

GROSVENOR MINE

HIGH RISK SPECIES MANAGEMENT PROGRAM

**Environment Department
Anglo Coal
Grosvenor Mine
464 Goonyella Road
Moranbah
QLD 4744**

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LIST OF ABBREVIATIONS

Abbreviation/Acronym	Definition
AusRivAs	Queensland Australian River Assessment System
DEEDI	Queensland Department of Employment, Economic Development and Innovation
DNRM	Queensland Department of Natural Resources and Mines
DotE	Commonwealth Department of the Environment
EA	Environmental Authority
DES	Queensland Department of Environment and Science
EIS	Environmental Impact Statement
EO	Environmental Officer
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act
HVR	High Value Regrowth
LP Act	Queensland Land Protection (Pest and Stock Route Management) Act
ML	Mining Lease
MNM	Moranbah North Mine
NC Act	Queensland Nature Conservation Act
NES	National Environmental Significance
PCSMR	Post-Clearing Species Management Report
RE	Regional Ecosystem
FSC	Fauna Spotter Catcher
SMP	Species Management Program
TOR	Terms of Reference
VM Act	Queensland Vegetation Management Act

1 INTRODUCTION

A Species Management Program (SMP) is required for impacting of animal breeding habitat for fauna species listed as least concern. For species listed as extinct in the wild, endangered, vulnerable, near threatened, special least concern, colonial breeder or least concern under the Nature Conservation Act 1992 (NC Act), an approved High-Risk Species Management Program (HR – SPM) is required for those species.

This HR - SMP describes the proposed 3 yearly clearing activities of the Grosvenor Coal Mine, that has the potential impact on fauna breeding habitat and the proposed impact management and mitigation measures.

1.1 PURPOSE

The purpose of a SMP is to:

- Assess the threats to native animal breeding places resulting from a planned activity.
- Incorporate management actions that will avoid or minimise both the immediate and the long-term impact of removing or altering an animal breeding place.
- Set monitoring and reporting requirements that demonstrate the management actions in the SMP are effectively implemented and produce the intended results.

2. APPLICANT DETAILS

Anglo Coal (Grosvenor) Pty Ltd
Level 11, 201 Charlotte St, Brisbane Qld 4000
ACN: 081 022 344

Person in Charge where approved activity is to be undertaken

Kate Bachmann
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Safety, Health and Environment Manager
Email: kate.bachmann@angloamerican.com

Grosvenor Coal Mine
464 Goonyella Road
Moranbah
QLD 4744

2 PROJECT DESCRIPTION

The proponent for the Grosvenor Coal Mine and this SMP is Anglo Coal (Grosvenor) Pty Ltd (ACN: 081 022 344), a wholly owned subsidiary of Anglo American Met Coal (AAMC). The Grosvenor Coal Mine is licenced under its Environmental Authority to extract up to 10.5 million tonnes per annum of run-of-mine (ROM) coal.

AAMC is the second largest exporter of metallurgical coal in Australia. Its current operations include Moranbah North, Capcoal German Creek and Dawson Coal Mines. AAMC is a wholly owned division 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.

2.1 LOCATION OF IMPACT AREA

The Grosvenor Mining Lease (ML) is located directly to the north of the township of Moranbah. The Grosvenor ML is surrounded by grazing land and industrial facilities to the west. Grazing land surrounds the ML with the Moranbah North Mine and the Isaac Plains open cut mine are located to the north & east of the ML boundary respectively. The Grosvenor Mine surface facilities are located approximately 3 km to the north-west of the nearest Moranbah residence. The Grosvenor ML covers an area of approximately 9,500 ha and is within the Isaac Regional Council area.



Figure 1. Regional location of the Grosvenor mine.

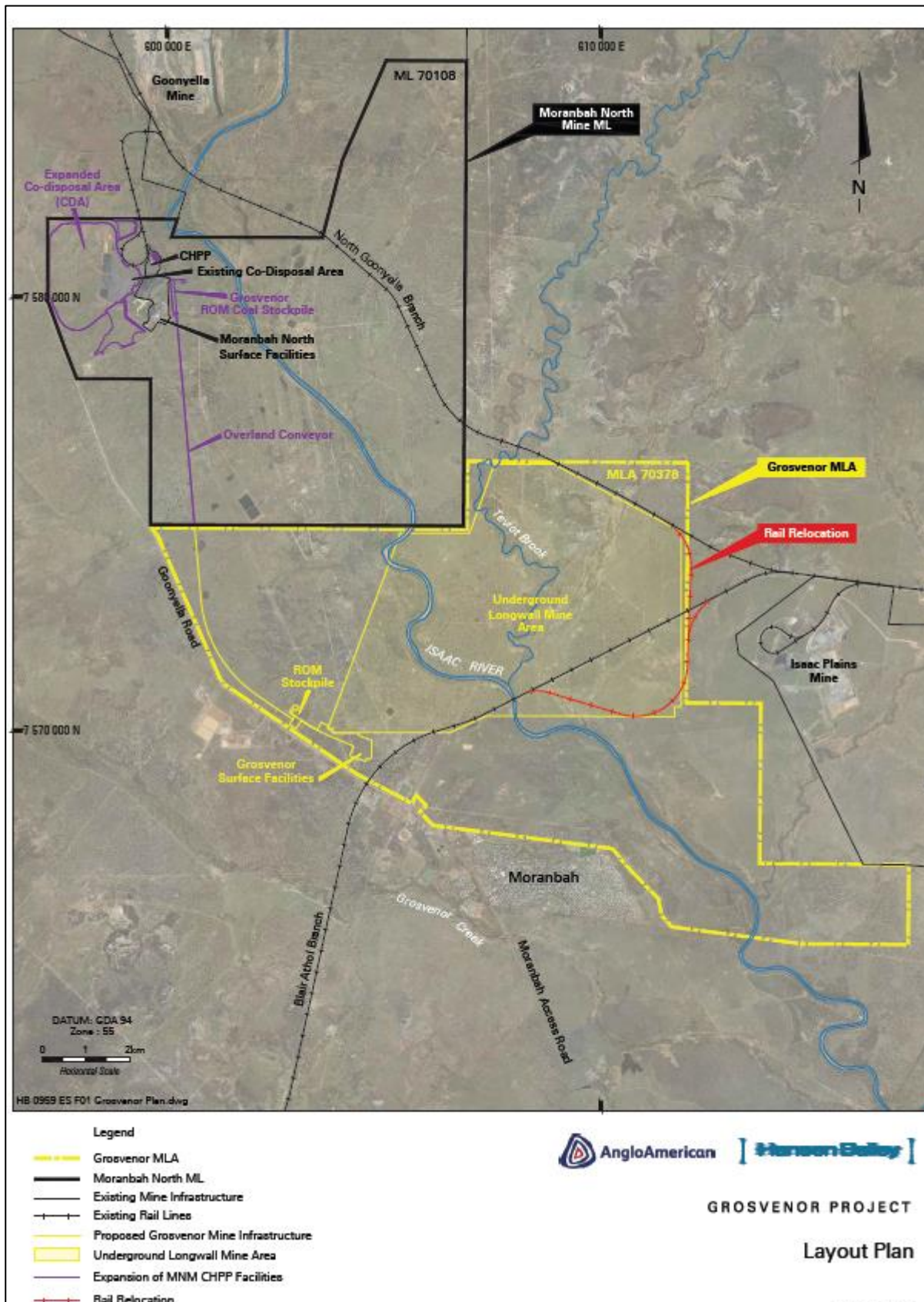


Figure 2: Overview of Grosvenor Mining Lease



Figure 3 – Forecast Impact Area for Duration of Program – Feb 2019 – Feb 2022

2.2 DURATION OF APPROVAL

This HR - SMP is proposed for a duration of three years, being Feb 2019 to Feb 2022.

It is anticipated that this HR - SMP will be used in conjunction with the EHP *SMP for tampering with animal breeding places (low risk of impacts) for least concern animals (excluding special least concern or colonial breeders)* (currently registered to 30 June 2019).

2.3 APPROVED AGENTS

The Approved Agents that are approved to operate under the HR - SMP are:

- Employees:
 - Grosvenor Mine Staff
- Contractors:
 - Earthwork contractors; and
 - Approved Fauna Spotter Catcher (FSC).

3 ASSESSMENT OF IMPACTS TO ANIMAL BREEDING PLACES

Detailed fauna and flora assessments were conducted at Grosvenor via the Grosvenor EIS process. The outcome of these assessments has been used to guide desktop studies, field assessments and existing management practices to minimise impacts on fauna and animal breeding places.

3.1.1 Desktop Methodology

A desktop studies was undertaken where Appendix J, Fauna & Flora of the Grosvenor EIS was reviewed.

This ecology assessment provides desktop information including:

- A description and mapping of vegetation communities and habitats directly or indirectly affected by the project (including species composition and condition);
- An assessment of the potential for the study area to contain terrestrial and aquatic flora and fauna species, populations or communities which are of Commonwealth or State conservation significance;
- Assessment of the potential impacts of the project on flora and fauna with specific focus on species, populations or communities which are of Commonwealth or State conservation significance; and
- Formulation of impact mitigation measures to reduce impacts on flora and fauna.

3.1.2 Assessment of Impacts to Animal Breeding Place Survey

Kleinfelder Ecologist have been conducting Fauna Spotter Catcher services at Grosvenor since site construction in 2012. Kleinfelder ecologists have a strong knowledge of the vegetation communities onsite and the animal breeding habitat that these ecosystems possess. Kleinfelder undertook numerous habitat assessments onsite throughout 2018.

In January 2019, Kleinfelder provided Grosvenor Mine an Animal Breeding Place Survey Report that outlines the animal breeding places and habitat features identified at the Grosvenor Mine for the extent of mining.

Please see Appendix A, Assessment of Impacts to Animal Breeding Places.

Please see Appendix B, Kleinfelder Fauna Spotter Catcher Services Report – October 2018, as an example of a pre-clearance survey and post-clearance report.

4 IMPACT MANAGEMENT PLAN

The project has the potential to give rise to impacts on animal breeding places from the following activities:

- Clearing of vegetation for the construction of surface infrastructure;
- Clearing of vegetation for coal seam gas drainage and associated infrastructure;
- Disturbing vegetation as part of the subsidence tension crack rehabilitation program;
- Disturbing vegetation as part of the seismic exploration program; and
- Secondary impacts because of noise, vibration and lighting from operating equipment and infrastructure.

Sections 4.2 describe the impacts of the project on habitat and threatened fauna species.

4.1 NATURE OF IMPACTS ON HABITAT

As illustrated in Figure 3, the planned total vegetation clearing at Grosvenor Mine for the duration of the 3-year term of the program is approx. 260ha.

4.1.1 Surface Infrastructure

The nature of the vegetation clearing at Grosvenor Mine is predominantly linear and narrow in nature, being associated with seam gas drainage, pipelines, powerlines and roads. These are generally no wider than 50-60m. This can be seen on Figure 3. As such, fauna has an excellent opportunity for self-relocation.

Other areas are cleared for drilling actives and these range from 900m² for exploration pad to 1ha for SIS drainage drill pads. Depicted in Figure 3 is the forecast exploration clearance, totalised and shown as a single are per year ~7.2ha per year or 80 pads x 900m²). This is due to the changeable nature of the exploration drilling locations. This is only a totalisation and in unspecific location for the purpose of the plan, as the pads are spread out and are only 900m² in individual size.

4.1.2 Subsidence Tension Crack Rehabilitation

Tension cracks are anticipated to a maximum width of 0.3 m and a depth of up to 3 m. Tension cracks will not cover the full extent of the mining area; rather tension cracks are expected to develop in the area above the chain pillars and could potentially occur in a zone extending approximately 25 m beyond each edge of the chain pillars. The exact location of cracks can only be confirmed through monitoring (most of the area will be unaffected by cracking).

Tension cracking itself will not necessarily impact on vegetation communities. However, based on experience at MNM, tension cracks may readily erode if not rehabilitated. Rehabilitation of cracks is therefore necessary to ensure a productive post-mining land use, to limit the possibility of significant erosion developing along crack lines and to alleviate safety risks to humans and fauna associated with open cracks. Areas disturbed as part of the tension crack rehabilitation program will generally comprise a narrow strip typically up to 2 - 3 m wide and for the length of the crack (up to 50 m).

The tension cracking rehabilitation approach involves monitoring areas potentially subject to tension cracking and repairing any individual cracks that develop. This non-intrusive, targeted method of surface subsidence crack rehabilitation has been proposed to minimise disturbance of vegetation. This approach does not involve any routine clearing of vegetation. Further details of subsidence management are included in the Grosvenor Rehabilitation Management Plan and the Subsidence Management Plan.

4.1.3 Seismic Exploration

The disturbance for seismic surveys will comprise the establishment of 4 m wide seismic (shot) lines on a parallel grid. The distance between shot lines will vary depending on the depth to coal. Receiver lines, approximately 3m wide, will also be established, 45 m apart at 30° to the survey grid using a slasher and/or mulcher. Brigalow areas, where practicable, will be avoided when laying out shot lines and receiver lines during the seismic survey. In areas which cannot be avoided, the feasibility of hand clearing during the deployment of equipment will be investigated to minimise clearing. Clearing techniques which minimise the area cleared within the Isaac River riparian corridor (i.e. between the high banks of the channel) will be employed. These include hand clearing, where feasible.

The amount of disturbance to vegetation communities from seismic survey activities is dependent on the depth of the coal resource below that area. The Grosvenor Coal Mine resource slopes downward from the western boundary toward the east of the ML. Therefore, seismic lines in the east of the ML will be relatively widely spaced leading to disturbance of between 8% and 10% of vegetation in these communities. It is not anticipated that the proposed clearing of shot and receiver lines in the eastern vegetation communities will result in significant impacts due to the naturally open structure of the predominantly eucalypt woodlands and the proposed techniques to minimise disturbance.

Communities in the western area of the ML, which includes the Isaac River, where the closest spacing of shot lines (45 m) will occur, some disturbance of the remnant vegetation may occur. The impacts of the seismic survey on the non-Endangered eucalypt woodland vegetation types present is not anticipated to be significant, particularly given the open nature of the canopy within these communities. Brigalow communities in the western area have a slightly separated or closed canopy and so some minimal disturbance to this community will occur. However, Brigalow areas will be avoided where possible and hand clearing will be used where feasible in these areas. This will serve to reduce the potential impact on Brigalow.

While the disturbance of vegetation is possible, any potential increase is considered likely to be very small in magnitude and temporary due to the narrow width of the disturbance, the retention of canopy trees wherever possible and weed management to facilitate successful regeneration. The proposed disturbance is considered unlikely to present any significant medium or long-term barriers to the movement of fauna within the ML even to less mobile species such as small ground dwelling mammals and reptiles.

4.2 IMPACTS ON THREATENED FAUNA SPECIES

4.2.1 Noise, Vibration and Lighting

Noise, vibration and lighting emissions are not expected to give rise to significant impacts on fauna and any impact would be limited to the immediate vicinity of the infrastructure.

4.2.2 Squatter Pigeon (*Geophaps scripta scripta*) - Listed as Vulnerable (Nature Conservation Act 1992 (Queensland): September 2017 list)

The Squatter Pigeon (Southern) is a medium sized pigeon found throughout the central and southern regions of Queensland. It is aptly named because of its nature to remain still (squat) in the presence of danger. The southern subspecies can be distinguished by the blue grey colouration around its eyes, the bird is also slightly larger than its northern relative. The Squatter Pigeon utilises open grasslands and woodland areas for habitat and foraging. Breeding habitat occurs on stony rises occurring on sandy or gravelly soils, within 1 km of a suitable, permanent waterbody (Squatter Pigeon Workshop 2011).

The population of the Squatter Pigeon throughout Queensland has been in decline since the 19th century although Garnett and Crowley (2000) concluded that this decline has slowed in recent times. The subspecies remains common north of the Carnarvon Ranges in Central Queensland and is distributed as a single, continuous (i.e. inter-breeding) sub-population (Squatter Pigeon Workshop 2011). The Pidgeon has been observed on the Grosvenor ML on several occasions.

The assessment has anticipated that, given the delivery of mitigation measures described in this SMP, the disturbance of woodland vegetation as part of the Grosvenor Coal Mine will not lead to a significant adverse impact on the species, particularly given the ability of the Squatter Pigeon to make use of non-remnant grassland. Given the ability of the squatter pigeon to utilise a variety of vegetation communities it is not expected that impacts from the construction of surface infrastructure for the operation of the Grosvenor Mine will impact the lifecycle of the pigeon. It is anticipated that this SMP and its associated management actions will remain applicable to the management of the squatter pigeon.

4.2.3 Greater Glider (*Petauroides Volans*) - Listed as Vulnerable (Nature Conservation Act 1992 (Queensland): September 2017 list)

The Greater Glider is a large nocturnal gliding mammal that can be found throughout eastern Australia. In Queensland two subspecies exist, *P. v. minor* (northern) and *P. v. volans* (southern), they can be differentiated by their size in areas where they may overlap. It has a diet that consists almost exclusively of eucalypt leaves. It is generally found in open forest to open woodland where males establish small territories. Breeding occurs from March through to June, with only one juvenile born per season. Juveniles emerge from the pouch after three to four months where they become back young for approximately the next three months.

Little is known of the population dynamics of the animal, and although their range appears to be stable, it is considered that where populations are present their numbers are likely to remain in decline. On the Grosvenor ML it is likely that populations exist in suitable habitat along the fringes of the Isaac River and Teviot Brook where large remnant trees will provide hollowing for nests.

Where vegetation clearing is necessary in such areas, it is unlikely to create a significant impact to the population considering suitable mitigation measures. Under-grubbing should be conducted a day prior to any habitat trees to allow the gliders to relocate overnight. Fauna spotter catchers should thoroughly assess felled habitat features and if the feature cannot be thoroughly inspected, then the

habitat tree should remain on the ground in-situ to allow any remaining animals to relocate the following night.

4.2.4 Short-beaked Echidna (*Tachyglossus aculeatus*) Listed as Special Least Concern (Nature Conservation Act 1992 (Queensland): September 2017 list)

The Short-beaked Echidna is an egg laying mammal (monotreme) found throughout Australia. It is an iconic animal and readily recognised by its thick covering of spines which it utilises when threatened. It has no habitat requirements and can be found from alpine regions to arid desert areas. Termites and ants make up the diet of the echidna it is most active in early morning and late afternoon and rests during the heat of the day in suitable areas including rock crevices or piles of wooded debris. Females construct a short burrow to breed with mating occurring in July and August. A single egg is produced, and the juvenile is raised in the pouch for an undetermined time.

Echidnas are solitary aside from the mating season and have overlapping home ranges. They are common throughout the country and aren't considered to be threatened by the Commonwealth Government. Echidnas have been observed throughout the Grosvenor ML and regularly utilise piles of wooded debris and hollow logs on the ground to rest during the midday and certain parts of the night.

The clearing of vegetation will not impact the lifecycle, or the population of the Echidna given appropriate inspection of known habitat features, and the careful dismantling of wood piles.

4.3 IMPACT MANAGEMENT STRATEGIES

4.3.1 General Site Management

Protection of threatened species habitat values within the Grosvenor ML will be facilitated through several management actions. In addition to the actions contained within this SMP, all works on the site will comply with the following:

- **Avoidance**
As priority, disturbance of vegetation is avoided where possible. Applications for vegetation clearing are reviewed during the design stage and are required to submit plans via the site Permit to Disturb (PTD) procedure, below.
 - **Minimisation**
As per the PTD process, the Grosvenor Mine Environmental Dept. has implemented, and risk assessed with Operational Departments the reduction in allowable disturbance for specific activities such as Exploration pads and Seam Gas infrastructure areas have been minimised to an allowable size to conduct work safely, though minimising disturbance of vegetation.
 - **Permit to Disturb (PTD) procedure**
The PD protocol describes management actions to be followed prior to any planned disturbances. Prior to commencement of land disturbance, the PTD application form must be completed and approved by site environmental staff, including consideration of environmental factors such as the size and location of vegetation clearing, the triggering of assessments for animal breeding places and habitat by qualified Fauna Spotter Catcher etc. Any clearing of vegetation under the PTD procedure will comply with the management actions and procedures set out in this SMP.
 - **Rehabilitation Management Plan (RMP)**
-

The RMP describes rehabilitation of the Grosvenor ML, including rehabilitation of areas cleared for operation requirements, infrastructure, subsidence, seismic survey areas and eventually mine closure and decommissioning. The RMP also details the proposed revegetation of disturbed areas with native vegetation species. A rehabilitation monitoring program is also conducted to monitor the successful regeneration and revegetation of areas disturbed by mining activities.

- **Weed management measures**
The weed management measures for the Grosvenor ML include management actions to control the spread of weeds, particularly in relation to areas disturbed by subsidence effects and seismic survey works.
- **Bushfire Management Plan (BMP)**
The BMP details management actions to ensure activities on the site are managed to minimise the risk of outbreak of bushfire, and associated impacts on animal habitat.
- **Sediment and Erosion Management Plan (SEMP):**
The SEMP details management actions to minimise the effects of erosion. The preparation of this plan is an EA condition and a copy has been submitted to DES.

4.3.2 Vegetation Clearing Management

The following management actions relate to those species addressed in this SMP as set out in Section 4.2.

Pre-Clearing

Clearing will be required during the operations phase of the mine, including as part of the tension crack rehabilitation, seismic survey programs and water and gas drainage. Prior to the commencement of such clearing works, the Environmental Officer (EO) will survey the proposed area to be cleared and determine whether a FSC is required. A FSC should be acquired if:

- Any potential fauna breeding/roosting habitat trees are located within the clearance area;
- Any active roosts/nests are located within the clearance area; or
- The clearance is within an area previously known to contain the above (i.e. refer to PCSMR).

The FSC will be appropriately qualified and experienced in wildlife management and will hold the necessary Rehabilitation Permit to allow the removal of fauna from the area to be cleared, if necessary.

Clearing works will be undertaken in accordance with the Permit to Disturb process and Rehabilitation Management Plan. This plan incorporates measures to minimise the impact on vegetation and encourage regeneration such as:

- Ripping or ploughing minor tension cracks using a small dozer, grader or tractor. These areas will be allowed to regenerate naturally through inherent seed resources, vegetation propagation from rootstock and recruitment from adjoining undisturbed edges.
 - Stripping large tension cracks of topsoil, excavating the cracks and sealing the cracks with bentonite, where necessary. Topsoil should then be respreads over the area and the site will be allowed to regenerate naturally from the seed bank in the topsoil and from rootstock and recruitment from adjacent vegetation. Areas disturbed as part of the crack rehabilitation
-

program will generally comprise a narrow strip typically up to 2-3 m wide and for the length of the crack (up to 50 m).

- For seismic lines, grassy areas will be cut with a slasher, and shrubby or woodland areas cleared with a mulcher including mulching of shrubs and small trees. Slashers and mulchers are proposed to be used specifically for facilitating rapid recovery of vegetation due to the retention of rootstock.

Clearing of large trees as part of the tension crack rehabilitation program and seismic survey work will be avoided where possible.

Prior to the commencement of clearing activities, the FSC will undertake pre-clearing surveys of the areas proposed to be cleared. The pre-clearing surveys will involve:

- 1 Identification, mapping and marking of potential fauna breeding/roosting habitat trees;
- 2 Identification and mapping of tree hollows inhabited, or potentially inhabited by threatened species;
- 3 Identification and mapping of active roosts and nests;
- 4 Identification and mapping of suitable habitat outside of the disturbance footprint for relocation of fauna and proposed actions for replacement of hollows (such as erecting stags and natural hollows or providing artificial habitat); and
- 5 Identification and mapping of threatened species present within the disturbance footprint, including determination of the distribution and density of affected species.

Please refer to Appendix B Kleinfelder Fauna Spotter Catcher Services Report – October 2018, as an example of a pre-clearance survey and post-clearance report.

The above information will be recorded as part of the Post-Clearing Species Management Report (PCSMR) to be prepared as detailed in Section 7.

Approximately one week prior to commencement of clearing activities, the SC will begin relocating fauna. This will be done to reduce the overall risk of injury or fatality to species during clearing activities and will focus on active nests and roosts within the disturbance footprint.

Fauna relocation will involve:

- Encouraging fauna to leave the disturbance footprint;
- Translocation of threatened fauna present to identified suitable habitat outside of the disturbance footprint;
- Relocation of active nests/roosts and any dependent young/eggs to identified suitable habitat outside of the disturbance footprint;
- The FSC will encourage fauna to leave by reasonable means or capture and relocate it prior to clearing;
- The FSC will physically relocate active nests/roosts and any dependent young/eggs to identified suitable habitat outside of the disturbance footprint.

Clearing

Where habitat and animal breeding places are identified, the FSC will be present to ensure that marked habitat trees/features are felled appropriately. Generally, non-habitat trees will be felled first, with habitat trees left initially and then felled under direct supervision of the FSC. The FSC will advise operations whether habitat trees need to be left for 24 hours before felling (to enable wildlife to relocate on its own), or whether such trees should be left for 24 hours once felled (for the same reason).

For the felling of marked habitat trees, the following guidelines will be followed:

- The FSC will inspect habitat trees to determine whether hollows are occupied (if unable to determine presence, it will be assumed that the hollow is occupied).
- If occupied, the FSC will attempt to encourage the fauna to leave by reasonable means (including shaking the tree with the blade of a dozer) or capture and physically relocate the fauna to identified suitable habitat outside of the disturbance footprint.
- If the fauna is unable to be relocated, habitat trees should be felled gently or lowered to the ground by skilled plant operators, ensuring the trees do not land on the inhabited hollow. Placement of other felled trees around habitat trees can be used to minimise the impact of felling.
- Once felled, habitat trees will be left for a short period of time on the ground to give the fauna an opportunity to escape.
- If the hollow is still occupied, any fauna found should be captured and relocated to suitable habitat outside of the disturbance footprint and released after nightfall to minimise the risk of predation by diurnal predators. Any animals that are inadvertently injured will be taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanized.
- If necessary and at the discretion of the FSC, occupied habitat trees and hollows may be plugged with a suitable material and relocated to an appropriate area outside of the disturbance footprint. The hollow will then be unplugged to allow fauna to escape.

The Grosvenor Mine & the FSC has identify appropriate wildlife carer groups or veterinarians in the local area who have the capacity and ability to treat injured animals should the need arise during clearing activities.

4.3.3 Staff Training

As part of the induction process for the clearing works, all staff and contactors will be advised of the protocol for clearing of vegetation in accordance with this SMP and the Permit to Disturb process. The contractor overseeing earthworks works will ensure that all sub-contractors are aware of their responsibilities under this SMP.

4.4 PERFORMANCE CRITERIA

The key performance criteria against which the success of the SMP will be assessed are as follows:

- Site EO inspection of proposed operational clearing areas prior to clearing and determination of requirement for FSC;
 - No clearing of habitat trees or features without FSC supervision (where required); and
 - Successful implementation of the procedures outlined in this SMP.
-

4.5 RESPONSIBILITIES

The following table identifies the parties responsible for ensuring the above management actions are carried out in accordance with this SMP.

Table 2
Management Action Responsibilities

Team Member	Responsibility
All employees and contractors	Follow the protocols outlined in this SMP
SHE Manager	Ensure adequate resources are allocated to enable the training of staff
Environmental Officer	- Follow Permit to Disturb protocol - Maintain wildlife register - Implement improvement measures as required - Conduct pre-clearing surveys for operational clearing activities and determine if SC is required - Annual monitoring of tension crack rehabilitation and seismic survey areas to confirm regeneration - Identification of areas where additional management measures are necessary and undertaking additional management measures as required - Review and document all FSC reports
Fauna Spotter Catcher	- Undertake pre-clearing surveys as required - Supervise clearing works as required - Provide details of clearing activities for input into wildlife register - Advise EO of any additional management measures required during subsequent clearing works - Submit fauna survey and clearing works reports as per the requirements of their Damage Mitigation & Rehabilitation Permit

4.6 RISKS AND CONTINGENCY PLANNING

The risks to successful species management on the project site are:

- Clearing of vegetation prior to pre-clearing translocation surveys; and
- Uncontrolled felling of habitat trees.

Grosvenor will engage suitably qualified Fauna Spotter Catchers at all times for all disturbances to breeding places. Grosvenor utilises a pre-clearance procedure externally developed where vegetation assessment is conducted by Grosvenor Mine, and undertake audits as necessary on clearing operations and contractors. Grosvenor Mine utilise the following organisations for animal welfare, and advice as necessary.

- Moranbah Veterinary Clinic
- Fauna Rescue Whitsunday
- Walkerston Veterinarians

Any additional species discovered and not included in the SMP will result in the SMP being revised and those species included. All fatalities will be reviewed to ensure best practise and make sure mitigation measures are being fully implemented, additional measures as advised by the Fauna Spotter Catchers will be considered where relevant.

5 MONITORING AND REPORTING

5.3 POST CLEARING SPECIES MANAGEMENT REPORT

The FSC will be responsible for preparing a Post Clearing Species Management Report (PCSMR). The PCSMR will be maintained by the EO, kept on site always and be made available to EHP upon request. The report will be submitted quarterly to the Regulator by the FSC as per the requirements of the FSC Rehabilitation Permit.

The report should include the following information:

- Identification, mapping and marking of potential fauna breeding/roosting habitat trees within the disturbance footprint;
- Identification and mapping of tree hollows inhabited, or potentially inhabited by threatened species within the disturbance footprint;
- Identification and mapping of active roosts and nests within the disturbance footprint;
- Identification and mapping of suitable habitat outside of the disturbance footprint for relocation of fauna or replacement of hollows;
- Identification and mapping of threatened species present within the disturbance footprint, including determination of the distribution and density of affected species;
- Details on any wildlife captures and releases including the location of any fauna relocated outside of the disturbance footprint; and
- Comment on the effectiveness of the species management procedures, and any potential for improvement.

5.4 FAUNA INCIDENT REGISTER (FIR)

During operational clearing works, the EO will be responsible for maintaining the FIR.

The FIR must contain the following information:

- Coordinates of incident;
 - Clearing method and safeguards in place at the time;
 - Qualifications of the person undertaking spotter-catcher activities including permit number; and
 - Mitigation measures that will be put in place to try and ensure similar incidents do not occur.
-

6 REFERENCES

- DERM (2011) DERM Species Management Program Guidelines
DEHP (2016) Information Sheet, Species Management Program NCS/2016/2519 Version 1.04
Ecotone (2011) Grosvenor Project Flora and Fauna Assessment
Marsden, S (2012) Personal comms on 24th April with Craig Brown re: presence of Rough Collared Frog in Moranbah region
Playford, T (2012) Personal comms on 26th April with Craig Brown re: clearing management actions and role of the spotter catcher

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Appendix A – Assessment of Impacts to Animal Breeding Places



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MACKAY OFFICE

25 January 2019
Ref: NCA19R89287

Anglo Coal (Grosvenor Management) Pty Ltd
Goonyella Road
Moranbah Qld 4744

Attention: Kate Bachmann

Delivered by email: kate.bachmann@angloamerican.com

Subject: Assessment of impacts to animal breeding places

Kleinfelder understands that Anglo American (Grosvenor) is currently renewing their Species Management Program (SMP) and requires information pertaining to animal breeding habitat within the Mining Lease (ML) as part of the SMP application process.

Kleinfelder have been involved in fauna habitat assessments and Fauna Spotter Catcher (FSC) services on Grosvenor Mine since construction first began in 2012. Kleinfelder ecologists have a strong knowledge of the vegetation communities onsite and the animal breeding habitat that these ecosystems possess. Kleinfelder undertook numerous habitat assessments onsite in 2018.

Vegetation communities within the ML are generally associated to the grassy woodland broad vegetation group. Hollow bearing trees are key habitat features of these woodlands. Ecosystems are commonly characterised by species with significant hollowing capabilities such as *Eucalyptus populnea* and *E. crebra*. on alluvial soils in association with the Isaac River, *E. tereticornis*, *E. tessellaris*, and *E. cambageana* regularly exhibit large hollowing features.

Table 1 identifies the breeding habitat features occurring on the ML and the fauna groups confirmed to be utilising such features.

Table 1: Confirmed habitat features currently present within the Grosvenor ML

Habitat feature	Fauna group known to utilise such features
Hollow bearing trees	• Arboreal mammals; • Microbats; • Birds that utilise hollow for nesting (owls, lorikeets etc); • Reptiles.
Avian nests (arboreal and terrestrial including bowers)	• Birds.



Woodpiles	• Reptiles; • Terrestrial mammals.
Hollow logs (fallen)	• Reptiles; • Terrestrial mammals.
Dirt mounds and banks.	• Reptiles; • Birds; • Terrestrial mammals.
Gilgai	• Reptiles; • Amphibians.

Through observations and previous surveys conducted within the ML, we can confirm the following listed species are present onsite and will be likely to be utilising such habitat features for breeding purposes. These species would require the need for a high risk SMP that included specific mitigation measures when tampering with suitable breeding habitat.

- *Geophaps scripta scripta* (Southern Squatter Pigeon);
- *Petauroides volans* (Greater Glider);
- *Tachyglossus aculeatus* (Short-beaked Echidna).



Plate 1: Grassy woodland with gravelly soils within the vicinity of the Isaac River. This habitat can be considered as potential breeding for the Southern Squatter Pigeon. Hollow logs also provide suitable animal breeding habitat.

Habitat assessments on the Grosvenor ML were conducted by Dallas Milburn, or by suitably qualified ecologists reporting directly to Dallas. Surveys were conducted throughout 2018 and effectively capture all potential breeding cycles including nesting birds. Dallas has over ten years of ecological experience in Queensland and six years' experience in the ecology of Grosvenor Mine. Dallas holds a nationally recognised (RTO) accreditation in Fauna Spotter



Catcher services. Further information can be found in **Appendix 2**. Kleinfelder operate under Rehabilitation Permit WA0005492.

Should you require any further information regarding fauna habitat on the Grosvenor ML please don't hesitate to contact me.

Sincerely,

Kleinfelder Australia Pty Ltd

A handwritten signature in black ink, appearing to read 'Dallas Milburn', with a stylized flourish at the end.

Dallas Milburn

Regional Manager (Qld) | Senior Ecologist

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Appendix B – Kleinfelder Fauna Spotter Catcher Services Report – October 2018



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MACKAY OFFICE

12 November 2018

Ref: NCA18L86486

Anglo Coal Pty Ltd
Grosvenor Mine
Goonyella Road
Moranbah Qld 4744

Attention: Katrina Gasnier

Email: katrina.gasnier@angloamerican.com

Subject: Fauna Spotter Catcher Services – Grosvenor Mine

A Kleinfelder Ecologist undertook a pre-clearing assessment and Fauna Spotter Catcher (FSC) services within the Grosvenor Mining Lease (ML) between 7 September and 25 October 2018. A summary of the work undertaken is provided below.

LW102 - PRE-CLEARING ASSESSMENT AND FSC SERVICES

Works consisted of a pre-clearing assessment and subsequent FSC services at LW102. A total of 74 hollow-bearing trees, 22 stag trees, 11 hollow logs, five woodpiles and one avian nest were identified in the assessment. All habitat features were felled and carefully relocated in the presence of a FSC. The location of habitat features located at LW102 are presented in **Figure 1**.

Two fauna species interactions were recorded during clearing works (**Table 1**). This includes the relocation of four *Petauroides volans* (Greater Glider). One adult and one juvenile (back young) were removed from a felled hollow bearing tree and successfully relocated to suitable habitat within the vicinity (**Plate 1**). Two adolescent Greater Gliders were removed from a separate hollow and subsequently relocated.

Table 1: Fauna caught/released/euthanized/observed during clearing activities

Species	Number	Capture coordinates	Release coordinates	Comment
<i>Cacatua sulphurea</i>	2	-21.94447 148.025913	-	Crushed by falling tree
<i>Petauroides volans</i>	4	-21.944326 148.025711	-21.942042 148.026433	Successfully relocated



Plate 1: Adult Greater Glider with back young

While undertaking FSC works within LW102, *Opuntia stricta* (Prickly Pear) was observed. *Opuntia stricta* is classified as a Restricted Matter (Category 3) under the *Biosecurity Act 2014*, locations are provided in **Table 2**.

Table 2: Restricted Matter locations

Species	Observed coordinates	Growth stage/Density
Prickly Pear	-21.939416 148.039156	Immature, low density
	-21.946452 148.024606	Immature, low density
	-21.951292 148.024313	Immature, low density
	-21.950935 148.02418	Immature, low density



HELIPAD - PRE-CLEARING ASSESSMENT

A pre-clearing assessment was undertaken at the proposed location of a helipad adjacent to the Grosvenor administration area. Eight hollow-bearing trees, six hollow logs, two woodpiles, and one stag tree were identified in the assessment. The location of habitat features located at the helipad are presented in **Figure 2**.

DISCUSSION

A desktop assessment of vegetation structure and diversity, in addition to field observations of the Grosvenor Mining Lease (ML), confirm that the vegetation located within LW102 is largely characterised by *Eucalyptus populnea* (Poplar Box) and *Corymbia tessellaris* (Moreton Bay Ash). The midstorey and understorey contained sparse regrowth with a variety of native and introduced grasses. Mature Poplar Box and Moreton Bay Ash are known for their hollowing characteristics, providing suitable habitat for numerous arboreal species including the Greater Glider.

The Greater Glider interaction is an important ecological observation on the ML. Greater Gliders are classified as Vulnerable under the *Nature Conservation Act 1992* and the *Environment Protection and Biodiversity Conservation Act 1999*. Any future clearing works should consider this species and put in appropriate mitigation measures. Gliders utilise a number of nests within their home range (1 – 2 dens per hectare, home range 1 – 4ha) and will likely remain within the locality. Mitigation measures include:

- Avoid clearing areas of high habitat quality during breeding and the period when young confined to their mothers pouch (March – September);
- Leave habitat trees standing over night to allow self-relocation out of the locality; and
- Maximise soft felling techniques.

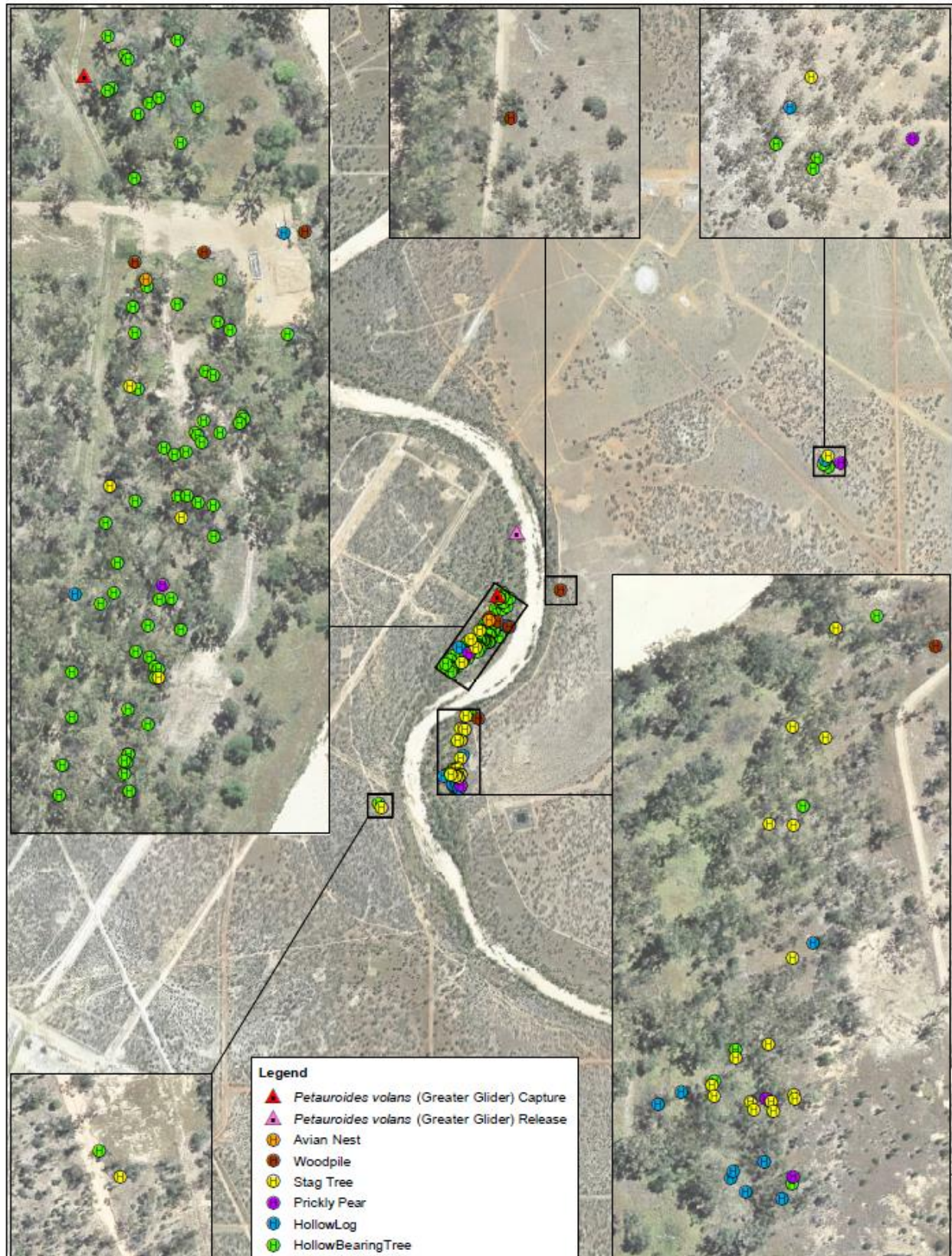
The Greater Glider was not recorded during initial fauna surveys (impact assessments) and any future amendments to the Species Management Program should include this species.

Should any further information regarding the pre-clearance assessment or FSC works be required, please do not hesitate to contact me.

Sincerely,

Kleinfelder Australia Pty Ltd

Matthew Brown BSc (Hons) BEnvSc
Ecologist
0487281839
mbrown@kleinfelder.com



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KLEINFELDER Right People. Right Solutions. www.kleinfelder.com	DATA SOURCE: Anglo American - 2018 Imagery: DigitalGlobe - 2016		

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Metres 0 5 10 20 30 40 50 KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com	PROJECT REFERENCE: 20183381 DATE DRAWN: 6/11/2018 10:49 Version 2 DRAWN BY: gloyce DATA SOURCE: Anglo American - 2016 Imagery: DigitalGlobe - 2016	October 2018 - Helipad Spotter Catcher Observations Anglo American Metallurgical Ltd. Grosvenor Mine Project Pre-clearance Spot Catch Grosvenor Coal Mine	FIGURE: 2
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