2036, 2041 (March – May)	Survey guidelines for Australia’s threatened mammals (DSEWPC 2011), EPBC Act referral guidelines for the vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DoE 2014). Survey guidelines for Australia’s threatened mammals (SEWPaC 2011c)	Across the offset area

Monitoring	Attributes monitored	Timing	Method	Location/s
	numbers and location of sightings and/or signs such as scats.			
Ecological condition and relevant habitat features using biocondition assessments	Recruitment of woody perennial species in EDL	2031, 2036, 2041 (March – May)	<p>Field observations, vegetation assessment as per the <i>BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland Assessment Manual</i> (Eyre et al., 2015b)</p> <p>Data for each of the ecological condition attributes monitored will be collected at fixed survey sites across the offset areas and reported on and presented in a sequential manner (including previous data collected) to quantify change from the baseline condition. This will record the change in each attribute measured and hence the condition of the habitat, thus enabling a statistical comparison to previous years'. Scoring is to be consistent with the <i>Guide to Determining Terrestrial Habitat Quality Version 1.3</i> (Department of Environment and Science, 2020).</p>	Fixed survey sites across the offset areas to be established in Year 1.
	Native plant species richness – trees			
	Native plant species richness – shrubs			
	Native plant species richness - grasses			
	Native plant species richness – forbs			
	Tree canopy height			
	Tree canopy cover			
	Shrub canopy cover			
	Native perennial grass cover			
	Organic litter			
	Large trees			
	Coarse woody debris			
	Non-native plant cover			
	Quality and availability of food and foraging habitat			
Quality and availability of shelter				

Note that the methodologies listed, and the regional ecosystem benchmarks used in the establishment of the baseline data, must be used consistently throughout the reporting period to enable the comparison of data.

The schedule for reporting on the monitoring activities is set out in Table 13.

Table 13: Reporting schedule

Report Details to Commonwealth Government	Reporting period	Submission due date
Submit an Annual Offset Area Management Report detailing: <ul style="list-style-type: none"> • summary of management action implementation • details of any triggers for corrective actions and outcome of implementing of corrective actions • results of quarterly inspections including weed or pest animal incursions, unauthorised clearing, fire incidents. 	Annually to cover the period from 1 June to 30 May	30 June each year beginning in 2026
Submit 5 yearly an Offset Condition Report detailing: <ul style="list-style-type: none"> • survey sites/photo point (including coordinates), • offset condition outcomes, including habitat quality scores, condition of habitat and results of surveys 	Initial Offset Area Report - from the date of approval of this OMP to 30 May 2031 for the first report	30 June 2031 for the first report
	Every 5 years until completion criteria achieved	30 June every 5 years from 2031 until completion criteria achieved

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Appendix A1: Grosvenor Mine MNES Impact Assessment

Appendix A2: Intermediate disturbance area BioCondition survey

Appendix A3: Impact site field derived ecology data

Appendix B1: Offset Assessment Report – Ellensfield ecological surveys

Appendix B2: Ellensfield Additional Offsets Area Ecology Survey Report

Appendix B3: Targeted Ornamental Snake Survey Report Ellensfield Offset Area

Appendix B4: Ellensfield ecological survey locations and habitat areas

Appendix C: Habitat Quality Spreadsheets

Appendix D: Offset Assessment Guide Calculations

See files provided separately