



Edna May Operations Compliance Report

EPBC 2018/8213

24 January 2020 to 23 January 2021

Version 1

Edna May Operations

22 Wolfram St Westonia WA 6423

**Compliance Report Edna May Operations (EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

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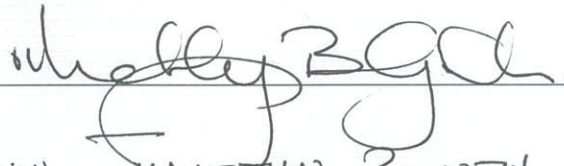
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Declaration of accuracy

In making this declaration, I am aware that sections 490 and 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed



Full name (please print)

TIMOTHY BLITT

Position (please print)

GENERAL MANAGER

Organisation

EDNA MAY OPERATIONS PTY LTD

Date

8/04/2021



TABLE OF CONTENTS

1.	APPROVED ACTION	5
1.1	DETAILS	5
1.2	THE ACTION	5
1.3	LOCATION OF PROJECT	5
1.4	REPORT PERIOD.....	5
2.	BACKGROUND INFORMATION.....	5
3.	CLEARING	7
3.1	EUCALYPT WOODLAND.....	7
3.2	CARNABY’S BLACK COCKATOO FORAGING HABITAT	7
4.	VEGETATION CORRIDOR.....	12
5.	REHABILITATION AREAS.....	12
6.	REHABILITATION OFFSET	15
6.1	FARMLAND REVEGETATION	15
6.1.1	Lot 1578.....	15
6.1.2	Lot 161 and 162.....	16
6.1.3	Monitoring	20
6.2	WESTONIA TOWN COMMON	23
7.	WEED MANAGEMENT.....	23
8.	FAUNA MANAGEMENT	25
9.	RECORD KEEPING.....	25
10.	INSPECTIONS AND AUDITS.....	26
10.1	INTERNAL.....	26
10.2	EXTERNAL.....	26
11.	COMPLIANCE.....	27
11.1	COMPLIANCE TABLE.....	27
11.2	NON COMPLIANCES.....	33
12.	NEW ENVIRONMENTAL RISKS.....	34
13.	REFERENCES	36
14.	APPENDICES	37



FIGURES

Figure 1: Approved clearing area for the expansion of the Edna May Gold Project – Greenfinch Pit	8
Figure 2: Native Vegetation cleared to develop the Greenfinch Project. Total Area cleared = 11.5ha	9
Figure 3: Approved clearing area of potential Carnaby's Black Cockatoo foraging Habitat (Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community), 9.3ha, and 38 potential breeding trees	10
Figure 4: Carnaby's Black Cockatoo Foraging Habitat (Eucalypt woodland TEC) and Potential Breeding Trees Cleared during the development of Greenfinch project.....	11
Figure 5: Vegetation Corridors	13
Figure 6: Rehabilitation Areas.....	14
Figure 7: Greenfinch farm Paddock 1 (Northern Paddock) after topsoil was placed from the Clearing of the Greenfinch project	16
Figure 8: Seedlings growing at Chatfield's Tree Nursery for Offset Planting, taken 18th February 2020	17
Figure 9: Location of Farmland revegetation offset sites	19
Figure 10: Farmland Rehabilitation and Vegetation Monitoring Transect Locations (Botanica 2021)	22
Figure 11: Weed Management completed during the 2020-2021 reporting period.	24
Figure 12: Proposed Change to Offset Farmland Revegetation area	35

TABLES

Table 1: Seedling order for the 2021 farmland revegetation project	17
Table 2: Seed List for 2021 farmland revegetation project.....	18
Table 3: Completion Criteria for Flora/Vegetation in the farmland revegetation	20
Table 4: Completion Criteria Targets / Performance Indicators for Farmland Revegetation. Calculated from 2017-2020 Analogue data (Botanica 2021).	21

APPENDICES

Appendix A: EPBC Act Proposal Approval Decision and Conditions – EPBC 2018/8213	37
Appendix B: Farmland Rehabilitation & EFA Monitoring at Edna May Gold Mine, March 2021	37



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

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Environment

1. APPROVED ACTION

1.1 DETAILS

EPBC Number	EPBC 2018/8213
Project Name	Edna May Gold Project Expansion – Greenfinch Pit, Western Australia
Approval Holder	Edna May Operations Pty Ltd
ACN/ABN	136 365 001

1.2 THE ACTION

Clearing of vegetation for the expansion of the existing Edna May Gold Project including the establishment of an open pit (the 'Greenfinch pit'), storage of non-reactive waste rock in an expanded North-North West waste rock landform, buttressing of an existing Tailings Storage Facility, development of a noise abandonment bund and construction of a haul road, site drainage works and storage of topsoil approximately 1 km north of Westonia, Western Australia.

The Action commenced on the 24th of January 2020.

1.3 LOCATION OF PROJECT

The Edna May Gold Project is located approximately one kilometre north of the town of Westonia in the Shire of Westonia, Western Australia.

1.4 REPORT PERIOD

Edna May Operations Pty Ltd (EMO) is required to prepare an Annual Compliance Report (ACR) for each 12month period following the data of commencement. The report is to be published on the Ramelius Resources Ltd website within 60 business following the reporting period.

This ACR covers the reporting period 24th January 2020 to the 23rd of January 2021 and is required to be published before the 21st of April 2021.

2. BACKGROUND INFORMATION

Edna May Operations Pty Ltd (EMO), a wholly owned subsidiary of Ramelius Resources Ltd, operates the Edna May Gold Project which is a medium-sized, gold mining operation that consists of a conventional open cut pit, underground, and a carbon-in-leach (CIL) processing plant.

This compliance report is a condition of the approval for the Edna May Gold Project expansion under the EPBC Act. The document seeks to provide a description of activities undertaken during the reporting period and EMO compliance to the conditions of the approval document.

The project approved is for the development of the Greenfinch pit which includes the clearing of up to 16.6 hectares of native vegetation. The project was assessed under the EPBC Act due to the potential threat to EPBC Act-listed species and ecological communities. This included the Carnaby's Black



Cockatoo (Endangered), the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community (Critically endangered) and *Eremophila resinosa* Resinous *Eremophila* (Endangered).

EMO has applied the mitigation hierarchy of controls (avoid, minimise, rehabilitate) to address impacts of the Action on these Threatened Ecological Communities (TEC) and remnant native vegetation.

Avoid

The footprint of the Greenfinch Project was designed to avoid disturbance to current and historic records of Threatened Flora *E. resinosa* (records from 1904 to 2018), the Westonia Common (remnant vegetation/ biological diversity and fauna habitat) and TEC where possible by using existing infrastructure of the Edna May gold mine and concentrating developments in areas of existing disturbance.

Minimise

The footprint of the Greenfinch Project was minimised to only clear up to 16.6 ha of native vegetation and designed to abut existing disturbances, to prevent fragmentation by maintaining habitat corridors, minimise potential impacts to the TEC/ Westonia Common from edge effect and minimise the clearing of potential Threatened Flora habitat and fauna habitat.

Rehabilitate

Existing rehabilitation trials conducted for the EMO have shown promise for successful establishment of native TEC vegetation. Future rehabilitation proposed will be specifically conducted to reinstate Red morrel (*Eucalyptus longicornis*) Woodlands, which will provide potential *E. resinosa* habitat, increase habitat connectivity/ widen vegetation corridors and improve the condition of remnant Red morrel vegetation.

To compensate for the unavoidable impacts of removing up to 16.6ha of native vegetation, an Offset Plan was developed and approved.

The Offsets for the Action are:

- Revegetation of 75ha of ex-farmland including a 60ha area immediately north of the Edna May mine site and directly north of the Westonia Common (Lots 161 and 162) and 15ha of ex-farmland located directly south of Edna May mine site which will provide additional fauna habitat corridor for the Westonia Common (Lot 1578).
- Protection, management and improvement (interplanting, weed control) of a remnant 15ha block of Red morrel on Lot 161.
- Placement of a conservation covenant over revegetated parts of Lots 161, 162 and 1578 (subject to government approval).
- provide \$10,000 per year for two years from the commencement of the action (indexed to the National Consumer Price Index value in 2019) to the Shire of Westonia for the purpose of funding activities in the Westonia Common Management Plan 2016-2020 and subsequent versions.



Compliance Report Edna May Operations (EPBC 2018/8213) 24 Jan 2020 - 23 Jan 2021

Page: 7 of 37

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3. CLEARING

Native vegetation was cleared to develop the Greenfinch project at the Edna May Gold Project. The EPBC Act approval allows EMO to clear up to 16.6ha of native vegetation (Figure 1). This area includes up to 9.3ha of Eucalypt Woodlands of the Western Australian Wheatbelt TEC, up to 9.3ha of foraging habitat and no more than 38 potential breeding trees for the Carnaby's Black Cockatoo (Figure 3).

Clearing on the project was managed as per EMO Clearing and Ground Disturbance Procedure and the Greenfinch Project Implementation Compliance Procedure. These documents are in place to ensure compliance with EPBC Act Approval EPBC 2018/8213, Clearing Permit CPS8550/1, and Mining Proposal RegID 73855. It is a requirement that all personnel working on the Greenfinch Project be trained in these procedures and sign-off on their understanding of requirements, competency and acknowledging their responsibilities.

EMO commenced clearing of the Project area on the 24th of January 2020. During the reporting period a total of 11.5 ha of native vegetation was cleared for the purpose of developing the Greenfinch project. The area cleared was for the diversion of the Warrachuppin road, the Greenfinch open cut pit, safety bund and access track, extension of the noise bund and for construction of the abandonment bund.

All clearing was within the approved areas stated in the EPBC Act Approval EPBC 2018/8213 and Clearing Permit CPS8550/1. EMO minimised clearing within the approved footprint where practicable. A haulage road approved to the north of the Pit was not required which has reduced the total project footprint. It is also unlikely that the haul road to the south of the Corsini Waste Rock Landform (WRL) will be required to be cleared for the project. A final decision on this road will occur in the next reporting period and prior to expiry of the Clearing Permit CPS8550/1 on the 25th of October 2021.

3.1 EUCALYPT WOODLAND

The project requires clearing of the Critically Endangered Eucalypt Woodlands of the Western Australian Wheatbelt (*E. longicornis* and *E. salubris* woodland). Approval was granted to clear up to 9.3ha of Eucalypt Woodlands of the Western Australian Wheatbelt TEC.

Clearing completed during the reporting period included 7.556 ha of Eucalypt Woodlands of the Western Australian Wheatbelt TEC (Figure 4).

3.2 CARNABY'S BLACK COCKATOO FORAGING HABITAT

The Greenfinch Project area required clearing of potential Carnaby's Black Cockatoo foraging habitat and potential breeding trees. The potential foraging habitat in this project is considered the Eucalypt Woodlands of the Western Australian Wheatbelt TEC. Although not observed during field surveys the Carnaby's Black Cockatoo has been documented to feed on Salmon gum (*Eucalyptus salmonophloia*) which is found in the Woodlands (Harewood 2018).

A fauna survey was undertaken before the project commenced to identify potential nesting trees for the Carnaby's Black Cockatoo. The survey identified trees in the project expansion area which included live and dead trees of Gimlet, Red morrel, Salmon gum that may potentially be suitable for nests.

During the reporting period EMO were required to clear 7.556 ha of Eucalypt woodland and 14 trees that were identified as potential nesting trees (Figure 4).



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

Page: 8 of 37

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Approved Clearing Permit Area 16.6ha



Figure 1: Approved clearing area for the expansion of the Edna May Gold Project – Greenfinch Pit



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

Page: 9 of 37

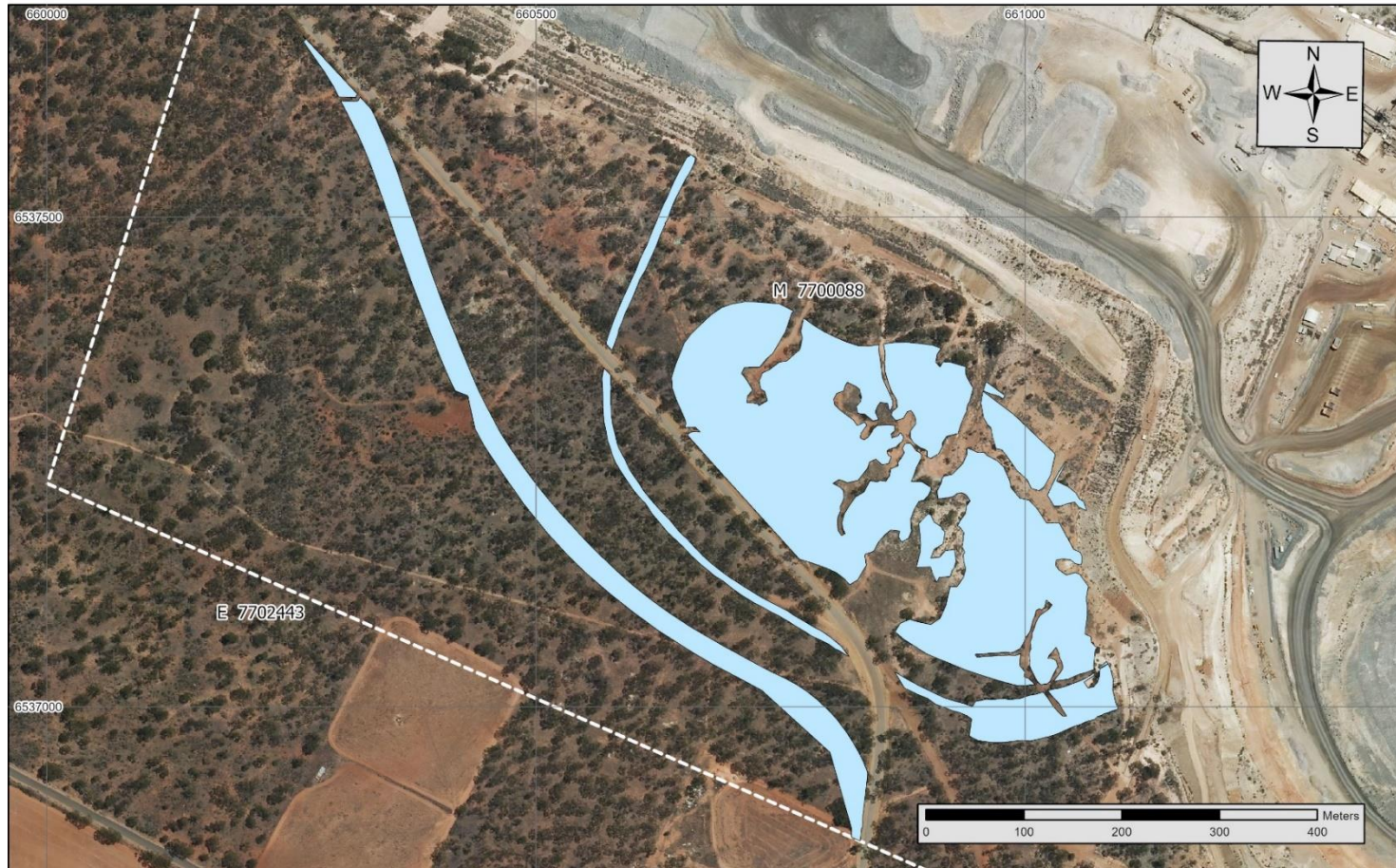
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Annual Compliance Report, Edna May Operations, EPBC 2018/8213
Total Area Cleared, 11.5ha



Author: Ramelius Resources

Drawn By: CD

Date: March 2021

Projection: GDA 94 Zone 50

Drawing No: EM0076

Figure 2: Native Vegetation cleared to develop the Greenfinch Project. Total Area cleared = 11.5ha

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**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

Page: 10 of 37

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Annual Compliance Report, Edna May Operations, EPBC 2018/8213
Approved Clearing Black Cockatoo Habitat and Trees

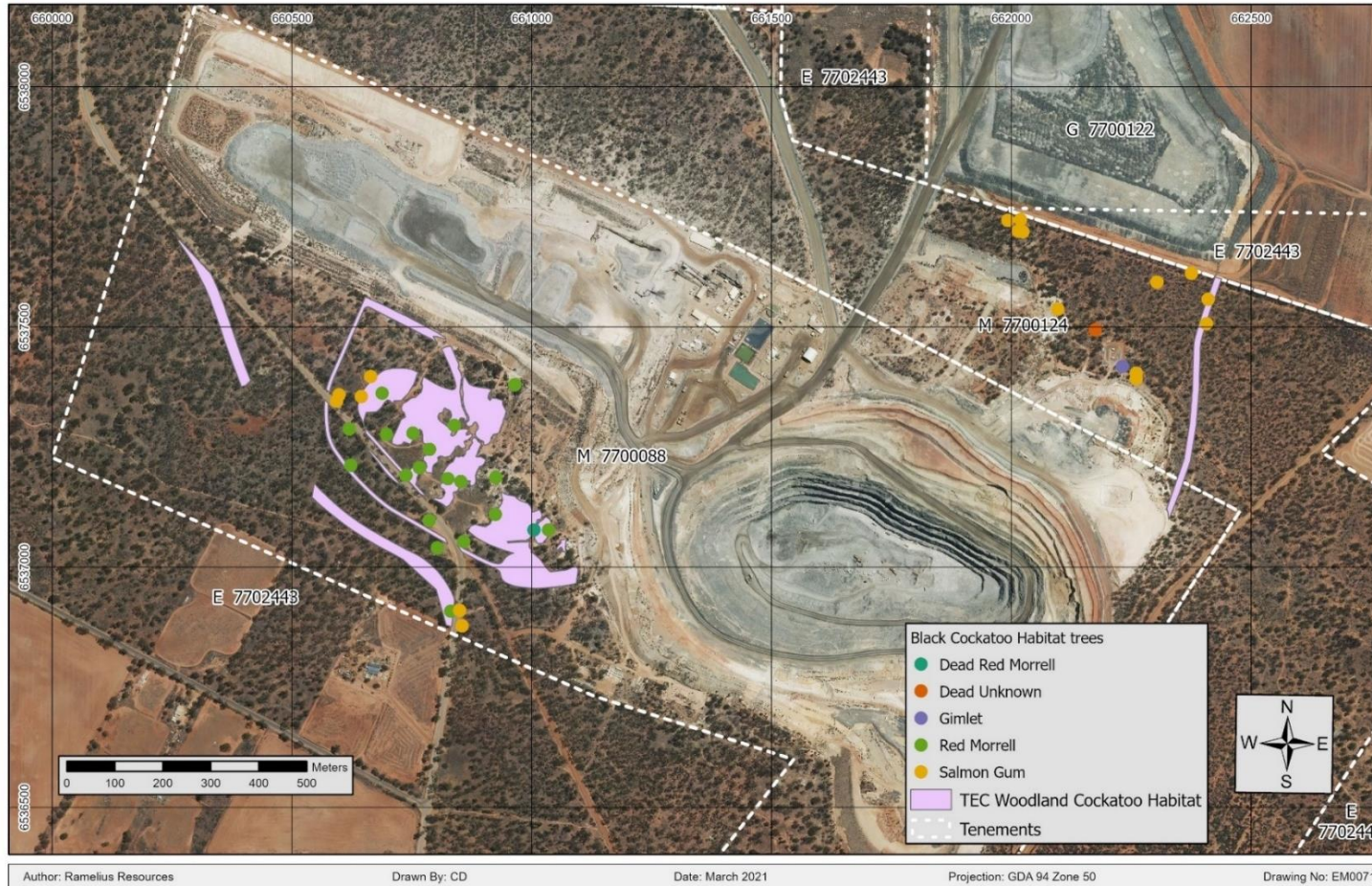


Figure 3: Approved clearing area of potential Carnaby's Black Cockatoo foraging Habitat (Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community), 9.3ha, and 38 potential breeding trees



Compliance Report Edna May Operations (EPBC 2018/8213) 24 Jan 2020 - 23 Jan 2021

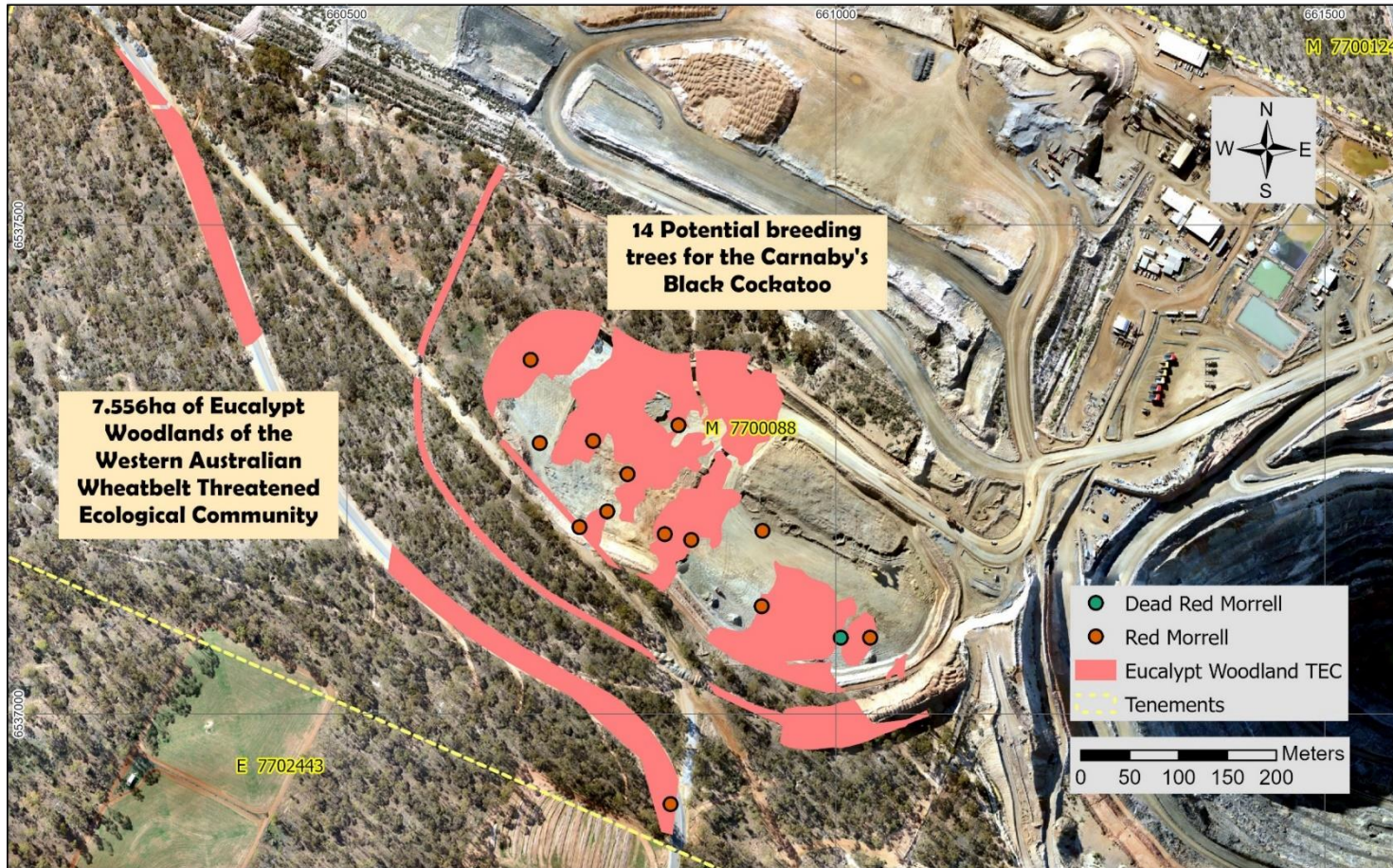
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Annual Compliance Report, Edna May Operations, EPBC 2018/8213

Carnaby's Black Cockatoo Foraging Habitat (Eucalypt woodland TEC) & Potential Breeding Trees Cleared 2021



Author: Ramelius Resources

Drawn By: CD

Date: March 2021

Projection: GDA 94 Zone 50

Drawing No: EM0075

Figure 4: Carnaby's Black Cockatoo Foraging Habitat (Eucalypt woodland TEC) and Potential Breeding Trees Cleared during the development of Greenfinch project



4. VEGETATION CORRIDOR

The Greenfinch project was designed so that the footprint required minimal clearing and maintained and enhanced the connectivity between the east and west remnant woodland blocks of the Westonia Common to avoid habitat fragmentation.

To maximise the corridors EMO amended the proposal so that:

- i) a minimum 50m wide vegetation corridor between the abandonment bund and the diverted road to the south was retained to facilitate fauna movement; and
- ii) further maximise the corridor connectivity to the south of the mine by not clearing any vegetation between the pit and the abandonment bund so that an additional approximately 40 m wide vegetation corridor is retained to facilitate fauna movement and reduce the area of TEC vegetation clearing.

EMO has maintained the “50m wide corridor” which at its minimum is approximately 50.86m wide. No clearing has occurred between the pit boundary and the abandonment bund and the 40m distance has been maintained. This distance does narrow out to extinction to the southeast as designed where the abandonment bund joined the existing Noise bund (Figure 5).

5. REHABILITATION AREAS

Areas disturbed within the project which are no longer required for the operation and will not be permanent disturbance features are rehabilitated as soon as possible. There are two features which were required as per the EPBC approval conditions to be rehabilitated within 12 months of completion of the abandonment bund. These were the original Warrachuppin road which was diverted, and a haulage track to the north of the pit used to construct an abandonment bund. The total proposed rehabilitation as per the approval was 1.9ha.

The actual area to be rehabilitated is smaller as the haul road was not required and the area not cleared. The total disturbance from the Warrachuppin road to be rehabilitated is approximately 1.06ha. Rehabilitation activities of the area have not yet commenced. The abandonment bund was only completed to DMIRS standard in December 2020 and active mining is still occurring in the Greenfinch pit.

EMO plan to commence rehabilitation in the 2021-2022 reporting period incorporating these works with the offset rehabilitation discussed in section 6. The planned work will include the removal of the bitumen road surface and then planting seedlings and seeds. As the bitumen has been preventing moisture getting into the soil below, plantings will concentrate on the old road verge this year, depending on rainfall. Additional planting may be required in the centre of the road the following year.

On completion of rehabilitation works a vegetation monitoring plot will be installed to monitor progress. This will be compared to existing analogue sites that are currently monitored annually. The criteria for successful rehabilitation is to establish a self-sustaining and fully functioning, Eucalypt Woodlands of the Western Australian Wheatbelt TEC which integrates into the surrounding woodland. Rehabilitating these areas will minimise impacts on the existing woodland by reducing threats associated with fragmentation and the edge affect.



Annual Compliance Report, Edna May Operations, EPBC 2018/8213
Vegetation Corridors



Author: Ramelius Resources

Drawn By: CD

Date: March 2021

Projection: GDA 94 Zone 50

Drawing No: EM0077

Figure 5: Vegetation Corridors



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

Page: 14 of 37

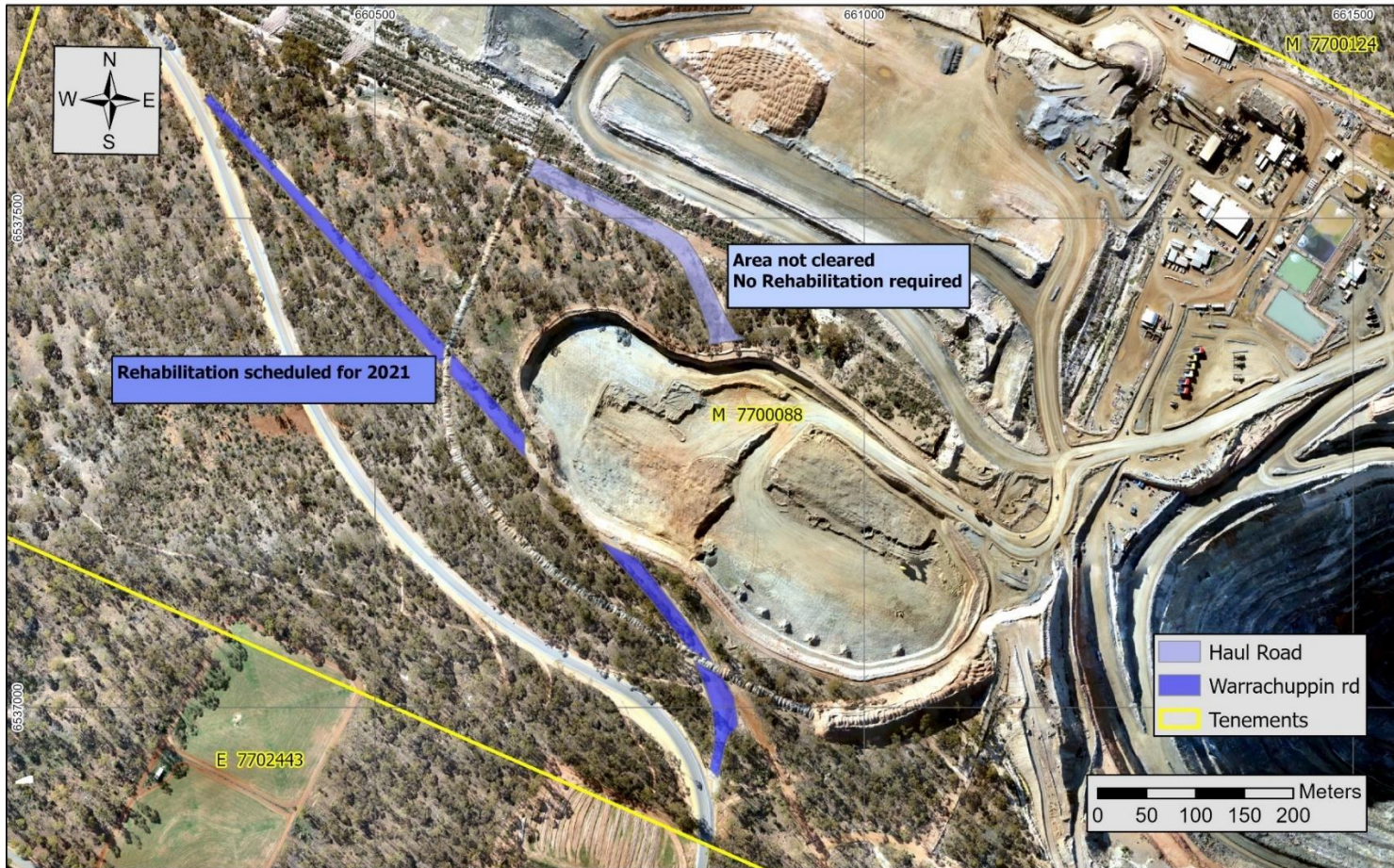
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Annual Compliance Report, Edna May Operations, EPBC 2018/8213
Rehabilitation Areas



Author: Ramelius Resources

Drawn By: CD

Date: March 2021

Projection: GDA 94 Zone 50

Drawing No: EM0073

Figure 6: Rehabilitation Areas

File Name: 2021 ACR EPBC2018-8213 V1

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6. REHABILITATION OFFSET

6.1 FARMLAND REVEGETATION

A condition of the clearing approval granted for the Greenfinch project is that 75 ha of ex-farmland (Lot 1578, Lot 161 and Lot 162) will be rehabilitated with Red morrel woodland TEC species. In addition to this a degraded 15 ha remnant at the north-east corner of the Lot 162 will be improved with the additional planting as required.

The Offset Rehabilitation Plan for the EMO Offset area has been developed to enable EMO to continue the high standard of annual woodland rehabilitation activities on ex-farmland that commenced in 2015. The purposes of the Rehabilitation Plan are to:

- ensure that annual planning and budgeting of ex-farmland rehabilitation continues to be integrated into the mine planning and operational activities;
- provide technical information and procedures on the rehabilitation of ex-farmland; and
- demonstrate to Government regulators that EMO follows a well-understood process based on monitoring results from trials and research that maximises the success rate of woodland rehabilitation.

Implementation of this Offset Rehabilitation Plan will maintain the linkage between the eastern and western natural vegetation blocks of the Westonia Common to avoid fragmentation, widen biodiversity corridor plantings already implemented on ex-farmland on Lots 161 and 162, and maintain and improve the biological diversity and ecological integrity of flora and vegetation protected under the EPBC Act (*E. resinosa* and the TEC woodland).

6.1.1 Lot 1578

Site preparation for the revegetation of 15 ha of ex farmland on location 1578, known as Greenfinch Farm, has commenced as part of the Offset Rehabilitation Plan for the Greenfinch project. The site is split into two paddocks by Stoneman Road which is a public road intersecting the site.

Site preparation activities on Slippery's Paddock (northern paddock) included the removal of internal fencing and clean-up of historical scrap and wire from various areas of the site. The agricultural land was then ploughed as a form of weed control and to level the surface. Topsoil from the Greenfinch pit was windrowed in situ by dozer and then transported and applied to the site by tipper truck. Once application was complete the fresh topsoil was shaped by a grader forming 6 m-wide bands of topsoil with 3 m-wide tracks between for vehicle access to allow for future weed management activities (Figure 7).



Figure 7: Greenfinch farm Paddock 1 (Northern Paddock) after topsoil was placed from the Clearing of the Greenfinch project

Site preparation for paddock 2 (southern paddock) consisted of herbicide weed control, followed by ploughing several weeks later as a form of effective weed control and to level the surface.

Seedlings of Woodland species were grown by Chatfield’s Tree Nursery from local provenance seed supplied by EMO. Local Provenance seed was collected in December 2019 from the vegetation areas which were to be cleared to make way for the Greenfinch pit and realignment of Warrachuppin Road and from the surrounding woodland area. A total of 17,437 local provenance seedlings were planted into the northern site. Direct seeding was undertaken using a special Commercial Native Vegetation Seeder (CommVeg) which is an innovative direct seeding machine to improve the efficiency of native seed sowing whilst reducing costs of revegetation. The CommVeg seeder completes site preparation requirements as it runs over the ground by scalping and ripping the soils as part of the seed sowing process all in a one-pass operation. In paddock 1 (northern paddock) 6,300 seedlings were hand planted using a potti-putki into rows pre-prepared by the CommVeg seeder.

As vegetation becomes established it will improve connectivity of the remnant vegetation of the surrounding Westonia Common, which is primarily a Red morrel woodland TEC.

6.1.2 Lot 161 and 162

Planning of the rehabilitation works of these sites commenced with an aim to plant 62ha offset areas during favourable conditions in 2021. A Native plant Agronomist has been engaged as rehabilitation consultant to organise and plan the works.

During the reporting period an assessment of the paddocks was completed to define the final rehabilitation areas (Figure 9), which included review of prior rehabilitation activities, landscape connectivity and soil types.



Restoration of the farmland will include a mix of direct seeding and planting. Species mix and planting densities were determined using information from the analogue flora surveys completed by Botanica (2018), and the consultant’s onsite experience.

Collected and purchased seed was supplied to a local Tammin-based business, Chatfield’s Tree Nursery, in October 2020. They have germinated the seed and established the seedlings as tube stock for EMO. The seedling order of 34,800 for the 62ha consists of a mix of *Eucalyptus* and *Melaleuca* species, and other plants that are difficult to establish from direct seed (Table 1).

Table 1: Seedling order for the 2021 farmland revegetation project

Genus	Species	Seedlings
<i>Eucalyptus</i>	<i>longicornis</i>	8,000
<i>Eucalyptus</i>	<i>salubris</i>	6,000
<i>Eucalyptus</i>	<i>salmonophloia</i>	2,000
<i>Eucalyptus</i>	<i>yilgarnensis</i>	6,000
<i>Melaleuca</i>	<i>pauperiflora. ssp fastigiata</i>	8,000
<i>Melaleuca</i>	<i>eleuterostachya</i>	1,000
<i>Melaleuca</i>	<i>uncinata</i>	1,000
<i>Eucalyptus</i>	<i>loxopheba</i>	1,000
<i>Calothamnus</i>	<i>gilesii</i>	1,200
<i>Pittosporum</i>	<i>angustifolium</i>	600
	Total	34,800



Figure 8: Seedlings growing at Chatfield’s Tree Nursery for Offset Planting, taken 18th February 2020



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

EMO

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In addition, seed will be applied at a rate of 1.5kg per hectare to the paddocks. The seed required for the project (seed list in Table 2) has been sourced and will be treated accordingly prior to application.

Table 2: Seed List for 2021 farmland revegetation project

Genus	Species	Genus	Species
<i>Acacia</i>	<i>acuminata (narrow)</i>	<i>Eucalyptus</i>	<i>longicornis</i>
<i>Acacia</i>	<i>aestivalis</i>	<i>Eucalyptus</i>	<i>salubris</i>
<i>Acacia</i>	<i>collettioides</i>	<i>Eucalyptus</i>	<i>yilgarnensis</i>
<i>Acacia</i>	<i>hemiteles</i>	<i>Grevillea</i>	<i>paradoxa</i>
<i>Acacia</i>	<i>lasiocalyx</i>	<i>Hakea</i>	<i>preissii</i>
<i>Acacia</i>	<i>longispinea</i>	<i>Hakea</i>	<i>recurva</i>
<i>Acacia</i>	<i>merallii</i>	<i>Hibbertia</i>	<i>exasperata</i>
<i>Acacia</i>	<i>microbotrya</i>	<i>Maireana</i>	<i>carnosa</i>
<i>Acacia</i>	<i>murrayana</i>	<i>Maireana</i>	<i>tomentosa</i>
<i>Acacia</i>	<i>prainii</i>	<i>Maireana</i>	<i>triptera</i>
<i>Acacia</i>	<i>ramulosa</i>	<i>Melaleuca</i>	<i>pauperiflora. ssp fastigiata</i>
<i>Acacia</i>	<i>steadmanii</i>	<i>Olearia</i>	<i>muelleri</i>
<i>Acacia</i>	<i>yorkrakinensis ssp acrita</i>	<i>Pittosporum</i>	<i>angustifolium</i>
<i>Acacia</i>	<i>coolgardiensis</i>	<i>Ptilotus</i>	<i>drummondii</i>
<i>Acacia</i>	<i>erinacea</i>	<i>Ptilotus</i>	<i>exaltatus (nobilis)</i>
<i>Acacia</i>	<i>tetragonophylla</i>	<i>Ptilotus</i>	<i>holosericeus</i>
<i>Allocasuarina</i>	<i>huegeliana</i>	<i>Santalum</i>	<i>acuminatum</i>
<i>Calothamnus</i>	<i>gilesii</i>	<i>Santalum</i>	<i>spicatum</i>
<i>Dianella</i>	<i>revoluta</i>	<i>Senna</i>	<i>artemesioides ssp filifolia</i>
<i>Enchlylaena</i>	<i>lanata</i>	<i>Senna</i>	<i>pleurocarpa var pleurocarpa</i>
<i>Eremophila</i>	<i>decipiens</i>	<i>Solanum</i>	<i>orbiculatum</i>
<i>Eremophila</i>	<i>resinosa</i>	<i>Templetonia</i>	<i>sulcata</i>
<i>Eriochyton</i>	<i>sclerolaenoides</i>	<i>Vittadinia</i>	<i>gracilis</i>

Prior to planting the site, weed control will be undertaken to target grasses and broadleaf plants. Spraying may occur in late summer if there has been sufficient rainfall for a germination. Weed spraying will then occur again in March / April, and then once more immediately prior to direct seeding, however again it is entirely rainfall dependent.



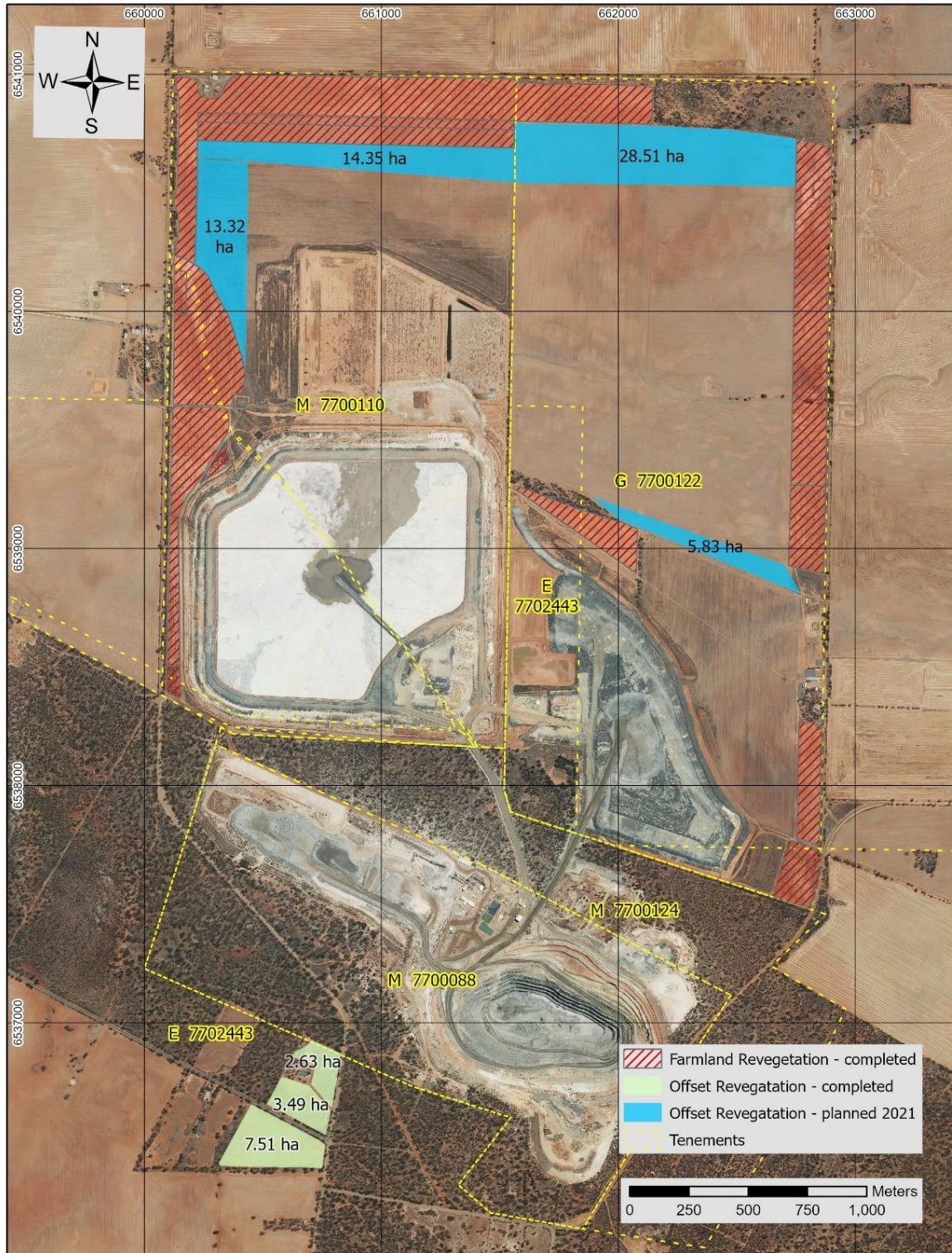
**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

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Farmland Revegetation including Offsets



Author: Ramelius Resources Drawn By: CD Date: March 2021 Projection: GDA 94 Zone 50 Drawing No: EM0072

Figure 9: Location of Farmland revegetation offset sites



6.1.3 Monitoring

The farmland revegetation areas surrounding the mining project are monitored annually to assess their performance against completion criteria (Table 3 and Table 4). Analogue sites of remnant Eucalypt woodland vegetation are used as a benchmark. Monitoring is conducted on species richness, species diversity, plant density, vegetation cover, relative weed cover and presence of significant weeds.

Annual monitoring took place in December 2020 and included new transects which were installed in Slippery’s paddock (Figure 10). The farmland rehabilitation is progressing well to meeting completion criteria. At most sites criteria are being met for species diversity, species richness, weeds of national environmental significance, declared plants cover and relative weed cover. Plant Density criteria and Vegetation cover criteria require review and will be closely monitored. It is expected these will improve with age of rehabilitation. At Site 1, a 2015 rehabilitation area, all criteria are being met (Botanica 2021).

The full report can be found in Appendix B.

Table 3: Completion Criteria for Flora/Vegetation in the farmland revegetation

Aspect	Closure Objectives	Closure Indicators	Completion Criteria	Management/ Measurement Approach
Flora/ Vegetation	Revegetation of disturbed areas are the best achievable with available rehabilitation resources and are rehabilitated using local provenance species to reflect the surrounding Westonia Common	Vegetation comprised of local provenance species in a self-sustaining and resilient community comparative to natural landscape	Vegetation cover (total percentage cover of live vegetation) and species density (total no. perennial plants) levels $\geq 50\%$ of the mean value from the analogue sites in the target ecosystem ¹ . Species diversity (total no. perennial species) levels $\geq 50\%$ of the mean value from the analogue sites in the target ecosystem	Landscape/Vegetation monitoring on rehabilitated landforms and target ecosystems to measure biodiversity. Reporting of monitoring results annually in AER
		Weed species not impacting upon the recruitment and growth of indigenous flora	Percentage cover of weeds of National Significance (listed by DotEE) or Declared Plants (listed by DPIRD) on rehabilitated landforms no greater than 15% ² .	Weed monitoring during landscape/vegetation monitoring and/ or WRL assessments. Management of weeds as per Weed Management Plan

¹ Completion criteria based on the minimum biodiversity and landscape function (critical threshold as described by Tongway & Hindley (2003) based on three successive years of monitoring data) at which a landform is self-sustaining (Beyond the critical threshold, the ecosystem becomes increasingly more self-sustaining and able to survive stress and disturbance, both natural and human induced the ecosystem becomes increasingly more self-sustaining and able to survive stress and disturbance, both natural and human induced (Tongway, & Hindley 2003). Will be compared against analogue site/s to ensure target biodiversity values are representative of the natural environment and consistent with the Westonia Common. Rehabilitation will be conducted using best practices for the site and will aim to achieve higher values than the minimum targets/ threshold specified.

² Completion criteria targets for weed coverage better than those that are based on published literature which suggests that weed cover (non-naturalised weeds) exceeding 40% impedes native vegetation growth. The target has been set at lower threshold to ensure weeds identified/ managed before native vegetation impacts occur



Table 4: Completion Criteria Targets / Performance Indicators for Farmland Revegetation. Calculated from 2017-2020 Analogue data (Botanica 2021).

Measure	Target	Rehabilitation Category
Plant Density (m ²)	≥3.8	Excellent
	≥1.4	Satisfactory
	<1.4	Requires review
Species Diversity Index	≥1.5	Excellent
	≥1.2	Satisfactory
	<1.2	Requires review
Species Richness	≥8	Excellent
	≥6	Satisfactory
	<6	Requires review
Vegetation Cover (%)	≥70	Excellent
	≥31	Satisfactory
	<31	Requires review
Relative Weed Cover (%)	0	Excellent
	<30	Satisfactory
	>30	Requires review
Weeds of National Environmental Significance (%)	0	Excellent
	0	Satisfactory
	>0	Requires review
Declared Plants (%)	0	Excellent
	0	Satisfactory
	>0	Requires review



Figure 10: Farmland Rehabilitation and Vegetation Monitoring Transect Locations (Botanica 2021)



6.2 WESTONIA TOWN COMMON

The Westonia Town Common is made up of 15 remnant vegetation reserves that surround the Town of Westonia and is located next to the EMO Greenfinch Project. It covers approximately 2,500 ha and is an important reserve as it contains a large area of Eucalypt Woodlands of the Western Australian Wheatbelt TEC. A conservation management plan (CMP), Westonia Common Conservation Management Plan 2016-2021, has been developed to protect the reserve from threats including feral animals and weeds and preserve the site for the future (Eco Logical Australia 2016).

To assist the Shire of Westonia implement and achieve the objectives of the CMP, EMO are providing \$10,000 per year for two years from the start of the Greenfinch project. The first of these annual payments was made to the Shire of Westonia in July 2020.

7. WEED MANAGEMENT

Weed management is undertaken at the Edna May Project to minimise the adverse impacts from weeds on the environment including local fauna and flora communities. EMO has a Weed and Vertebrate Pest Management Plan which provides a management framework for the implementation, monitoring and review of actions which specifically aims to:

- Maintain the abundance, diversity, geographic distribution and productivity of terrestrial flora at species and ecosystem levels.
- Protect and minimise impact to DRF and Priority Flora located within the Edna May Operations leases.
- Disturb land only within approved clearing envelopes.
- Ensure that land rehabilitation is implemented progressively.

EMO has continued to implement the Weed and Vertebrate Pest Management Plan. Activities completed during the reporting period have included:

- Inspections of Mining and surrounding areas for the presence of weeds.
- Specific weed control activities to control populations of Ruby dock (*Acetosa vesicaria*) and Skeleton weed (*Chondrilla juncea*).
- Mapping of significant weed populations in GIS (Figure 11).
- Reporting of Skeleton weed monitoring and control to DPIRD .
- Inspection of earthmoving equipment to ensure they are clean and free of soil material before entering site and undertaking clearing activities.
- Training of personnel involved in clearing in management activities to identify and minimise the spread of weeds.
- Control of weeds and grasses in Offset Rehabilitation areas to ensure successful revegetation to Eucalypt woodland.



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

Page: 24 of 37

EMO

Environment



Ramelius
Resources

Annual Compliance Report, Edna May Operations, EPBC 2018/8213
Edna May Operations Weed Control 2020-2021 Reporting Period



Author: Ramelius Resources

Drawn By: CD

Date: March 2021

Projection: GDA 94 Zone 50

Drawing No: EM0074

Figure 11: Weed Management completed during the 2020-2021 reporting period.

File Name: 2021 ACR EPBC2018-8213 V1

Version: 1

Date Published: 7/04/2021



8. FAUNA MANAGEMENT

To protect native fauna and control feral animals at the project EMO have continued to implement their Fauna Management Plan. The objectives of the management plan are to:

- Maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels.
- Minimise impacts to fauna habitats.
- Adopt practices aimed at minimising impacts on fauna, including controlling the extent of open excavations; regularly checking areas where animals could become trapped; actively managing features such as water storages, domestic waste storages, processing water storage, tailings supernatant pond and lighting which may attract fauna.
- Disturb land only within approved clearing envelopes.
- Ensure that land rehabilitation is implemented progressively.

Actions implemented during the reporting period to Manage Fauna onsite have included:

- Adhering to all clearing and ground disturbance permits by following all internal related procedures.
- Minimise clearing where possible.
- Recording sightings of any species of conservation significance and feral animals on the mining lease.
- Relocation of snakes and reptiles from work areas by trained personnel.
- Injured fauna or deaths have been reported to the Environment department and treated as appropriate.
- Ensuring landfill waste is regularly covered to prevent attracting feral fauna.
- Managing and monitoring dust onsite.
- Monitoring levels of cyanide (CN) in the TSF decant and recording fauna sightings in the TSF.
- Regularly monitoring sumps and water storage dams to ensure adequate egress points are in place and there is no trapped fauna.

9. RECORD KEEPING

EMO maintains accurate records of all monitoring, inspections, and other environmental management activities that occur on site. EMO utilises the INX InControl management system to store and manage all records, inspections, hazards and incidents. Environmental monitoring data that is collected is uploaded to MonitorPro database for safe storage and to ensure compliance. All other records are maintained and backed up on the site servers. EMO can provide records including spatial data to the department for audits if requested.

**10. INSPECTIONS AND AUDITS****10.1 INTERNAL**

A coordinated internal inspection programme is completed by Environmental Department personnel with assistance from operational personnel. Key operational areas of the site are inspected for compliance with licence requirements such as clearing and waste management. Inspection documentation is recorded along with supporting photos. Inspections are scheduled on a weekly, monthly or quarterly basis dependent on the area and regulatory requirements. A monitoring schedule is completed for each calendar year so that all activities can be captured.

10.2 EXTERNAL

External independent audits may be required to ensure that EMO is within compliance of all the conditions of the approval. No external audits have been completed nor requested during the reporting period.

An independent review is required five years from the commencement of the rehabilitation activities and the audits are due to be completed in 2025, 2030 and 2035. The purpose of the reviews will be to determine if the performance indicators and completion criteria as described in the Rehabilitation Offset Plan have been met.

To verify that rehabilitation areas have reached completion criteria, comprise self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt TEC, an audit report is to be completed by an independent and suitably qualified expert. This audit is to be completed 20 years from the commencement of rehabilitation activities and will be due to be completed in 2041.



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

EMO

Environment

11. COMPLIANCE

11.1 COMPLIANCE TABLE

Number	Condition	Compliance	Comments
Part A – Conditions specific to the action			
1	To minimise impacts to EPBC Act listed species and ecological communities, the approval holder must not clear more than 16.6 hectares of native vegetation within the Clearing Permit Area. Within the Clearing Permit Area the approval holder must not clear more than the following:	Compliant	EMO has cleared a total of 11.5 ha of the native vegetation within the clearing permit area which was completed in the reporting period. For more information refer to Section 3
1a	9.3 ha of Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community; and	Compliant	EMO has cleared a total of 7.556 ha of the Eucalypt Woodlands within the clearing permit area which was completed in the reporting period. For more information refer to Section 3
1b	9.3 ha of foraging habitat and no more than 38 potential breeding trees for the Carnaby's Black Cockatoo.	Compliant	EMO has cleared a total of 7.556 ha of the of foraging habitat for the Carnaby's Black Cockatoo within the clearing permit area which was completed in the reporting period. EMO has cleared 14 potential breeding trees for the Carnaby's Black Cockatoo within the clearing permit area which was completed in the reporting period. For more information refer to Section 3
2	To minimise the impacts of fragmentation on the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community, the approval holder must retain and maintain the two corridors of native vegetation shown as '40m wide corridor' and '50m wide corridor' in Attachment A. The approval holder must maintain these corridors as self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community, integrated with Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community in the surrounding ecosystem. The '40m wide corridor' must be maintained so as to be at least 40 metres wide at its narrowest point for the life of the approval. The '50m wide corridor' must be maintained so as to be at least 50 metres wide	Compliant	EMO has retained and maintained the two corridors of native vegetation shown as '40m wide corridor' and '50m wide corridor' in Attachment A. The Width of the corridors exceeds the narrowest widths of 40m and 50m. For more information refer to Section 4.



Number	Condition	Compliance	Comments
	at its narrowest point for the life of the approval.		
3	To minimise the impacts of clearing, fragmentation and edge effects on the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community and foraging habitat and potential breeding trees for the Carnaby's Black Cockatoo, the approval holder must rehabilitate at least 1.9 hectares identified as 'Rehabilitation Areas (1.9ha)' in Attachment C. The rehabilitation must establish and maintain self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community in the Rehabilitation Areas, integrated with the surrounding Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community within ten years of the commencement of rehabilitation activities. In order to meet this objective, the approval holder must:	Not Applicable	EMO has not commenced rehabilitation activities of the area identified as 'Rehabilitation Areas (1.9ha).' The total 'Rehabilitation Areas' will be smaller than 1.9ha as EMO has managed to develop the project within a smaller disturbance than that which was approved. An access road to construct the abandonment bund to the west of the pit was not required. The total area of rehabilitation to complete is 1.06 ha
3a	Rehabilitate the Rehabilitation Areas using species representative of the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community;	Not Applicable	EMO has not commenced rehabilitation activities of the area identified as 'Rehabilitation Areas'
3b	Commence rehabilitation activities in all Rehabilitation Areas within twelve months of the completion of construction of the abandonment bund;	Not Applicable	Construction of the abandonment bund commenced during the reporting period. Final earthworks on the abandonment bund to ensure it met DMIRS guidelines were completed in December 2020. EMO is planning to rehabilitate these areas in 2021.
3c	Implement sufficient monitoring and management of the Rehabilitation Areas to a standard that will ensure that the objective of condition 3 is met within ten years of the commencement of rehabilitation activities;	Not Applicable	EMO has not commenced rehabilitation activities of the area identified as 'Rehabilitation Areas'
3d	Provide, within eleven years from the commencement of rehabilitation activities, a report prepared by an independent and suitably qualified expert verifying that the rehabilitation areas comprise self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community; and	Not Applicable	
3e	Continue the same standard of monitoring and management of the Rehabilitation Areas until the Department advises in writing that it has reviewed and accepts the report of the independent and suitably qualified expert.	Not Applicable	



Number	Condition	Compliance	Comments
4	To minimise the impacts of weeds on the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community, foraging habitat and potential breeding trees for the Carnaby's Black Cockatoo, the approval holder must implement the Weed and Vertebrate Pest Management Plan from the commencement of the action for the life of the approval.	Compliant	EMO has implemented the "Weed and Vertebrate Pest Management Plan" during the reporting period. For more information on management activities and compliance with the "Weed and Vertebrate Pest Management Plan" strategies refer to Section 7.
5	To minimise the impacts of predation by feral animals on the Carnaby's Black Cockatoo, the approval holder must implement the Fauna Management Plan from the commencement of the action for the life of the approval.	Compliant	EMO has implemented the "Fauna Management Plan" during the reporting period. For more information on management activities and compliance with the "Fauna Management Plan" strategies refer to Section 8.
6a	To compensate for the residual significant impact on the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community, the approval holder must: Rehabilitate, to establish and maintain self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheat belt Threatened Ecological Community on 70 ha comprising the portions of Lots 161 and 162 shaded in dark blue in Attachment D;	Not Applicable	EMO is planning to complete rehabilitation of the portions of Lots 161 and 162 during the next reporting period (winter 2021). For more information on planning and schedule of rehabilitation works refer to Section 6.
6b	rehabilitate, to establish and maintain self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community on 15 ha comprising the portions of Lot 1578 shaded in dark blue in Attachment D; and	Not Applicable	EMO has completed rehabilitation of Lot 1578. Ongoing monitoring and management activities will occur to achieve a self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community.
6c	provide \$10,000 per year for two years from the commencement of the action (indexed to the National Consumer Price Index value in 2019) to the Shire of Westonia for the purpose of funding activities in the Westonia Common Management Plan 2016-2020 and subsequent versions. The first payment must be made within six months from the commencement of the action.	Compliant	On the 7th of July 2020, EMO provided \$10,000 to the Shire of Westonia for the purpose of funding activities in the Westonia Common Management Plan 2016-2020.
7	To provide for the establishment and ongoing management of the compensatory measures described in condition 6a and 6b, the approval holder must implement the Rehabilitation	Compliant	EMO began implementing the Rehabilitation Offset Plan during the reporting period.



Number	Condition	Compliance	Comments
	Offset Plan within 12 months of the commencement of the action. The purpose of the Rehabilitation Offset Plan will be to establish and maintain a self-sustaining native vegetation cover that is representative of the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community within twenty years from the commencement of rehabilitation activities. In addition the approval holder must:		
7a	Commence rehabilitation activities in the offset areas described in Attachment C within 18 months of the date of this approval;	Compliant	EMO commenced rehabilitation works in the offset area, LOT 1578, this reporting period.
7b	Undertake a review by an independent and suitably qualified expert at five years, ten and fifteen years from the commencement of the rehabilitation activities. The purpose of the reviews will be to determine if the performance indicators and completion criteria as described in the Rehabilitation Offset Plan have been met. The approval holder must provide the results of each review to the Department within five months of the completion of each review;	Not Applicable	Independent review is not required until 5 years from the commencement of the rehabilitation activities. Audits are due to be completed in 2025, 2030 & 2035.
7c	Provide to the Department details of corrective actions, including triggers and timeframes for the implementation of corrective actions, that will be undertaken by the approval holder in the event that the reviews undertaken under condition 7b show that rehabilitation activities are not meeting the performance indicators and completion criteria as described in the Rehabilitation Offset Plan;	Not Applicable	
7d	Provide the Department, within twenty years from the commencement of rehabilitation activities, a report prepared by an independent and suitably qualified expert verifying that the rehabilitation areas comprise self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community;	Not Applicable	EMO commenced rehabilitation activities in 2020. Verification report is not yet required
7e	Continue the same standard of monitoring and management of the rehabilitation areas identified in Attachment C until the Department advises in writing that it has reviewed and accepts the report of the independent and suitably qualified expert; and	Not Applicable	
7f	Within 12 months of the advice notification in condition 7e, provide the Department with written evidence for the legal protection of the	Not Applicable	EMO commenced rehabilitation activities in 2020. Verification report is not yet required.



Number	Condition	Compliance	Comments
	rehabilitation offset described in conditions 6a and 6b in perpetuity (for example, through a covenant agreed with the Western Australian Department of Biodiversity, Conservation and Attractions).		Initial discussions with DBCA indicate that a covenant agreement is not suitable to the rehabilitation offset areas. Instead, EMO will hold discussions with the Westonia Shire about including the areas within the Westonia Common.
Part B – Standard administrative conditions			
<i>Notification of date of commencement of the action</i>			
8	The approval holder must notify the Department in writing of the date of commencement of the action within 10 business days after the date of commencement of the action.	Compliant	EMO provided notice to the Department on the 23rd of January 2020 that they will be commencing the action.
<i>Compliance records</i>			
9	The approval holder must maintain accurate and complete compliance records.	Compliant	EMO is maintaining accurate and complete compliance records. Data is stored and backed up on the site server or databases.
10	If the Department makes a request in writing, the approval holder must provide electronic copies of compliance records to the Department within the timeframe specified in the request.	Not Applicable	The Department have not requested copies of compliance records. Records are available if requested.
<i>Preparation and publication of plans</i>			
11a	The approval holder must: submit plans electronically to the Department for approval by the Minister;	Compliant	Plans were submitted to the Department and approved by the Minister on the 22/1/2020.
11b	publish each plan on the website within 20 business days of the date the plan is approved by the Minister or of the date a revised action management plan is submitted to the Minister or the Department, unless otherwise agreed to in writing by the Minister;	Compliant	Plans are published and available on the Ramelius website: Greenfinch Weed and Vertebrate Pest Management Plan Greenfinch Offset Rehabilitation Plan Greenfinch Fauna Management Plan
11c	exclude or redact sensitive ecological data from plans published on the website or provided to a member of the public; and	Compliant	No sensitive ecological data is published in the plans available on the website
11d	keep plans published on the website until the end date of this approval.	Compliant	Plans are published and available on the Ramelius website: Greenfinch Weed and Vertebrate Pest Management Plan Greenfinch Offset Rehabilitation Plan Greenfinch Fauna Management Plan
12	The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps, and other spatial and metadata required under a plan is prepared in	Not Applicable	Plans do not require monitoring data to be submitted to the Department.



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

EMO

Environment

Number	Condition	Compliance	Comments
	accordance with the Department's Guidelines for biological survey and mapped data (2018) and submitted electronically to the Department in accordance with the requirements of the plan.		
<i>Annual compliance reporting</i>			
13	The approval holder must prepare a compliance report for each 12 month period following the date of commencement of the action, or otherwise in accordance with an annual date that has been agreed to in writing by the Minister. The approval holder must:	Compliant	Compliance Report completed for 12-month period 24th January 2020 to 23rd January 2021
13a	publish each compliance report on the website within 60 business days following the relevant 12 month period;	Compliant	EMO will publish this report on the Ramelius website prior to the 21st of April 2021
13b	notify the Department by email that a compliance report has been published on the website and provide the weblink for the compliance report within five business days of the date of publication;	Compliant	EMO will notify the department and provide a weblink within five business days of this report's publication
13c	keep all compliance reports publicly available on the website until this approval expires;	Compliant	EMO will publish this report on the Ramelius website prior to the 21st of April 2021
13d	exclude or redact sensitive ecological data from compliance reports published on the website; and	Compliant	EMO has not included any sensitive ecological data in this report
13e	where any sensitive ecological data has been excluded from the version published, submit the full compliance report to the Department within 5 business days of publication.	Not Applicable	No sensitive ecological data was included or excluded from this report.
<i>Reporting non-compliance</i>			
14	The approval holder must notify the Department in writing of any: incident; non-compliance with the conditions; or non-compliance with the commitments made in plans. The notification must be given as soon as practicable, and no later than two business days after becoming aware of the incident or non-compliance. The notification must specify:	Not Applicable	EMO is not aware of any incident; non-compliance with the conditions; or non-compliance with the commitments made in plans
14a	any condition which is or may be in breach;	Not Applicable	
14b	a short description of the incident and/or non-compliance; and	Not Applicable	
14c	the location (including co-ordinates); date, and time of the incident and/or non-compliance. In the event the exact information cannot be provided, provide the best information available	Not Applicable	



Number	Condition	Compliance	Comments
15	The approval holder must provide to the Department the details of any incident or non-compliance with the conditions or commitments made in plans as soon as practicable and no later than 10 business days after becoming aware of the incident or non-compliance, specifying:	Not Applicable	
15a	any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future;	Not Applicable	
15b	the potential impacts of the incident or non-compliance; and	Not Applicable	
15c	the method and timing of any remedial action that will be undertaken by the approval holder.	Not Applicable	
<i>Independent Audit</i>			
16	The approval holder must ensure that independent audits of compliance with the conditions are conducted as requested in writing by the Minister.	Not Applicable	The Minister has not requested from EMO an independent audit of compliance with the conditions.
17a	For each independent audit, the approval holder must: provide the name and qualifications of the independent auditor and the draft audit criteria to the Department;	Not Applicable	
17b	only commence the independent audit once the audit criteria have been approved in writing by the Department; and	Not Applicable	
17c	submit an audit report to the Department within the timeframe specified in the approved audit criteria.	Not Applicable	
18	The approval holder must publish the audit report on the website within 10 business days of receiving the Department's approval of the audit report and keep the audit report published on the website until the end date of this approval.	Not Applicable	
<i>Completion of the action</i>			
19	Within 30 days after the completion of the action, the approval holder must notify the Department in writing and provide completion data.	Not Applicable	EMO has not completed the action.

11.2 NON COMPLIANCES

EMO has complied to all applicable conditions of the licence



12. NEW ENVIRONMENTAL RISKS

EMO is unaware of any new risks which may impact the achievement of the approval conditions or pose a risk to the Environment in the project area.

In the 2021 – 2022 reporting period it is planned to rehabilitate 62ha of farmland offset area and 1.06ha of revegetation areas (Figure 9). The success of planting will depend on factors including weather and control of weeds. Weed management prior to planting and in the few years post will be critical to survival of plants and ensure progression to establishing self-sustaining and fully functioning Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community.

The location of the 70ha area planned and approved to be rehabilitated in Lot 161 and Lot 162 may need to be amended to account for potential expansion of the Edna May project into the farmland paddock areas. Rehabilitation will still occur in Lot 161 and Lot 162 and be 70 ha although the blue shaded area (Attachment D of the Approval document) may change. The proposal is displayed in Figure 12. The EMO Offset Rehabilitation Plan accounts for refinements such as this and it will not affect the main goals of the plan of rehabilitating ex-farmland, nor pose any new environmental risks. EMO assumes that these minor changes to specified location are acceptable to DAWE and is proposing to use this Compliance Report as the means of notifying and seeking approval for the minor change to the proposed rehabilitation works.



**Compliance Report Edna May Operations
(EPBC 2018/8213)
24 Jan 2020 - 23 Jan 2021**

EMO

Environment



Annual Compliance Report, Edna May Operations, EPBC 2018/8213
Proposed change to Offset Farmland Revegetation area

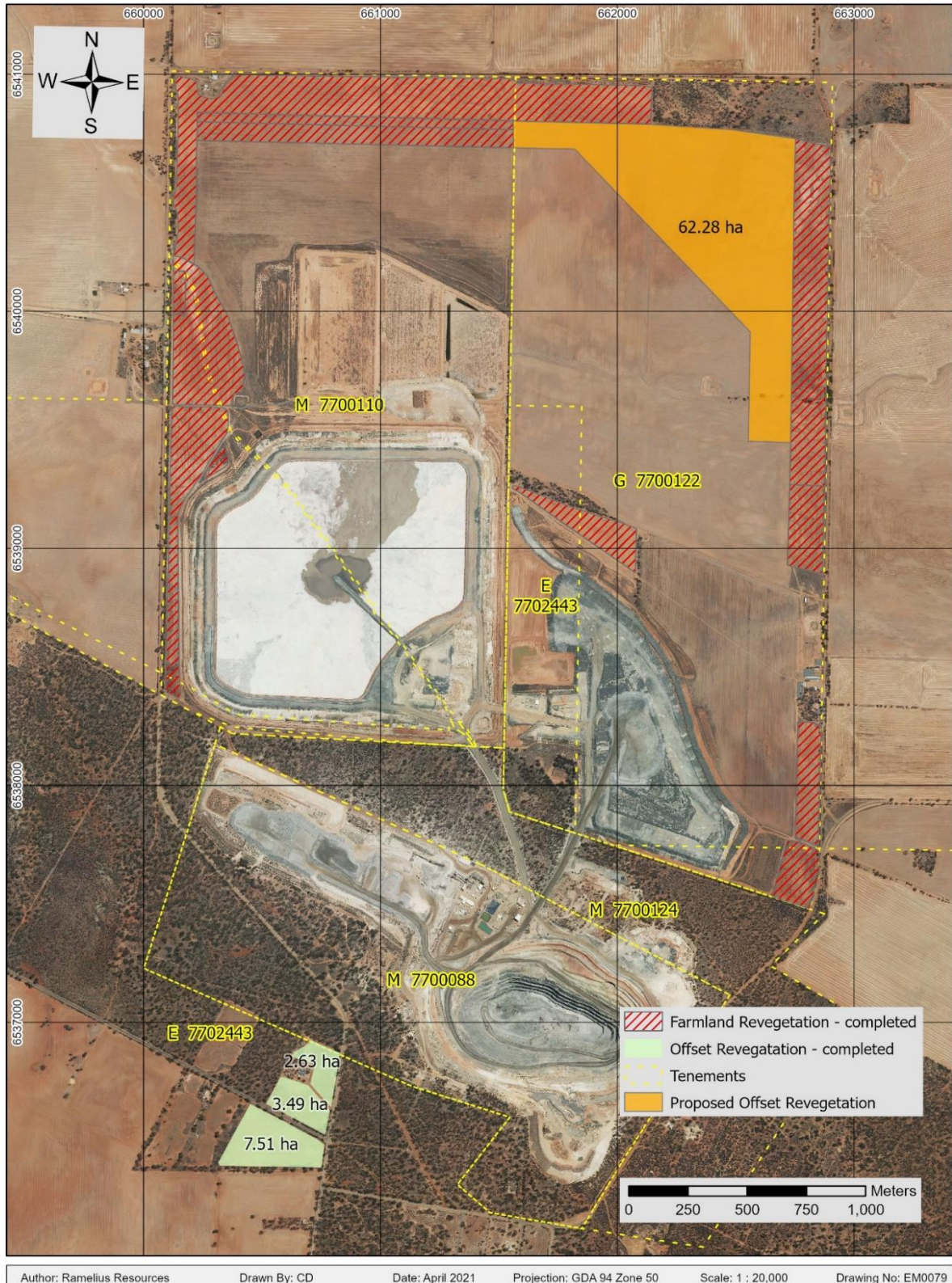


Figure 12: Proposed Change to Offset Farmland Revegetation area



13. REFERENCES

- Botanica Consulting (2021). *Farmland Rehabilitation & EFA Monitoring at Edna May Gold Mine 2020*. Unpublished report prepared for Ramelius Resources Ltd.
- Eco Logical Australia (2016). *Westonia Common Conservation Management Plan 2016-2021*. Prepared for Shire of Westonia
- Harewood (2018). *Targeted Survey Search of Carnaby's black cockatoo*. Unpublished report prepared for Ramelius Resources Ltd.



14. APPENDICES

Appendix A: EPBC Act Proposal Approval Decision and Conditions – EPBC 2018/8213

Appendix B: Farmland Rehabilitation & EFA Monitoring at Edna May Gold Mine, March 2021



PROPOSED APPROVAL

Edna May Gold Project Expansion – Greenfinch Pit, Western Australia (EPBC 2018/8213)

This decision is made under sections 130(1) and 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*. Note that section 134(1A) of the **EPBC Act** applies to this approval, which provides in general terms that if the approval holder authorises another person to undertake any part of the action, the approval holder must take all reasonable steps to ensure that the other person is informed of any conditions attached to this approval, and that the other person complies with any such condition.

Details

Person to whom the approval is granted (approval holder)	Edna May Operations Pty Ltd
ACN or ABN of approval holder	136 365 001
Action	Clearing of vegetation for the expansion of the existing Edna May Gold Project including the establishment of an open pit (the 'Greenfinch pit'), storage of non-reactive waste rock in an expanded North-North West waste rock landform, buttressing of an existing Tailings Storage Facility, development of a noise abandonment bund and construction of a haul road, site drainage works and storage of topsoil approximately 1 km north of Westonia, Western Australia [See EPBC Act referral 2018/8213].

Proposed Approval decision

My decision on whether or not to approve the taking of the action for the purposes of the controlling provision for the action is as follows.

Controlling Provisions

Listed Threatened Species and Communities	
Section 18	Approve
Section 18A	Approve

Period for which the approval has effect

This approval has effect until 30 December 2039.

Decision-maker

Name and position	Declan O'Connor-Cox Acting Assistant Secretary Environment Approvals Division Department of the Environment and Energy
Signature	
Date of decision	22/1/2020

Conditions of approval

This approval is subject to the conditions under the EPBC Act as set out in ANNEXURE A.

ANNEXURE A – CONDITIONS OF APPROVAL

Part A – Conditions specific to the action

1. To minimise impacts to **EPBC Act listed species and ecological communities**, the approval holder must not clear more than 16.6 hectares of native vegetation within the **Clearing Permit Area**. Within the **Clearing Permit Area** the approval holder must not clear more than the following:
 - a. 9.3 ha of **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**; and
 - b. 9.3 ha of **foraging habitat** and no more than 38 **potential breeding trees for the Carnaby's Black Cockatoo**.
2. To minimise the impacts of fragmentation on the **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**, the approval holder must retain and maintain the two corridors of native vegetation shown as '40m wide corridor' and '50m wide corridor' in Attachment A. The approval holder must maintain these corridors as self-sustaining and fully functioning **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**, integrated with **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community** in the surrounding ecosystem. The '40m wide corridor' must be maintained so as to be at least 40 metres wide at its narrowest point for the **life of the approval**. The '50m wide corridor' must be maintained so as to be at least 50 metres wide at its narrowest point for the **life of the approval**.
3. To minimise the impacts of clearing, fragmentation and edge effects on the **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community** and **foraging habitat** and **potential breeding trees for the Carnaby's Black Cockatoo**, the approval holder must rehabilitate at least 1.9 hectares identified as 'Rehabilitation Areas (1.9ha)' in Attachment C. The rehabilitation must establish and maintain self-sustaining and fully functioning **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community** in the Rehabilitation Areas, integrated with the surrounding **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community** within ten years of the commencement of rehabilitation activities. In order to meet this objective, the approval holder must:
 - a. Rehabilitate the Rehabilitation Areas using species representative of the **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**;
 - b. Commence rehabilitation activities in all Rehabilitation Areas within twelve months of the completion of construction of the abandonment bund;
 - c. Implement sufficient monitoring and management of the Rehabilitation Areas to a standard that will ensure that the objective of condition 3 is met within ten years of the commencement of rehabilitation activities;
 - d. Provide, within eleven years from the commencement of rehabilitation activities, a report prepared by an **independent and suitably qualified expert** verifying that the rehabilitation areas comprise self-sustaining and fully functioning **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**; and
 - e. Continue the same standard of monitoring and management of the Rehabilitation Areas until the **Department** advises in writing that it has reviewed and accepts the report of the **independent and suitably qualified expert**.

4. To minimise the impacts of **weeds** on the **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**, **foraging habitat** and **potential breeding trees for the Carnaby's Black Cockatoo**, the approval holder must implement the **Weed and Vertebrate Pest Management Plan** from the **commencement of the action** for the **life of the approval**.
5. To minimise the impacts of predation by **feral animals** on the **Carnaby's Black Cockatoo**, the **approval holder** must implement the **Fauna Management Plan** from the **commencement of the action** for the **life of the approval**.
6. To compensate for the residual significant impact on the **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**, the approval holder must:
 - a. Rehabilitate, to establish and maintain self-sustaining and fully functioning **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community** on 70 ha comprising the portions of Lots 161 and 162 shaded in dark blue in Attachment D;
 - b. rehabilitate, to establish and maintain self-sustaining and fully functioning **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community** on 15 ha comprising the portions of Lot 1578 shaded in dark blue in Attachment D; and
 - c. provide \$10,000 per year for two years from the **commencement of the action** (indexed to the National Consumer Price Index value in 2019) to the Shire of Westonia for the purpose of funding activities in the **Westonia Common Management Plan 2016-2020** and subsequent versions. The first payment must be made within six months from the **commencement of the action**.
7. To provide for the establishment and ongoing management of the compensatory measures described in condition 6a and 6b, the approval holder must implement the **Rehabilitation Offset Plan** within 12 months of the **commencement of the action**. The purpose of the **Rehabilitation Offset Plan** will be to establish and maintain a self-sustaining native vegetation cover that is representative of the **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community** within twenty years from the commencement of rehabilitation activities.

In addition the approval holder must:

- a. Commence rehabilitation activities in the offset areas described in Attachment C within 18 months of the date of this approval;
- b. Undertake a review by an **independent and suitably qualified expert** at five years, ten and fifteen years from the commencement of the rehabilitation activities. The purpose of the reviews will be to determine if the performance indicators and completion criteria as described in the **Rehabilitation Offset Plan** have been met. The approval holder must provide the results of each review to the **Department** within five months of the completion of each review;
- c. Provide to the **Department** details of corrective actions, including triggers and timeframes for the implementation of corrective actions, that will be undertaken by the approval holder in the event that the reviews undertaken under condition 7b show that rehabilitation activities are not meeting the performance indicators and completion criteria as described in the **Rehabilitation Offset Plan**;
- d. Provide the **Department**, within twenty years from the commencement of rehabilitation activities, a report prepared by an **independent and suitably qualified expert** verifying that

the rehabilitation areas comprise self-sustaining and fully functioning **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**;

- e. Continue the same standard of monitoring and management of the rehabilitation areas identified in Attachment C until the **Department** advises in writing that it has reviewed and accepts the report of the **independent and suitably qualified expert**; and
- f. Within 12 months of the advice notification in condition 7e, provide the **Department** with written evidence for the legal protection of the rehabilitation offset described in conditions 6a and 6b in perpetuity (for example, through a covenant agreed with the **Western Australian Department of Biodiversity, Conservation and Attractions**).

Part B – Standard administrative conditions

Notification of date of commencement of the action

8. The approval holder must notify the **Department** in writing of the date of **commencement of the action** within 10 **business days** after the date of **commencement of the action**.

Compliance records

9. The approval holder must maintain accurate and complete **compliance records**.
10. If the **Department** makes a request in writing, the approval holder must provide electronic copies of **compliance records** to the **Department** within the timeframe specified in the request.

Note: **Compliance records** may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the **Department's** website or through the general media.

Preparation and publication of plans

11. The approval holder must:
 - a. submit **plans** electronically to the **Department** for approval by the **Minister**;
 - b. publish each **plan** on the **website** within 20 **business days** of the date the **plan** is approved by the **Minister** or of the date a revised action management plan is submitted to the **Minister** or the **Department**, unless otherwise agreed to in writing by the **Minister**;
 - c. exclude or redact **sensitive ecological data** from **plans** published on the **website** or provided to a member of the public; and
 - d. keep **plans** published on the **website** until the end date of this approval.
12. The approval holder must ensure that any **monitoring data** (including **sensitive ecological data**), surveys, maps, and other spatial and metadata required under a **plan** is prepared in accordance with the **Department's Guidelines for biological survey and mapped data** (2018) and submitted electronically to the **Department** in accordance with the requirements of the **plan**.

Annual compliance reporting

13. The approval holder must prepare a **compliance report** for each 12 month period following the date of **commencement of the action**, or otherwise in accordance with an annual date that has been agreed to in writing by the **Minister**. The approval holder must:
 - a. publish each **compliance report** on the **website** within 60 **business days** following the relevant 12 month period;
 - b. notify the **Department** by email that a **compliance report** has been published on the **website** and provide the weblink for the **compliance report** within five **business days** of the date of publication;

- c. keep all **compliance reports** publicly available on the **website** until this approval expires;
- d. exclude or redact **sensitive ecological data** from **compliance reports** published on the **website**; and
- e. where any **sensitive ecological data** has been excluded from the version published, submit the full **compliance report** to the **Department** within **5 business days** of publication.

Note: **Compliance reports** may be published on the **Department's** website.

Reporting non-compliance

14. The approval holder must notify the **Department** in writing of any: **incident**; non-compliance with the conditions; or non-compliance with the commitments made in **plans**. The notification must be given as soon as practicable, and no later than two **business days** after becoming aware of the **incident** or non-compliance. The notification must specify:
 - a. any condition which is or may be in breach;
 - b. a short description of the **incident** and/or non-compliance; and
 - c. the location (including co-ordinates), date, and time of the **incident** and/or non-compliance. In the event the exact information cannot be provided, provide the best information available.
15. The approval holder must provide to the **Department** the details of any **incident** or non-compliance with the conditions or commitments made in **plans** as soon as practicable and no later than **10 business days** after becoming aware of the **incident** or non-compliance, specifying:
 - a. any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future;
 - b. the potential impacts of the **incident** or non-compliance; and
 - c. the method and timing of any remedial action that will be undertaken by the approval holder.

Independent audit

16. The approval holder must ensure that **independent audits** of compliance with the conditions are conducted as requested in writing by the **Minister**.
17. For each **independent audit**, the approval holder must:
 - a. provide the name and qualifications of the independent auditor and the draft audit criteria to the **Department**;
 - b. only commence the **independent audit** once the audit criteria have been approved in writing by the **Department**; and
 - c. submit an audit report to the **Department** within the timeframe specified in the approved audit criteria.
18. The approval holder must publish the audit report on the **website** within **10 business days** of receiving the **Department's** approval of the audit report and keep the audit report published on the **website** until the end date of this approval.

Completion of the action

19. Within 30 days after the **completion of the action**, the approval holder must notify the **Department** in writing and provide **completion data**.

Part C - Definitions

In these conditions, except where contrary intention is expressed, the following definitions are used:

Business day means a day that is not a Saturday, a Sunday or a public holiday in the state or territory of the action.

Carnaby's Black Cockatoo means the **EPBC Act** listed Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*).

Clearing means the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of vegetation.

Clearing Permit Area is the Clearing Permit Area identified in Attachment A.

Commencement of the action means the first instance of any specified activity associated with the action including clearing of vegetation and **construction** of any infrastructure. **Commencement of the action** does not include minor physical disturbance necessary to:

- i. undertake pre-clearance surveys or monitoring programs;
- ii. install signage and /or temporary fencing to prevent unapproved use of the project area;
- iii. protect environmental and property assets from fire, weeds and pests, including use of existing surface access tracks; and
- iv. install temporary site facilities for persons undertaking pre-commencement activities so long as these are located where they have no impact on the **protected matters**.

Completion criteria means, but may not be limited to, the completion criteria to be achieved at ten years from the commencement of rehabilitation activities identified in the Edna May Operations Offset Rehabilitation Plan provided to the Department on 4 November 2019.

Completion data means an environmental report and spatial data clearly detailing how the conditions of this approval have been met. The **Department's** preferred spatial data format is **shapefile**.

Completion of the action means all specified activities associated with the action have permanently ceased.

Compliance records means all documentation or other material in whatever form required to demonstrate compliance with the conditions of approval in the approval holder's possession or that are within the approval holder's power to obtain lawfully.

Compliance reports means written reports:

- i. providing accurate and complete details of compliance, **incidents**, and non-compliance with the conditions and the **plans**;
- ii. consistent with the **Department's Annual Compliance Report Guidelines (2014)**;
- iii. include a **shapefile** of any clearance of any **protected matters**, or their habitat, undertaken within the relevant 12 month period; and
- iv. annexing a schedule of all **plans** prepared and in existence in relation to the conditions during the relevant 12 month period.

Construction means the erection of a building or structure that is or is to be fixed to the ground and wholly or partially fabricated on-site; the alteration, maintenance, repair or demolition of any building or structure; preliminary site preparation work which involves breaking of the ground (including pile driving); the laying of pipes and other prefabricated materials in the ground, and any associated excavation work; but excluding the installation of temporary fences and signage.

Department means the Australian Government agency responsible for administering the **EPBC Act**.

EPBC Act means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

EPBC Act listed species and ecological communities means the EPBC Act listed **Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community**, Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) and **Resinous Eremophila** (*Eremophila resinosa*).

EPBC Regulations means the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth).

Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community means the EPBC Act listed Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community.

Fauna Management Plan means the *Fauna Management Plan* provided to the Department as part of preliminary documentation on 9 October 2019.

Feral animals includes, but may not be limited to, Red Fox (*Vulpes vulpes*), European Rabbit (*Oryctolagus cuniculus*), Cat (*Felis catus*) and Wild Dog (*Canis lupus familiaris*)

Foraging habitat for the Carnaby's Black Cockatoo means the EPBC Act listed Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community.

Incident means any event which has the potential to, or does, impact on one or more **protected matter(s)**.

Independent and suitably qualified expert means a person that:

- a. does not have, an individual or by employment or family affiliation, any conflicting or competing interests with the approval holder; the approval holder's staff, representatives or associated persons; or the project, including any personal, financial, business or employment relationship, other than receiving payment for undertaking the role for which the condition requires an independent expert;
- b. has professional qualifications relevant to the **protected matter(s)**;
- c. is a recognised expert, supported by relevant peer reviewed publications, regarding the **protected matter(s)**; and
- d. has at least 7 years of experience designing and undertaking surveys relevant to the **protected matter(s)**.

Independent audit: means an audit conducted by an independent and **suitably qualified person** as detailed in the *Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines* (2015).

Life of the approval means the period for which the approval has effect.

Monitoring data means the data required to be recorded under the conditions of this approval.

Minister means the Australian Government Minister administering the EPBC Act including any delegate thereof.

Performance indicators means, but may not be limited to, the performance indicators to be achieved at five years from the commencement of rehabilitation activities identified in the Edna May Operations Offset Rehabilitation Plan provided to the Department on 4 November 2019.

Plan(s) means any of the documents required to be prepared, approved by the **Minister**, and/or implemented by the approval holder and published on the **website** in accordance with these conditions (includes action management plans and/or strategies).

Potential breeding trees for the Carnaby's Black Cockatoo means the breeding habitat for Carnaby's Black Cockatoo identified in Attachment B.

Protected matter means a matter protected under a controlling provision in Part 3 of the **EPBC Act** for which this approval has effect.

Rehabilitation Offset Plan means the EMO Offset Rehabilitation Plan provided to the Department as part of the preliminary documentation on 9 October 2019 and any subsequent revisions as approved by the **Department**.

Resinous Eremophila means the **EPBC Act** listed Resinous Eremophila (*Eremophila resinosa*).

Sensitive ecological data means data as defined in the Australian Government Department of the Environment (2016) *Sensitive Ecological Data – Access and Management Policy V1.0*.

Shapefile means location and attribute information of the action provided in an Esri shapefile format. Shapefiles must contain '.shp', '.shx', '.dbf' files and a '.prj' file that specifies the projection/geographic coordinate system used. Shapefiles must also include an '.xml' metadata file that describes the shapefile for discovery and identification purposes.

Species representative of the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community means Salmon Gum (*Eucalyptus salmonophloia*), Red Morrell (*Eucalyptus longicornis*) and Gimlet (*Eucalyptus salubris*) and/or species that will produce the following Eucalypt woodlands as described in the **Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt**:

- Mid woodland of Red Morrell (*Eucalyptus longicornis*) over isolated tall Boree (*Melaleuca pauperiflora* subsp. *fastigiata*) shrubs, low open chenopod shrubland Saltbush (*Atirplex*) species and open low forbland of Grey Copper Burr (*Sclerolaena diacantha*) on clay-loam plain; and/or
- Mid woodland of Gimlet over open mid shrubland of Desert Quandong (*Santalum acuminatum*) and open low shrubland of Tan Wattle (*Acacia hemiteles*) and Spiny Grevillea (*Grevillea acuaria*) on clay-loam plain.

Suitably qualified person means a person who has professional qualifications, training, skills and/or experience related to the nominated subject matter and can give authoritative independent assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods and/or literature.

Website means a set of related web pages located under a single domain name attributed to the approval holder and available to the public.

Weed and Vertebrate Pest Management Plan is the *Weed and Vertebrate Pest Management Plan* provided to the Department as part of the preliminary documentation on 9 October 2018.

Weeds includes, but may not be limited to, Wild Oats (*Avena fatua*), Onion Weed (*Asphodelus fistulosus*) and Wild Raddish (*Raphanus raphanistrum*).

Western Australian Department of Biodiversity, Conservation and Attractions means the Western Australian Department of Biodiversity, Conservation and Attractions or any future agencies that retain its roles and responsibilities.

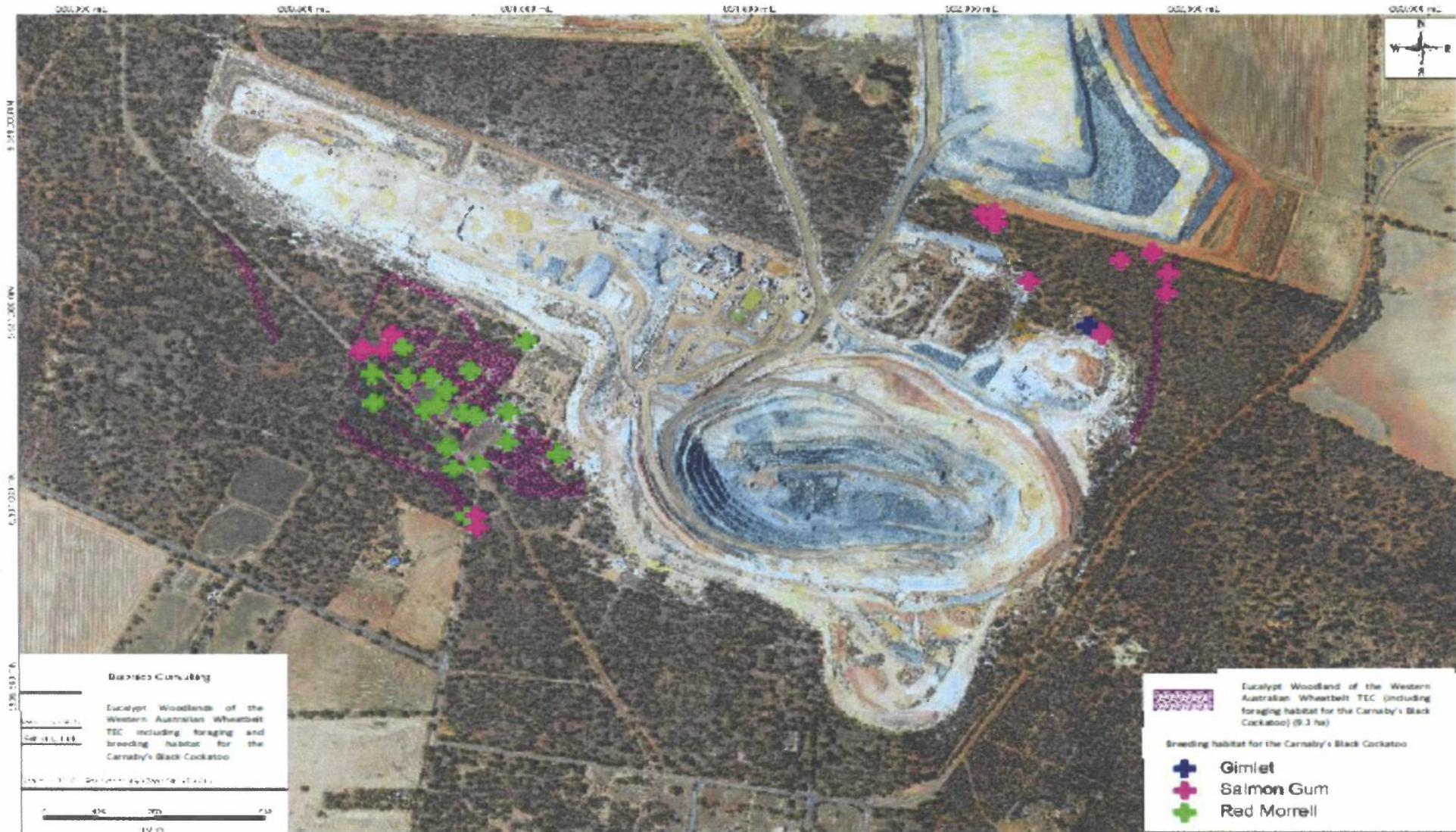
Westonia Common Management Plan 2016-2021 is the *Westonia Common Management Plan 2016-2021* provided to the Department as part of the preliminary documentation on 9 October 2018, or any subsequent versions.

ATTACHMENTS

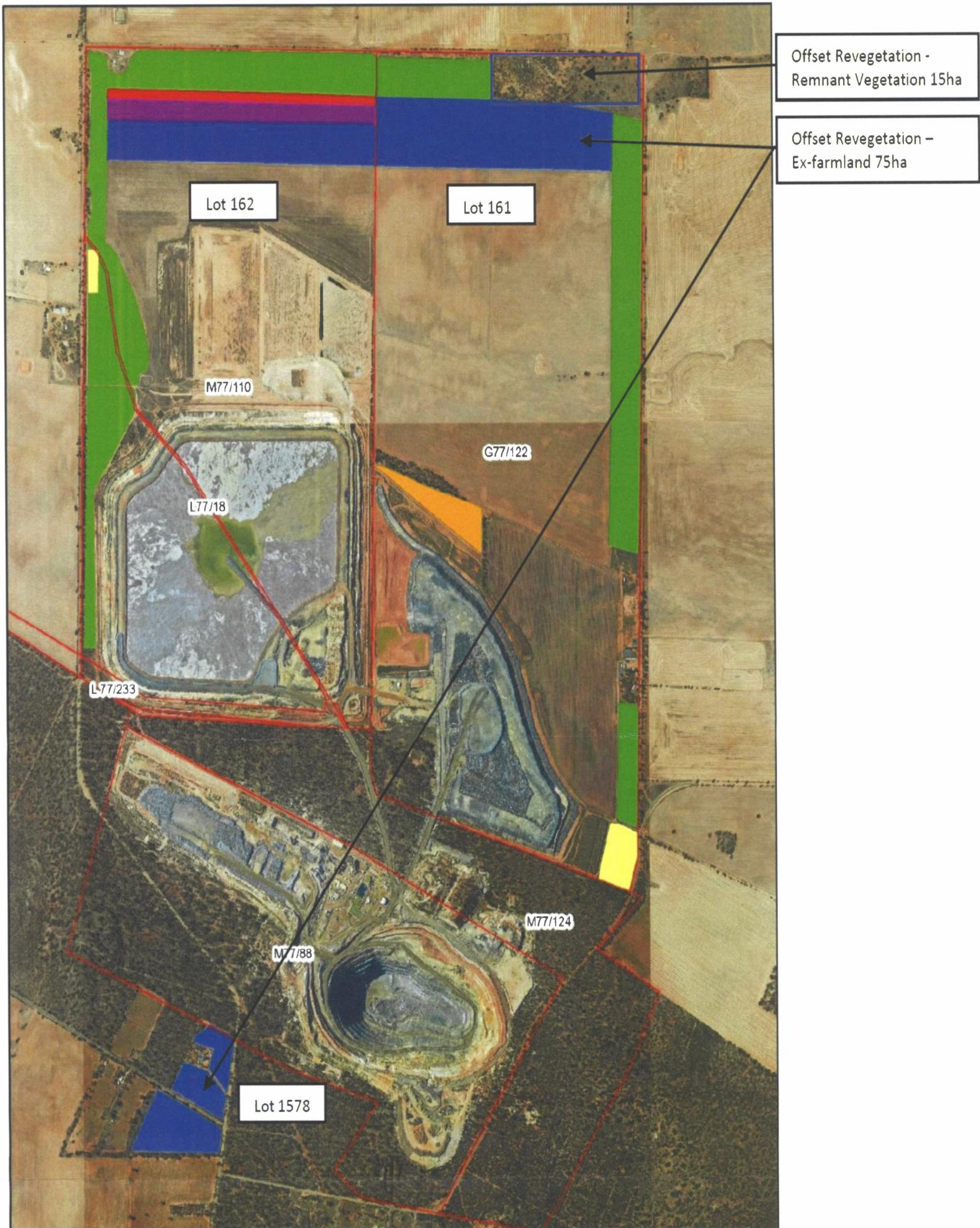
ATTACHMENT A – Map of Clearing Permit Area






ATTACHMENT B – Map of Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community and breeding and foraging habitat for the Carnaby's Black Cockatoo in the Clearing Permit Area.



ATTACHMENT D – Map of environmental offset areas (Lots 161, 162 and 1578)



		<table border="1"> <tr> <th colspan="2">Revegetation</th> </tr> <tr> <th>YEAR</th> <th>Color</th> </tr> <tr> <td>2015</td> <td>Yellow</td> </tr> <tr> <td>2016</td> <td>Light Green</td> </tr> <tr> <td>2017</td> <td>Orange</td> </tr> <tr> <td>2018</td> <td>Red</td> </tr> <tr> <td>Scheduled Revegetation 2019</td> <td>Purple</td> </tr> <tr> <td>Proposed offset revegetation</td> <td>Blue</td> </tr> </table>	Revegetation		YEAR	Color	2015	Yellow	2016	Light Green	2017	Orange	2018	Red	Scheduled Revegetation 2019	Purple	Proposed offset revegetation	Blue	<h3>Farmland Revegetation</h3>		
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Proposed offset revegetation	Blue																				
Edna May Operations Date: 02/02/2019 Drawn By: B. Bamford Grid: Australia MGA94 Zone 50																					



Farmland Rehabilitation & EFA Monitoring at Edna May Gold Mine



Version 2
March 2021

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Table of Contents

Executive Summary	1
1 Introduction	2
1.1 Background	4
1.2 Flora and Vegetation	8
1.3 Climate	8
2 Methods	9
2.1 Vegetation Monitoring	9
2.2 EFA Monitoring	11
3 Results	13
3.1 Vegetation Monitoring	13
3.1.1 Completion Criteria Assessment	18
3.1.2 2015 Rehabilitation	20
3.1.3 2016 Rehabilitation	22
3.1.4 Slippery's Paddock 2020 Rehabilitation	24
3.2 EFA Monitoring	26
4 Discussion & Conclusions	33
4.1 Vegetation Monitoring and Completion Criteria	33
4.2 EFA Monitoring and Completion Criteria	33
5 References	35
Figures	
Figure 1-1: Location Map of the Edna May Gold Mine	3
Figure 1-2: Farmland Rehabilitation and Vegetation Monitoring Transect Locations	5
Figure 1-3: EFA monitoring sites established in December 2020	7
Figure 1-4: Monthly rainfall (2017 to 2020) for the Westonia weather station (#12083) (BoM, 2021)	8
Figure 3-1: Perennial Species Richness of each transect	15
Figure 3-2: Perennial Species Diversity of each transect	15
Figure 3-3: Perennial Plant Density (m ²) of each transect	16
Figure 3-4: Perennial Vegetation Cover (%) of each transect	16
Figure 3-5: Relative Weed Cover (%) of each transect	17
Figure 3-6: Mean species richness and total plant density of 2015 Rehabilitation sites	20
Figure 3-7: Mean species diversity and plant density (m ²) of 2015 Rehabilitation sites	21
Figure 3-8: Mean vegetation cover and relative weed cover (%) of 2015 Rehabilitation sites	21
Figure 3-9: Mean species richness and total plant density of 2016 Rehabilitation sites	22
Figure 3-10: Mean species diversity and plant density (m ²) of 2016 Rehabilitation sites	23
Figure 3-11: Mean vegetation cover and relative weed cover (%) of 2016 Rehabilitation sites	23
Figure 3-12: Mean species richness and total plant density of Slippery's Paddock transects	24
Figure 3-13: Mean species diversity and plant density (m ²) of Slippery's Paddock transects	24
Figure 3-14: Mean vegetation cover and relative weed cover (%) of Slippery's Paddock transects	25
Figure 3-15: EFA indices for sites at Edna May Gold Mine, December 2020	26
Figure 3-16: Species Richness (per 100m ²) and Plant Density (plants/ha) at Edna May Gold Mine, December 2020	26
Figure 3-17: EFA indices for EM001, December 2020	27
Figure 3-18: Top (left) and bottom (right) of EM001	27
Figure 3-19: EFA indices for EM002, December 2020	28
Figure 3-20: Top (left) and bottom (right) of EM002	28
Figure 3-21: EFA indices for EM003, December 2020	29
Figure 3-22: Top (left) and bottom (right) of EM003	29
Figure 3-23: EFA indices for EM004, December 2020	30
Figure 3-24: Top (left) and bottom (right) of EM004	30
Figure 3-25: EFA indices for Ana1, December 2020	31

Figure 3-26: Top (left) and bottom (right) of Ana1	31
Figure 3-27: EFA indices for Ana2, December 2020	32
Figure 3-28: Top (left) and bottom (right) of Ana2	32

Tables

Table 1-1: Revegetation methods	4
Table 2-1: Monitoring Transect Details	9
Table 2-2: Completion Criteria Targets	10
Table 2-3: Monitoring Transect Details	11
Table 2-4: Contribution of the Soil Surface Features to the Landscape Condition (Tongway, 1994).	12
Table 3-1: Monitoring Results Summary: 2017-2020	14
Table 3-2: Assessment of rehabilitation sites against completion criteria	19
Table 4-1: Completion Criteria against Transects Data 2020	34

Appendices

Appendix 1: Species List Vegetation Monitoring 2020	36
Appendix 2: Photographic Record of Vegetation Monitoring Transects 2017-2020	37
Appendix 3: Photographic record of EFA Transects	45
Appendix 4: Species List for EFA Transects 2020	48
Appendix 5: Slippery's Paddock Seedlings (2020)	50

EXECUTIVE SUMMARY

The Edna May Gold Mine, located in the wheatbelt shire of Westonia, commenced a large-scale rehabilitation programme in 2015 replacing ex-farmland and agricultural land back to woodland, similar to that of the remnant Eucalypt woodland vegetation within the region known as the 'Eucalypt woodlands of the Western Australian Wheatbelt'. Approximately 97 ha of farmland surrounding the Project was planted over 2015 and 2016. A combination of direct seeding and planting of tubestock was used. In 2020, 5.7 ha of land known as "Slippery's Paddock" and located approximately 600m south west of the Edna May Gold Mine, was rehabilitated by ripping and seeding. Two transects were established on Slippery's Paddock during the current (2020) monitoring period. Analogue transects A3a-T1 and A3a-T2 were also established in 2020 to replace transect A3-T1 and A3-T2 that were found to be removed.

Since planting at the farmlands and Slippery's Paddock, vegetation monitoring has occurred each year to assess how well the rehabilitation efforts are progressing towards final completion criteria. Completion criteria are based on identical monitoring methodology of remnant Eucalypt woodland vegetation analogue sites. Monitoring is conducted on species richness, species diversity, plant density, vegetation cover, relative weed cover and presence of significant weeds.

All sites achieved excellent levels for species diversity (except for one transect at Slippery's Paddock), weeds of national environmental significance and declared plants cover. Majority of sites achieved satisfactory to excellent levels for species richness and relative weed cover. Site 1 has shown particular progress and met all the completion criteria across the entire monitoring program, while Slippery's Paddock transect SLP-T2 requires review in 4 of the 7 completion criteria categories. All remaining sites have not achieved satisfactory levels of plant density and vegetation cover. Further recruitment from sown seed may result in attainment of satisfactory levels or some sites may require supplementary plantings while other sites may require supplementary plantings to increase and/or maintain diversity and density until the sites reach an equilibrium state, comparable to analogues. Vegetation cover and plant density criteria for majority of the rehabilitation sites have not yet been met; however, given the rehabilitation is at an early stage of development (less than six years old for the farmland sites) this result is not unexpected. A decline in species richness, diversity and plant density has been identified since the baseline monitoring period for the 2016 rehabilitation areas, however, this decline was also evident in the analogue sites.

No Declared Plants or Weeds of National Significance were recorded at any of the rehabilitation sites or analogues since monitoring began in 2017. Weed cover was highest at the Slippery's Paddock transects where *Carrichtera annua* (Ward's Weed), *Chenopodium album* (White Goosefoot) and *Mesembryanthemum crystallinum* (Common Iceplant) were identified. A re-appraisal of weed control methods and application frequency maybe advised if future monitoring of the Slippery's Paddock transects show an increasing trend in weed cover.

This current monitoring program also established six sites for Ecosystem Function Analysis (EFA) monitoring, with two sites established on the Old TSF landform, two sites on the Southern Waste Rock Landform (WRL) and two analogue sites in native vegetation to the south west of the Edna May site.

Data collected shows that all EFA indices were generally consistent across all sites. Stability scored higher at the two analogue sites compared to the sites on the WRLs. Infiltration scored similarly for the WRL sites and the analogue sites and the nutrient cycling was slightly higher for the analogue sites.

Species richness was comparable across transects and analogues. Plant density was higher on the four sites on the WRLs compared to the two analogue sites, and percentage vegetation cover was comparable across all sites.

Ward's weed (*Carrichtera annua*) was recorded at one site on the Old TSF landform.

1 INTRODUCTION

The Edna May Gold Mine is located in the Shire of Westonia, approximately 1 km north of the township of Westonia and approximately 280 km east-northeast of Perth WA (Figure 1). Mining of the Edna May deposit has been conducted periodically since the early 1900's with current operations being conducted by Edna May Operations Pty Ltd (EMO), which is a wholly owned subsidiary of Ramelius Resources Limited (Ramelius).

The Edna May Gold Mine is located within the Merredin Subregion of the Avon Wheatbelt Bioregion, which has been subject to extensive clearing for agriculture and grazed by stock. Remnant Eucalypt woodland vegetation within the region is protected under Commonwealth legislation as a Threatened Ecological Community (TEC) known as the 'Eucalypt woodlands of the Western Australian Wheatbelt'.

In July 2017 Phoenix Environmental Sciences Pty Ltd (Phoenix) was engaged by EMO to undertake a rehabilitation assessment in areas rehabilitated in 2015 and 2016 at the Edna May Gold Mine. These sites were monitored in December 2018 and December 2020 by Botanica Consulting (BC). In December 2020, two transects were established on rehabilitated land in Slippery's Paddock to begin vegetation monitoring there. Also in 2020, one of the analogue sites for vegetation monitoring (A3-T1 and A3-T2) was removed and replaced with a new analogue (A3a-T1a and A3a-Ta).

The objectives of the vegetation monitoring program were to:

- Undertake vegetation monitoring of each analogue and rehabilitation site and assess rehabilitation against baseline data and completion criteria.
- Present a report detailing the current status of the rehabilitated areas.

In December 2020, Botanica Consulting was engaged by EMO to establish transects on the old Tailings Storage Facility (TSF) and the Southern WRL. The scope of works included the establishing of several analogue transects. The transects were subject to Ecosystem Function Analysis and Landscape Function Analysis (collectively referred to as EFA), a method established by Tongway and colleagues (Tongway, 1994). EFA was initially used to grade rangeland but has also been used effectively to monitor progress of rehabilitation on mine site Waste Rock Landforms (WRL).

The full scope of EFA assessment includes:

- Measuring Landscape Function at each established transect;
- Monitoring the established analogue site;
- Recording plant taxa present;
- Measuring the plant density for each species;
- Measuring the percentage canopy cover for each transect;
- Statistically analysing the data and providing tabulated summary of the findings;
- Identification of rehabilitation which complies with the Department of Mines, Industry, Regulation and Safety (DMIRS) requirements;
- Comparison rehabilitation criteria to targets stated in respective Mine Closure Plans.

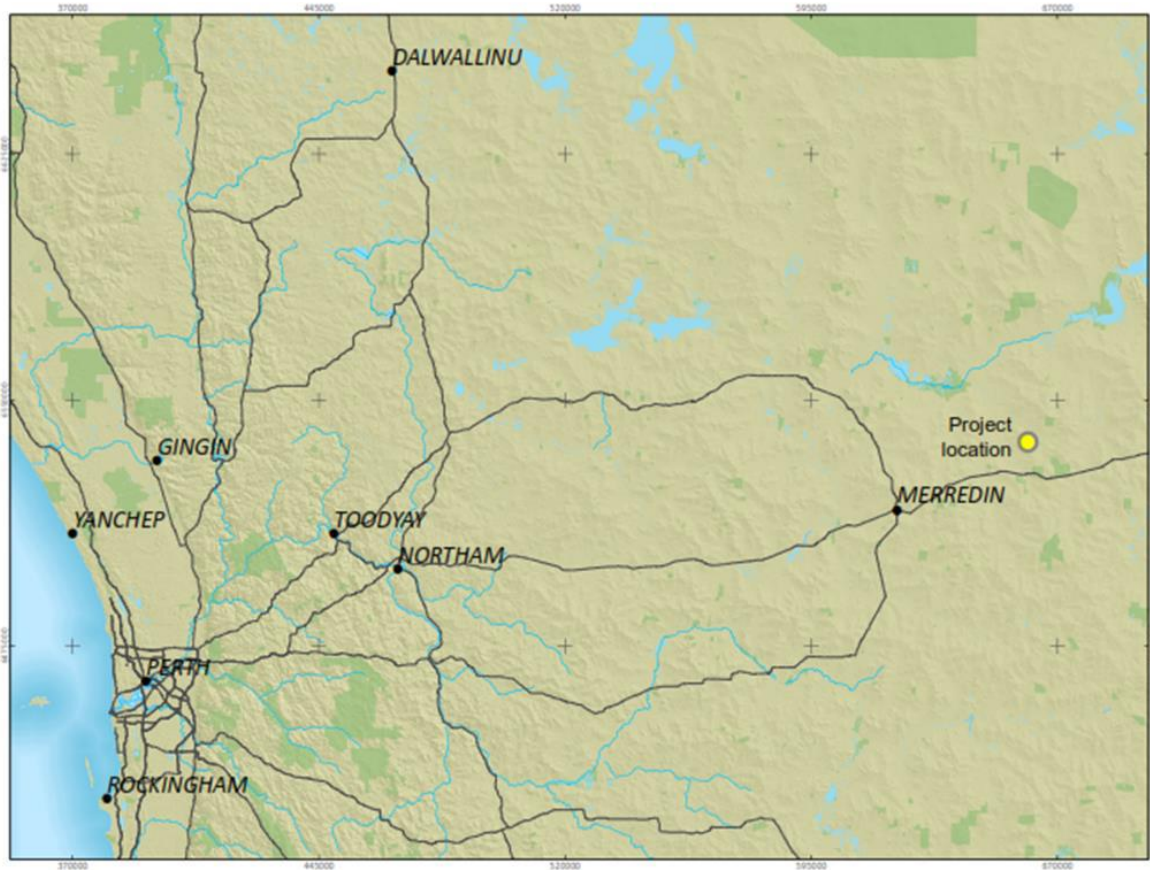


Figure 1-1: Location Map of the Edna May Gold Mine

1.1 BACKGROUND

Vegetation Monitoring

Approximately 97 ha of farmland surrounding the Project was rehabilitated in 2015 and 2016 (Figure 1-2). These areas contain two sites that are 5 ha each, these sites are where the Threatened flora, *Eremophila resinosa*, was sown with the direct seeding mix. Revegetation was undertaken across six sites utilising direct seeding and planting of tubestock (Table 1-1).

Direct seeding was undertaken utilising a Commercial Native Vegetation Seeder (CommVeg seeder developed by Dr Geoff Woodall). In a single pass operation, the CommVeg seeder scalping blade produces a flat-bottomed scalp which is followed by a shallow rip (0.3 m) with a spring tyne followed by paired tillage disks and then the passage of the floating seeder arm which flattens the ripped and tilled soil then forms a seeding trench at a present depth, then places seed before closing the trench and pressing the soil.

In the majority of rehabilitated areas tubestock was hand planted utilising Pottiputki planters. For site 4 rehabilitated in 2016 tubestock was planted by a Chatsfield tree planter that in a one pass operation rips, scalps and plants a seedling (Bella Bamford pers. Comm.).

The seeding and planting methods result in parallel shallow trenches that have been seeded and/or planted interspaced by areas that are not tilled and received no native seed or plants.

Table 1-1: Revegetation methods

Site	Rehabilitation Year	Area (ha)	Methods
1	2015	4.1	Direct seeded using the CommVeg seeder, seedlings were hand planted into the direct seeding rows
2	2016	5	Site was direct seeded using the CommVeg seeder, seedlings were hand planted into the direct seeding rows. This site is also <i>Eremophila resinosa</i> translocation site
3	2016	5.3+21.4	Site was direct seeded using the CommVeg seeder, seedlings were hand planted into the direct seeding rows. This site is also <i>Eremophila resinosa</i> translocation site
4	2016	36.8	Site was direct seeded using the CommVeg seeder, seedlings were planted into separate rows to the direct seeding using the Chatsfield tree planter
5	2015	0.9	Direct seeded using the CommVeg seeder, seedlings were hand planted into the direct seeding rows
6	2016	9.8+13.2	Direct seeded using the CommVeg seeder, seedlings were hand planted into the direct seeding rows
Slippery's Paddock	2020	5.7	Topsoil spread (200mm deep), seedlings hand planted in paddock (See Appendix 5 for species composition)



Figure 1-2: Farmland Rehabilitation and Vegetation Monitoring Transect Locations

EFA Monitoring

Old TSF landform

Progressive rehabilitation of the Old TSF landform commenced in 2016 however this was put on hold prior to completion. Earthworks then recommenced in 2018. Profiling the batter of the landform was completed again and an armouring cover of 300mm was spread across the slope. The armouring cover was comprised of 1 part topsoil to 2 parts fresh waste rock and spread along the slope at a depth of 300mm. In May 2018, a dozer ripped the batter on the contour.

Southern WRL

Progressive rehabilitation of the Southern WRL commenced in 2016 however this was put on hold prior to completion. Earthworks recommenced in 2018 with an armouring cover of 300mm spread across the slope. The armouring cover was comprised of 1 part topsoil to 2 parts fresh waste rock and spread along the slope at a depth of 300mm. In June 2018, a dozer ripped the batter on the contour.

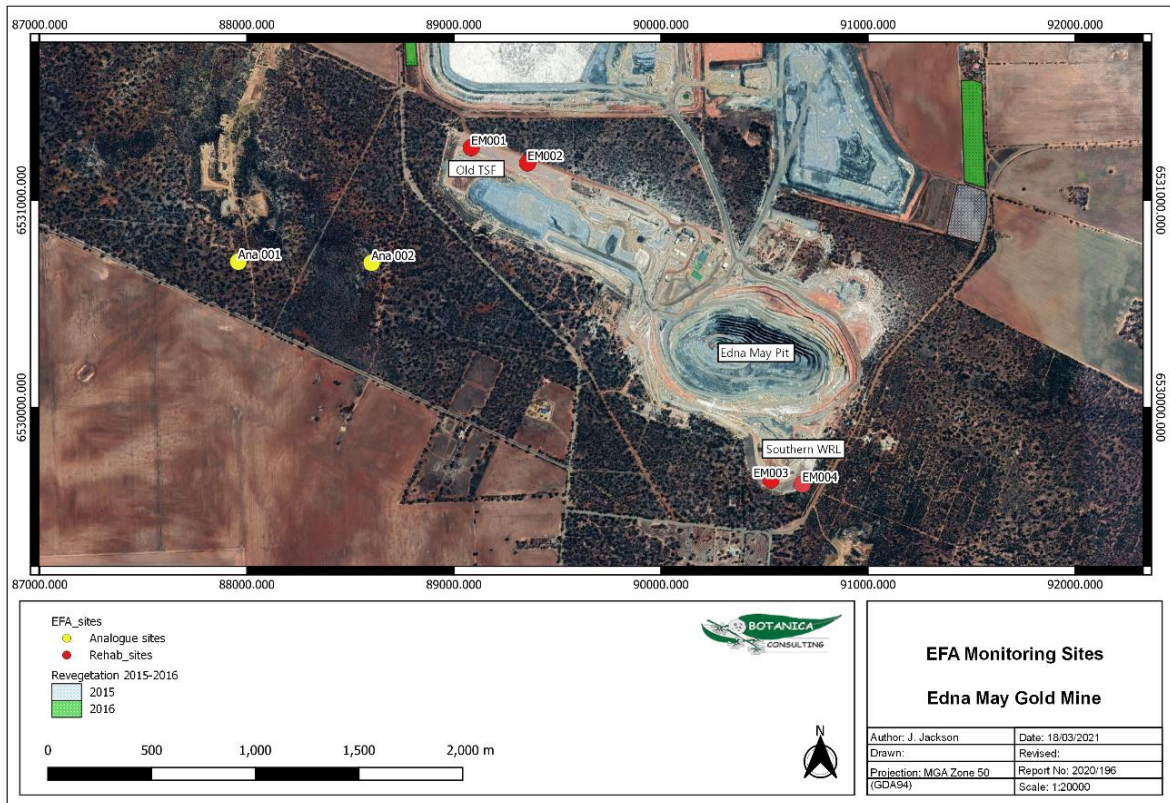


Figure 1-3: EFA monitoring sites established in December 2020

1.2 FLORA AND VEGETATION

The Edna May Gold Mine lies within the Merredin subregion of the Avon Wheatbelt Bioregion which is characterized by gently undulating landscapes of low relief; proteaceous scrub heaths on residual lateritic uplands and mixed woodlands on quaternary alluvial soils. The region is dominated by mixed woodland of Mallee and Eucalyptus species. The region has been extensively cleared for agriculture and grazed by stock. Remnant vegetation, riparian systems, populations of threatened native flora and fauna species and ecosystems are in poor condition, with the trend expected to decline (McKenzie, May and McKenna, 2002). Extensive clearing of native vegetation has led to salinity problems being experienced throughout the bioregion.

Multiple reconnaissance flora and vegetation surveys of native vegetation surrounding the Edna May Gold Mine have been conducted, including surveys conducted by MWH (2014), Phoenix Environmental Services (2016; 2017) and Botanica Consulting (2018). From these surveys, a total of five natural vegetation communities are present in the area surrounding the Edna May Gold Mine:

1. *Eucalyptus corrugata* Mallee Woodland
2. *Eucalyptus longicornis* Woodland
3. *Eucalyptus loxophleba* Mallee Woodland
4. *Eucalyptus salubris* Woodland
5. *Melaleuca/Acacia* Scrub

1.3 CLIMATE

The climate of the Merredin subregion is characterised as semi-arid warm Mediterranean and is characterised by hot dry summers and wet winters (Beard, 1990; Beecham, 2001). Rainfall data for the Westonia weather station (#12083), located approximately 1 km south-east of the Edna May Gold Mine, is shown in Figure 1-4 (BoM, 2021). With the exception of June, monthly rainfall in 2019 was below average throughout the entire year, and the total annual rainfall was recorded at 232.5mm. In 2020, the total annual rainfall was much closer to the average annual rainfall at 331.3mm and 324.9mm respectively.

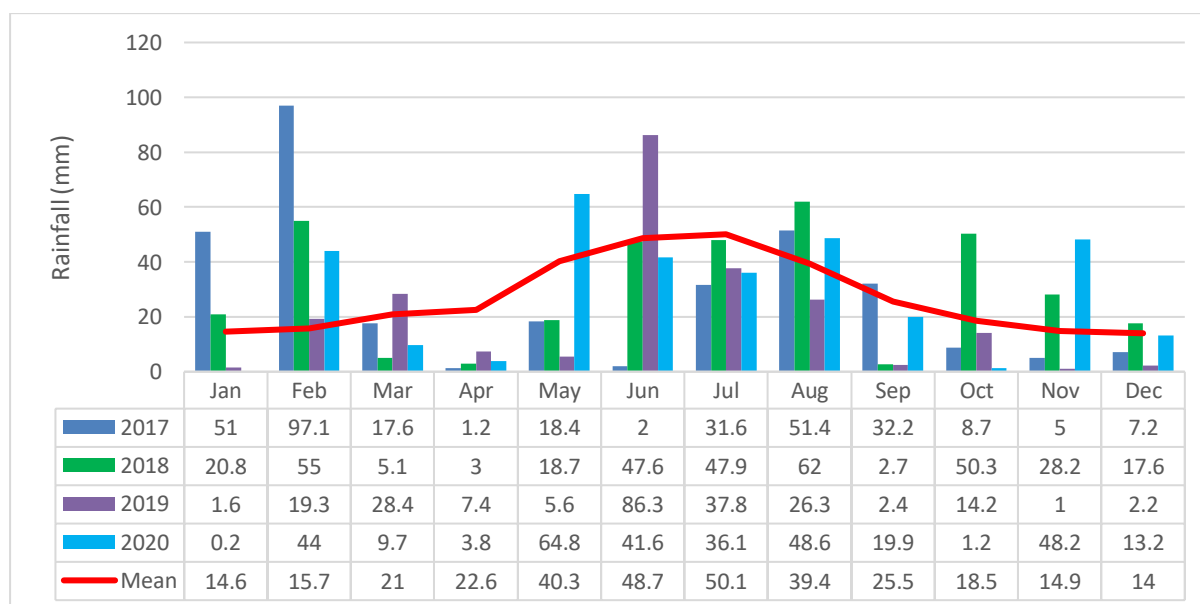


Figure 1-4: Monthly rainfall (2017 to 2020) for the Westonia weather station (#12083) (BoM, 2021)

2 METHODS

2.1 VEGETATION MONITORING

All transects previously established and assessed by Phoenix in 2017 were monitored (listed in Table 2-1). Each transect comprised of 1m X 1m quadrats (25 quadrats per transect) along the length of the transect (25m length).

Table 2-1: Monitoring Transect Details

Rehabilitation/ Analogue Site	Transect ID	GPS Coordinates (GDA 94, 28350)
Site 1	T1	50J 662771 6537641
Site 5	T2	50J 660165 6540060
Site 2	T1	50J 662808 6538180
Site 3	T2	50J 662761 6539045
Site 4	T3	50J 661259 6540886
Site 6	T4	50J 660176 6539476
Slippery's Paddock	SLP T1	50J 660768 6536740
Slippery's Paddock	SLP T2	50J 660628 6536737
Analogue 1	A1T1	50J 662661 6537466
	A1T2	50J 662645 6537475
Analogue 2	A2T1	50J 661686 6536192
	A2T2	50J 661646 6536219
Analogue 3a ¹	A3aT1	50J 660496 6536824
	A3aT2	50J 660529 6536903

¹Analogue 3a replacing Analogue 3 in 2020 (Analogue 3 removed)

Quantitative floristic data collected in each sequential 1 m x 1 m quadrat along the 25 m transect included:

- Identification of all vascular plants within the quadrat (species richness);
- Count of all vascular plants of each species recorded in the quadrat (plant density);
- Visual estimate of the perennial foliage cover of each species in the quadrat (vegetation cover); and
- Visual estimate of the weed cover in the quadrat (weed cover).

The following assessments were conducted on the quadrat data collected for each transect:

- Species Richness (total number of perennial species) within each transect
- Species Diversity (Shannon diversity index (H)) within each transect
- Plant Density (total number of perennial plants) within each transect
- Vegetation Cover (percentage of live perennial foliage) within each transect
- Relative Weed Cover (percentage of weed foliage¹/total foliage cover X100) within each transect
- Weed cover (total percentage of foliage) for Weeds of National Environmental Significance (WONS) listed by the Department of Environment and Energy (DotEE, 2018b) and Declared

¹ Relative weed cover calculated for all weeds not listed as WONS or Declared Plants. Much of the weed cover was dry/ dying off at the time of assessment (summer) however distinction between live and dead weed foliage was not possible. As a result, the total coverage was recorded which provides a conservative/ over-estimation of the actual weed cover. Further monitoring in cooler climatic conditions (winter) will determine whether weeds have persisted.

Plants listed by Department of Primary Industries and Regional Development (DPIRD, 2018) within each transect

Annuals/ short-lived species and weed species were excluded from the biodiversity assessments (richness, diversity, density and vegetation cover).

Quantitative completion criteria derived from the average biodiversity of the analogue sites were used to assess rehabilitation success (Table 2-2). The categories for biodiversity criteria (plant density and vegetation cover, species diversity and richness) are as follows:

Vegetation Cover and Plant Density:

Excellent: Achieves or exceeds the mean value of the analogue sites

Satisfactory: Achieves or exceeds 50% of the mean value of the analogue sites

Requires Review: Does not achieve 50% of the mean value of the analogue sites

Species Diversity and Species Richness:

Excellent: Achieves or exceeds the mean value of the analogue sites

Satisfactory: Achieves or exceeds 80% of the mean value of the analogue sites

Requires Review: Does not achieve 80% of the mean value of the analogue sites

Completion criteria targets for weed coverage are based on published literature which suggests that weed cover (non-naturalised weeds) exceeding 40% impedes native vegetation growth. Target has been set at lower threshold to ensure weeds identified/ managed before native vegetation impacts occur (<30% target for weeds not listed as WONS or Declared Plants; 0% target for weeds listed as WONS or Declared Plants).

Table 2-2: Completion Criteria Targets

Measure	Target	Rehabilitation Category
Plant Density (m ²)	≥3.8	Excellent
	≥1.4	Satisfactory
	<1.4	Requires review
Species Diversity Index	≥1.5	Excellent
	≥1.2	Satisfactory
	<1.2	Requires review
Species Richness	≥8	Excellent
	≥6	Satisfactory
	<6	Requires review
Vegetation Cover (%)	≥70	Excellent
	≥31	Satisfactory
	<31	Requires review
Relative Weed Cover (%)	0	Excellent
	<30	Satisfactory
	>30	Requires review
Weeds of National Environmental Significance (%)	0	Excellent
	0	Satisfactory
	>0	Requires review
Declared Plants (%)	0	Excellent
	0	Satisfactory
	>0	Requires review

2.2 EFA MONITORING

Table 2-3 shows the co-ordinates for the Edna May EFA monitoring transects (established 2020).

Table 2-3: Monitoring Transect Details

Landform	Transect ID	GPS Coordinates (GDA 94, 28350)
TSF North Face	EM001	50J 660386 6538073
TSF North Face	EM002	50J 660654 6537984
WRL South	EM003	50J 661742 6536395
WRL South	EM004	50J 661892 6536367
Analogue	Ana 001	50J 659235 6537585
Analogue	Ana 002	50J 659877 6537545

EFA is a method developed by Tongway and Hindley (2004) to measure landscape stability and ecosystem function. EFA was developed originally for assessment of degraded rangeland but has been adapted and modified for use in mine site rehabilitation. This approach emphasises aspects of community structure and organisation that are likely to lead to long-term stability and sustainability of plant communities on the rehabilitated land.

EFA has two major components; the measurement of landscape zones such as "bare patches" and "vegetation patches" which are recorded along the transect and the assessment of the soil surface condition for the major landscape zones identified along the slope. Vegetation patches play an important role in regulating the flow of landscape resources down the slope (rainfall, litter, soil etc.). Bare patches usually are the source of the resources deposited at vegetation patches after a period of time.

The second component of EFA assesses the soil surface condition and is conducted for the major landscape zones identified in the initial assessment of the slope. Three replicates of the soil assessments were obtained for each landscape zone, randomly selected along each transect. The indicators for the soil surface condition assessment are listed in Table 2-4 along with the objective for assessing each feature. Depending on which feature is assessed, a value of 1 may indicate the poorest condition for each indicator assessed and the highest score may reflect the best condition.

Table 2-4: Contribution of the Soil Surface Features to the Landscape Condition (Tongway, 1994)

Indicator	Purpose of Measurement	Score
Soil cover*	Assess susceptibility to erosion	1-5
Perennial basal cover	Assess the potential biomass for nutrient cycling	1-4
Litter Cover (simple)*	Assess the soil organic matter content	1-10
Litter cover (complex)	Assess the degree of incorporation (nutrient benefit) in soil	1-30
Cryptogam cover*	A positive indicator of surface stability	0-4
Crust Broken-ness*	Assess the crust stability and susceptibility to erosion	0-4
Deposited materials*	Assess the quantity of alluvial deposits	4-1
Erosion Features*	Assess the nature and type of erosion features	4-1
Microtopography	Assess the surface roughness for water infiltration	1-5
Surface nature*	Assess the likely impact of mechanical stress	1-5
Slake test*	Assess the soil stability during rain	0-4
Soil surface texture	Indicator of infiltration rate and water storage	1-4

*indicates those soil surface parameters used in measuring stability levels of a waste landform.

EFA Data Analysis

With the assistance of an Excel program the proportion of the slope covered by various landscape zones was calculated. The stability, infiltration and nutrient cycling indices for each landscape zone were calculated for the scores allocated during the soil surface condition assessment. The combination of soil surface features that were used to calculate stability, infiltration and nutrient cycling indices are presented in Table 2-4. The overall stability, infiltration and nutrient cycling indices for the landscape were calculated from the scores for the landscape zones and the proportion of the slope covered by each particular landscape zone. These were calculated as a percentage (%) of the highest attainable score and presented in tables.

EFA Vegetation Analysis

Vegetation was surveyed at each EFA site of the WRL using a 10m x 10m quadrat set to the left of the transect. Species density, species diversity and percentage vegetation cover of perennial species were recorded within each quadrat. Percentage vegetation cover of weed species was also recorded within the quadrat. Each tree or shrub seedling was identified to species or genus level so that species diversity and species density could be determined. The mean values of percentage vegetation cover, species density and species diversity were calculated from the measurements collected for each quadrat. Comparisons of the percentage vegetation cover, species density and species diversity at each transect and the analogue sites were made. Photographs were taken at each quadrat to depict the direction and representative vegetation at each site.

3 RESULTS

3.1 VEGETATION MONITORING

The total species list for the 2020 monitoring (including annuals/short-lived species and weed species excluded from the analysis) is provided in Appendix 1. Photographic monitoring records for each transect is provided in Appendix 2. The 2017-2020 results for each transect are summarised in Table 3-1.

Table 3-1: Monitoring Results Summary 2017-2020

Site	Species Richness				Species Diversity Index				Plant Density				Plant Density (m ²)				Vegetation Cover %				Relative Weed Cover (%)				Weeds of National Environmental Significance (%)				Declared Plants (%)						
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020			
Site 1	15	16	16	10	2.3	2.4	2.4	1.9	48	53	53	43	1.9	2.1	2.1	1.7	35	40	40	40	28	7	0	0	0	0	0	0	0	0	0	0			
Site 5	7	5	7	7	1.6	1.6	2.1	1.9	13	6	8	8	0.5	0.2	0.3	0.3	10	10	10	10	80	89	0	20	0	0	0	0	0	0	0	0			
Mean 2015 Rehab	11	11	12	9	2.0	2.0	2.3	1.9	31	30	31	26	1.2	1.2	1.2	1.0	23	25	25	25	54	48	0	10	0	0	0	0	0	0	0	0			
Site 2	8	4	4	4	2.0	1.3	1.3	1.3	13	5	5	5	0.5	0.2	0.2	0.2	5	10	10	10	82	89	45	10	0	0	0	0	0	0	0	0			
Site 3	10	10	9	7	2.2	2.2	2.0	1.8	25	20	17	12	1.0	0.8	0.7	0.5	15	15	15	15	50	60	0	0	0	0	0	0	0	0	0	0			
Site 4	8	5	6	5	1.9	1.4	1.5	1.4	28	17	18	17	1.1	0.7	0.7	0.7	15	10	20	30	20	54	51	30	0	0	0	0	0	0	0	0	0		
Site 6	12	10	10	10	2.2	2.1	2.1	2.1	29	25	31	31	1.2	1.0	1.2	1.2	18	10	10	20	28	40	0	5	0	0	0	0	0	0	0	0	0		
Mean 2016 Rehab	10	7	7	2	2.1	1.8	1.8	1.7	24	17	18	16	1.0	0.7	0.7	13.3	13	11	14	19	45	61	24	11	0	0	0	0	0	0	0	0	0		
SLPT1				5				1.4								1.8				10												0	0		
SLPT2				3				0.8								0.8				10													0	0	
Mean 2020 Rehab				4				1.1				34				1.3				10													0	0	
A1T1	11	11	11	6	1.5	1.7	1.8	1.8	110	125	54	10	4.4	5.0	2.2	0.4	50	50	50	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
A1T2	14	12	12	6	2.1	2.1	2.1	1.7	70	62	36	9	2.8	2.5	1.4	0.4	80	70	70	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A2T1	7	6	6	6	1.3	1.3	1.3	1.3	71	60	51	48	2.8	2.4	0.2	1.9	100	100	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A2T2	6	6	6	5	1.4	1.3	1.3	1.3	34	47	43	32	1.4	1.9	1.7	1.3	75	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A3aT1	6	7	7	3	1.3	1.5	1.6	0.3	138	62	44	40	5.5	2.5	1.8	1.6	40	40	40	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A3aT2	8	6	6	4	1.6	1.4	1.2	0.9	153	77	55	46	6.1	3.1	2.2	2.0	75	70	70	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean Analogue	9	8	8	5	1.5	1.5	1.5	1.2	96	72	47	31	3.8	2.9	1.6	1.3	70	67	67	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Red highlighted cell = data from previous transect A3T1 and A3T2 that were removed in 2020 and replaced with A3aT1 and A3aT2.

Perennial species richness for five of the six farmland rehabilitation sites (Site 1, 2, 3, 4 and 6) and all of the analogue sites has decreased since 2017. One farmland rehabilitation site (Site 5) remained constant since 2017. From 2019 to 2020, there was a considerable decline in species richness in transects, except for Site 5 and analogue A2T1. Because SLPT1 and SLPT2 are in their first round of monitoring, they cannot be compared to the analogue mean for 2020. Species richness in 2020 ranged from four to ten perennial species rehabilitation sites and three to six perennial species for the analogue sites. Perennial species richness of Site 1 and 6 exceeded mean species richness of the analogue sites across the entire monitoring program (Figure 3-1).

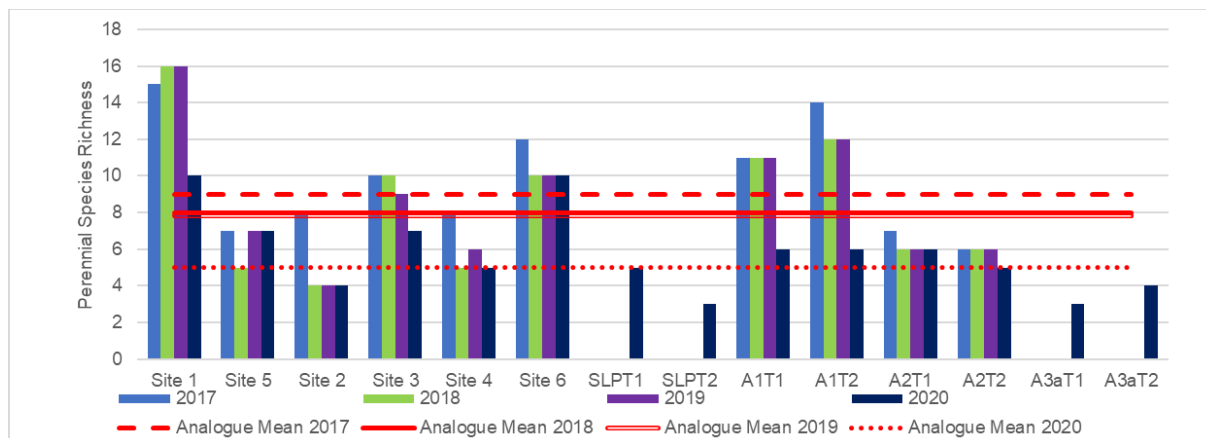


Figure 3-1: Perennial Species Richness of each transect

Perennial species diversity for four of the six farmland rehabilitation sites (Site 2, 3, 4 and 6) and three of the six analogue sites (A1-T2, A2-T2 and A3-T2) decreased since 2017. The remaining transects recorded either a constant level of species diversity (A2-T1) or increase in species richness since 2017 (A1-T1). Species diversity ranged from 0.8-2.1 for the rehabilitation sites and 0.3-1.8 for the analogue sites. Species diversity of Site 1, 3, 5 and 6 exceeded mean species diversity of the analogue sites across the entire monitoring program. The analogue averages declined from 2019 to 2020 after the replacement of transect A3T1 and A3T2 with A3aT1 and A3aT2, which recorded the lowest species diversity of all the analogues at 0.3 and 0.9 respectively (Figure 3-2).

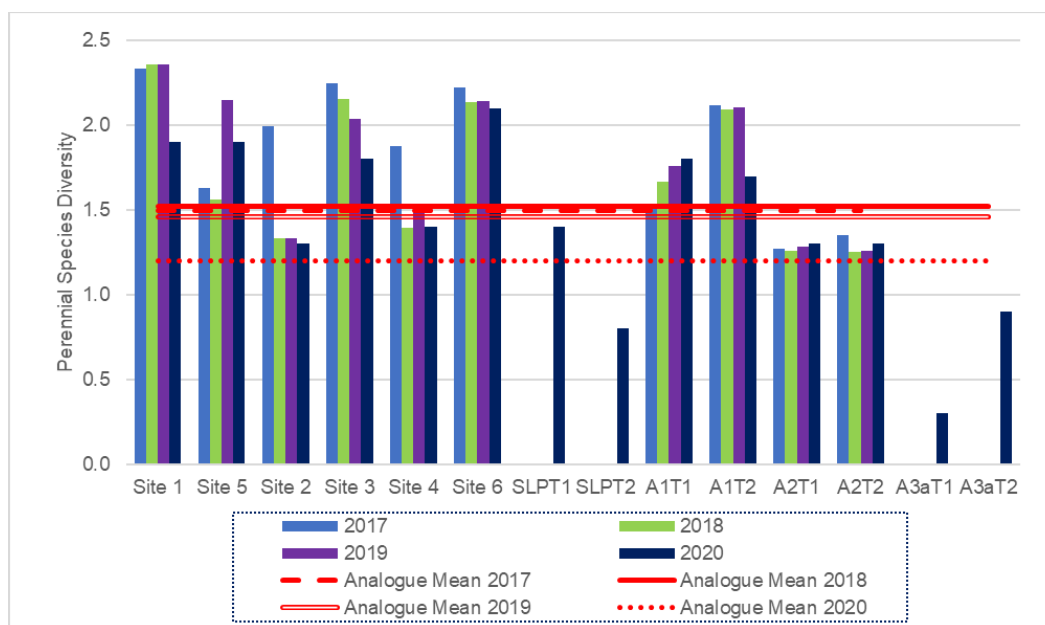


Figure 3-2: Perennial Species Diversity of each transect

Perennial plant density (m^2) for five of the six farmland rehabilitation sites (Site 1-5) and four of the six analogue sites (all excluding A2-T2, and new transects A3aT1 and A3aT2 which began monitoring in 2020) decreased since 2017. None of the transects or analogues recorded an increase in perennial plant density since 2017. Perennial plant density ranged from 0.2 to 2.0 plants per m^2 for both the rehabilitation sites and the analogue sites. Perennial plant density of Site 1 and SLPT1 currently exceed mean plant density of the analogue sites (Figure 3-3).

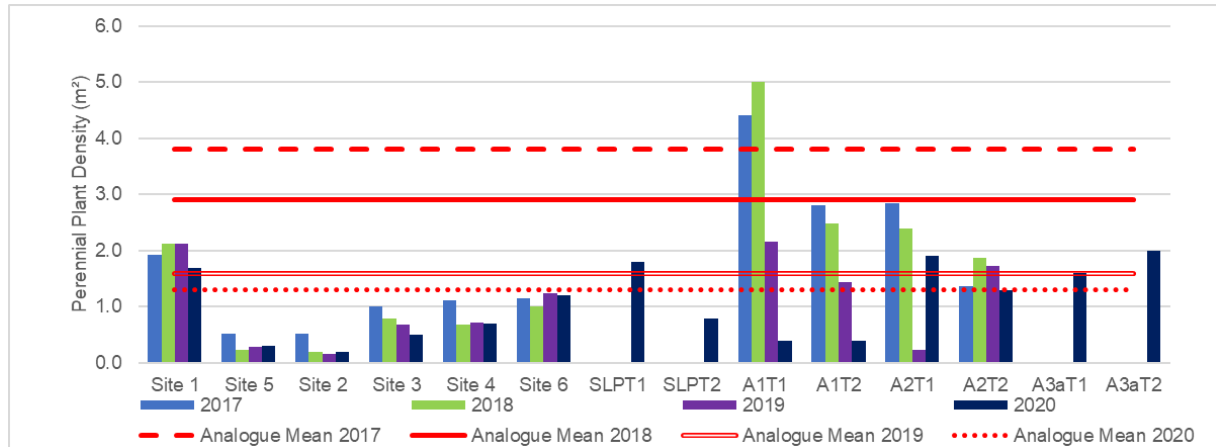


Figure 3-3: Perennial Plant Density (m^2) of each transect

Perennial vegetation cover (%) for two analogue sites (A1-T2 and A2-T2) decreased since 2017. The remaining analogue sites (A1 -T1 and A2-T1) remained constant since 2017 (not including A3aT1 and A3aT2 which were first monitored in 2020). None of the farmland rehabilitation sites recorded a decrease in perennial vegetation cover since 2017. Four of the rehabilitation sites (Site 1, 2, 4 and 6) recorded a increase in vegetation cover since 2017 and two of the rehabilitation sites remained constant (Site 3 and 5). Vegetation cover ranged from 10-40% for the rehabilitation sites and 50-100% for the analogue sites. Vegetation cover of all rehabilitation sites has remained below mean vegetation cover of the analogue sites across the entire monitoring program (Figure 3-4).

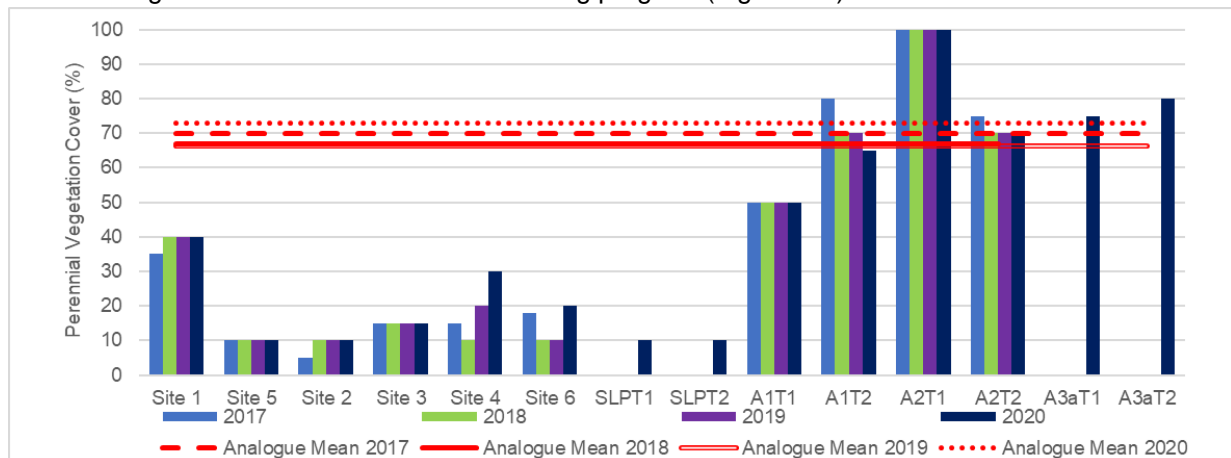


Figure 3-4: Perennial Vegetation Cover (%) of each transect

Relative weed cover (%) for six of the rehabilitation sites has had an overall decreased since 2017. In 2020, weeds were recorded at six of eight rehabilitation sites (Site 2, 4, 5, 6 and SLP-T1 and SLPT-2), likely due to an increase in rain in 2020. All the analogues maintained a constant level of relative weed cover with no weeds recorded (Figure 3-5). Weed species richness has reduced since 2017 with thirteen weed species recorded in 2017 and four weed species recorded in 2020 (Appendix 1). According to the DotEE database, none of these species are listed as a Weed of National Environmental Significance (DotEE, 2020b). According to the DPIRD database, none of these species are listed as a Declared Plant under the *Biosecurity and Agriculture Management Act 2007* (DPIRD, 2020).

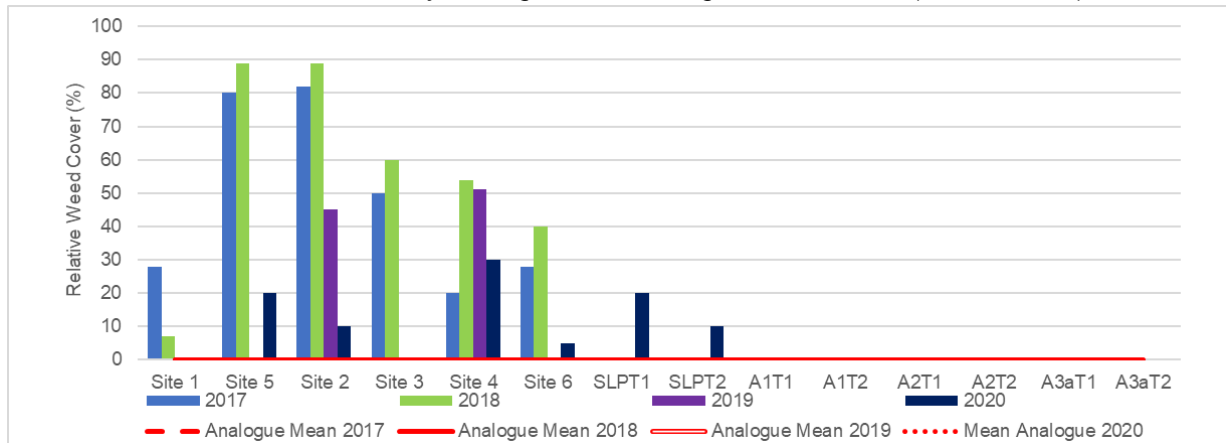


Figure 3-5: Relative Weed Cover (%) of each transect

3.1.1 Completion Criteria Assessment

An assessment of the rehabilitation sites against completion criteria targets is provided in Table 3-2.

All sites achieved at least one score at excellent levels for species richness, weeds of national environmental significance and declared plants cover. Majority of sites achieved satisfactory to excellent levels for species richness and relative weed cover. Site 1 has shown particular progress and met all the completion criteria across the entire monitoring program. A new transect established in 2020 for Slippery's Paddock, SPL-T2 received requires review score for plant density, species diversity, species richness and vegetation cover.

Table 3-2: Assessment of rehabilitation sites against completion criteria

Measure	Target ¹	Rehabilitation Category	2017						2018						2019						2020						Slippery's Paddock 2020 Rehabilitation	
			2015 Rehabilitation		2016 Rehabilitation				2015 Rehabilitation		2016 Rehabilitation				2015 Rehabilitation		2016 Rehabilitation				2015 Rehabilitation		2016 Rehabilitation				SLP T1	SLP T2
			Site 1	Site 5	Site 2	Site 3	Site 4	Site 6	Site 1	Site 5	Site 2	Site 3	Site 4	Site 6	Site 1	Site 5	Site 2	Site 3	Site 4	Site 6	Site 1	Site 5	Site 2	Site 3	Site 4	Site 6	SLP T1	SLP T2
Plant Density (m ²)	≥2.4	Excellent																										
	≥1.2	Satisfactory	1.9	0.5	0.5	1	1.1	1.2	2.1	0.2	0.2	0.8	0.7	1	2.1	0.3	0.2	0.7	0.7	1.2	1.7	0.3	0.2	0.3	0.7	1.2	1.8	0.8
	<1.2	Requires review																										
Species Diversity Index	≥1.4	Excellent																										
	≥1.1	Satisfactory	2.3	1.6	2	2.2	1.9	2.2	2.4	1.6	1.3	2.2	1.4	2.1	2.4	2.1	1.3	2	1.5	2.1	1.9	1.9	1.2	1.8	1.4	2.1	1.4	0.8
	<1.1	Requires review																										
Species Richness	≥8	Excellent																										
	≥6	Satisfactory	15	7	8	10	8	12	16	5	4	10	5	10	16	7	4	9	6	10	10	7	4	7	5	10	5	3
	<6	Requires review																										
Vegetation Cover (%)	≥69	Excellent																										
	≥35	Satisfactory	35	10	5	15	15	18	40	10	10	15	10	10	40	10	10	15	20	10	40	10	10	15	30	20	10	10
	<35	Requires review																										
Relative Weed Cover (%)	0	Excellent																										
	<30	Satisfactory	28	80	82	50	20	28	7	89	89	60	54	40	0	0	45	0	51	0	0	20	10	0	30	5	20	10
	>30	Requires review																										
Weeds of National Environmental Significance (%)	0	Excellent																										
	0	Satisfactory	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	>0	Requires review																										
Declared Plants (%)	0	Excellent																										
	0	Satisfactory	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	>0	Requires review																										

¹Target is based on average of Analogue sites from 2017-2020

3.1.2 2015 Rehabilitation

In 2020, a total of 13 taxa were recorded within the transects in the 2015 rehabilitated areas. No weed species were present within the 2015 rehabilitated areas in the current monitoring period. In the 2017 monitoring period, a total of 34 taxa were recorded in transects installed in the 2015 rehabilitated areas comprising 22 native species (perennials and annuals) and 12 weed species. Species richness and diversity ranged from satisfactory to excellent. Plant density and vegetation cover of Site 1 was satisfactory, however Site 5 requires review. Weed cover was 0 at Site 1 and satisfactory (20%) at Site 5. Mean species richness for the 2015 rehabilitation sites have remained relatively constant from 2017 to 2020 and exceeds mean species richness of the analogue sites (Figure 3-6). Mean total plant density of the 2015 rehabilitation sites remained relatively constant from 2017-2020 (30 to 31 plants), however mean total plant density of the analogue sites has decreased since 2017 (Figure 3-6).

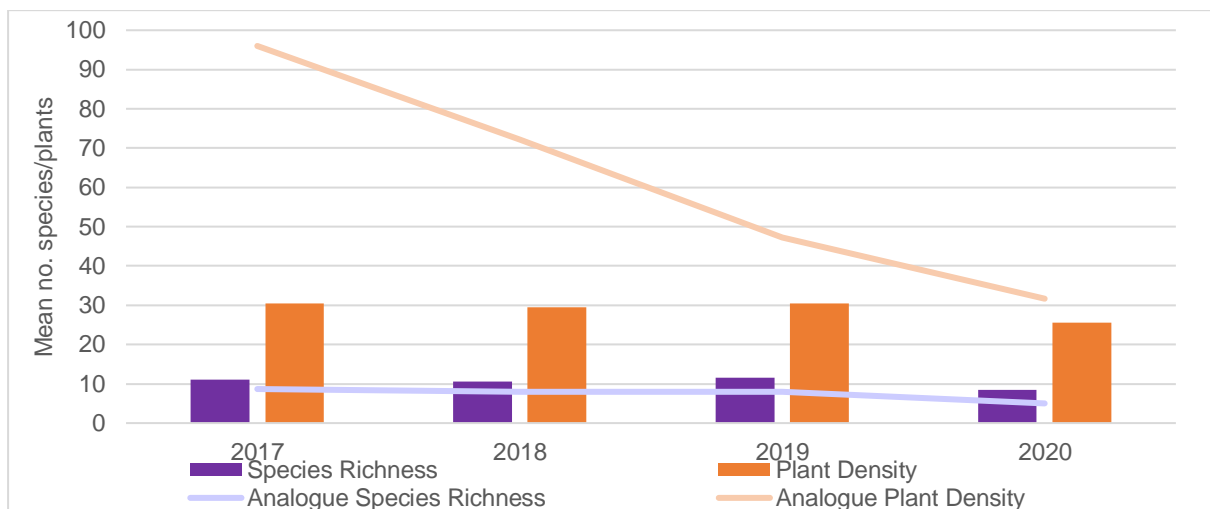


Figure 3-6: Mean species richness and total plant density of 2015 Rehabilitation sites

Mean species diversity for the 2015 rehabilitation sites has decreased slightly since 2017 (from diversity index of 2 to 1.9). Mean species diversity of the analogue sites have also declined slightly from 2017-2020. Mean species diversity of the 2015 rehabilitation site has continued to exceed mean species diversity of the analogue sites (Figure 3-7). Mean plant density (per m²) of the 2015 rehabilitation sites decreased slightly constant from 2017-2020, however mean plant density (per m²) of the analogue sites has decreased since 2017 as well (Figure 3-7).

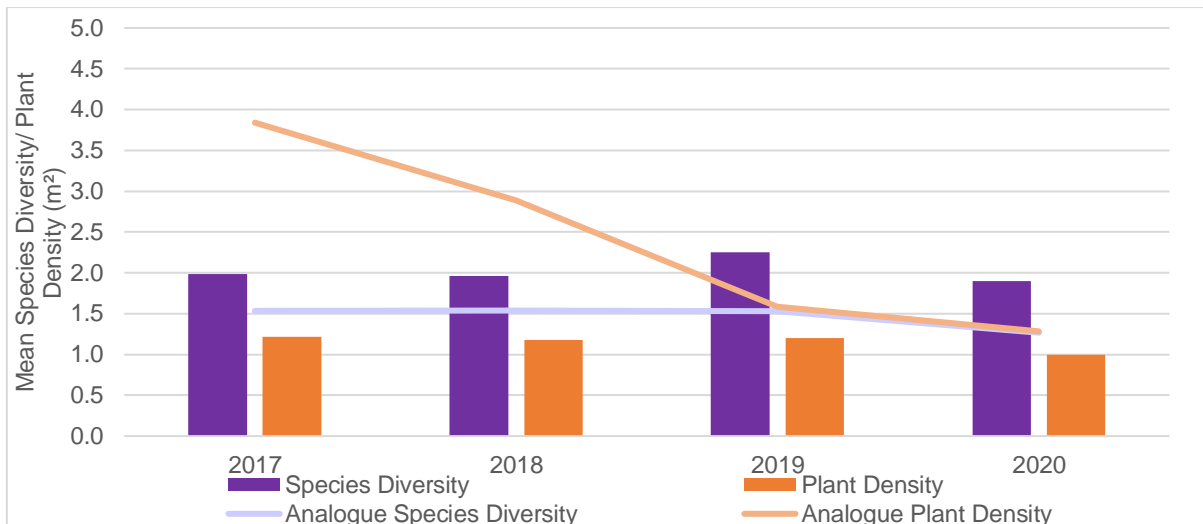


Figure 3-7: Mean species diversity and plant density (m²) of 2015 Rehabilitation sites

Mean vegetation cover for the 2015 rehabilitation sites increased slightly since 2017, however 2020 monitoring results remained constant with levels recorded in 2018 and 2019. Mean vegetation cover of the analogue sites has increased by 3% since 2017 (Figure 3-8). Mean relative weed cover of the 2015 rehabilitation sites has decreased from 54% in 2017 to 0% in 2019. Mean relative weed cover in 2020 of the analogue sites remains well below 2017 and 2018 levels at 5% (Figure 3-8).

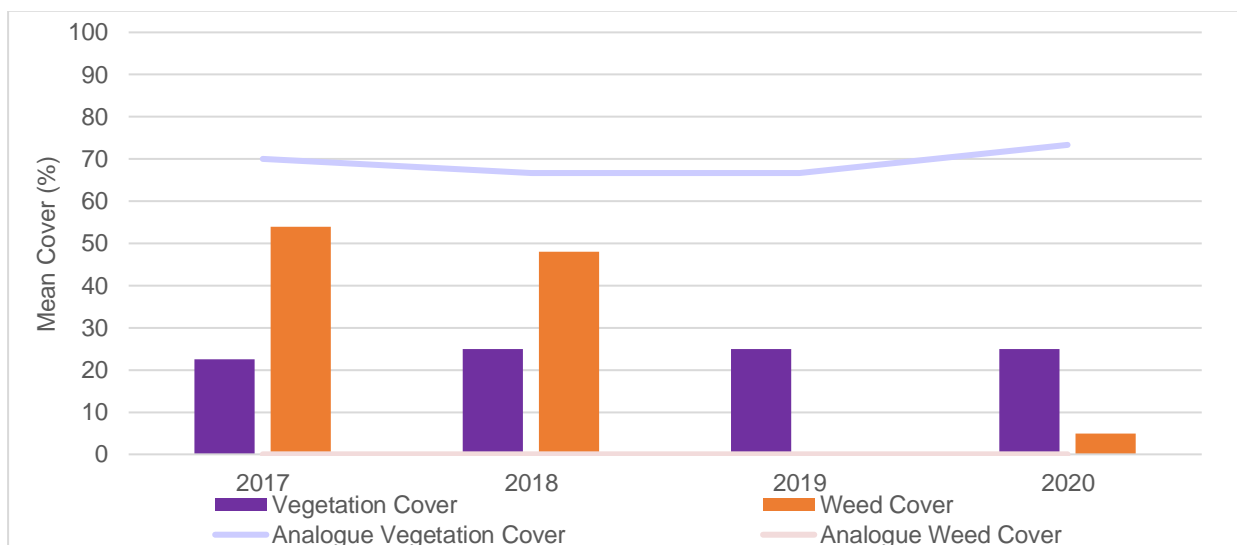


Figure 3-8: Mean vegetation cover and relative weed cover (%) of 2015 Rehabilitation sites

3.1.3 2016 Rehabilitation

In 2020, a total of 18 taxa were recorded within the transects in the 2016 rehabilitated areas including one weed species: *Oncosiphon piluliferum* (Globe Chamomile). In 2017 monitoring period, a total of 36 taxa were recorded in transects installed in the 2016 rehabilitated areas comprising 25 native species (perennials and annuals) and 11 weed species. Species diversity was excellent at all sites in 2020, except Site 2 where it was satisfactory. For species richness, Site 2 and Site 4 require review, Site 3 scored satisfactory, and Site 6 was excellent. Plant density for all sites require review, except for Site 6 which scored satisfactory. Vegetation cover for all sites requires review.

Mean species richness for the 2016 rehabilitation sites and analogue sites have decreased since 2017 reducing from ten to seven and nine to eight species respectively (Figure 3-9). Mean total plant density of the 2016 rehabilitation sites and analogue sites also decreased since 2017, reducing from 24 to 16 plants and 96 to 32 plants respectively (Figure 3-9).

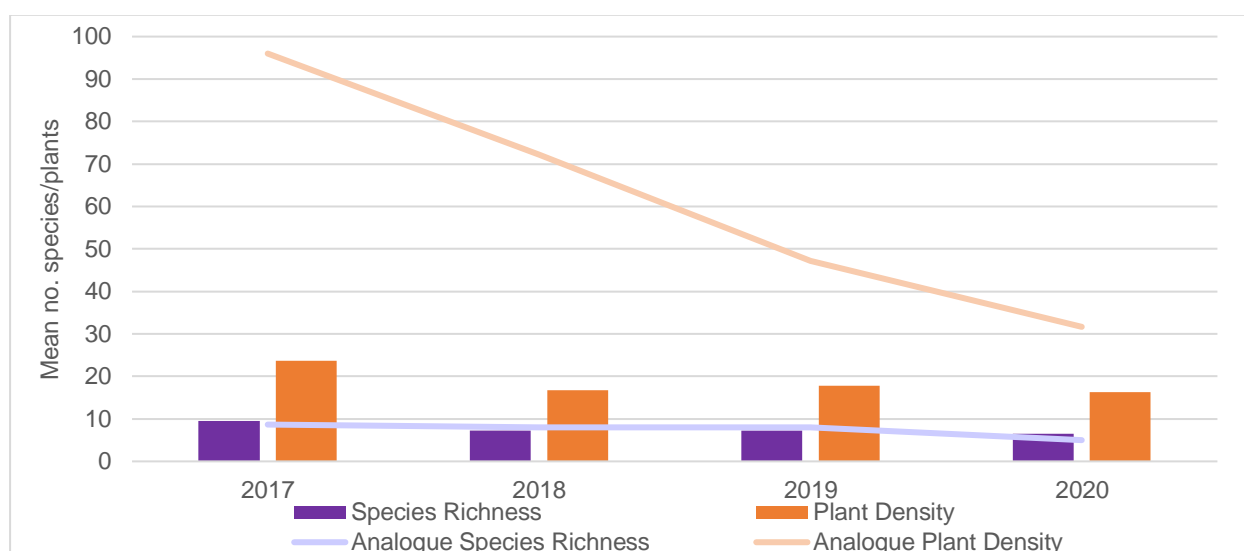


Figure 3-9: Mean species richness and total plant density of 2016 Rehabilitation sites

Mean species diversity for the 2016 rehabilitation sites has decreased since 2017 (from diversity index of 2.1 to 1.6). However, mean species diversity of the analogue sites has also declined slightly from 1.5 in 2017-2019 to 1.3 in 2020. Despite the decrease since 2017, mean species diversity of the rehabilitation site continues to exceed mean species diversity of the analogue sites (Figure 3-10). Mean plant density (per m²) of the 2016 rehabilitation sites and analogue sites have both decreased since 2017, however mean plant density of the 2016 rehabilitation sites has remained relatively constant since 2018 (Figure 3-10).

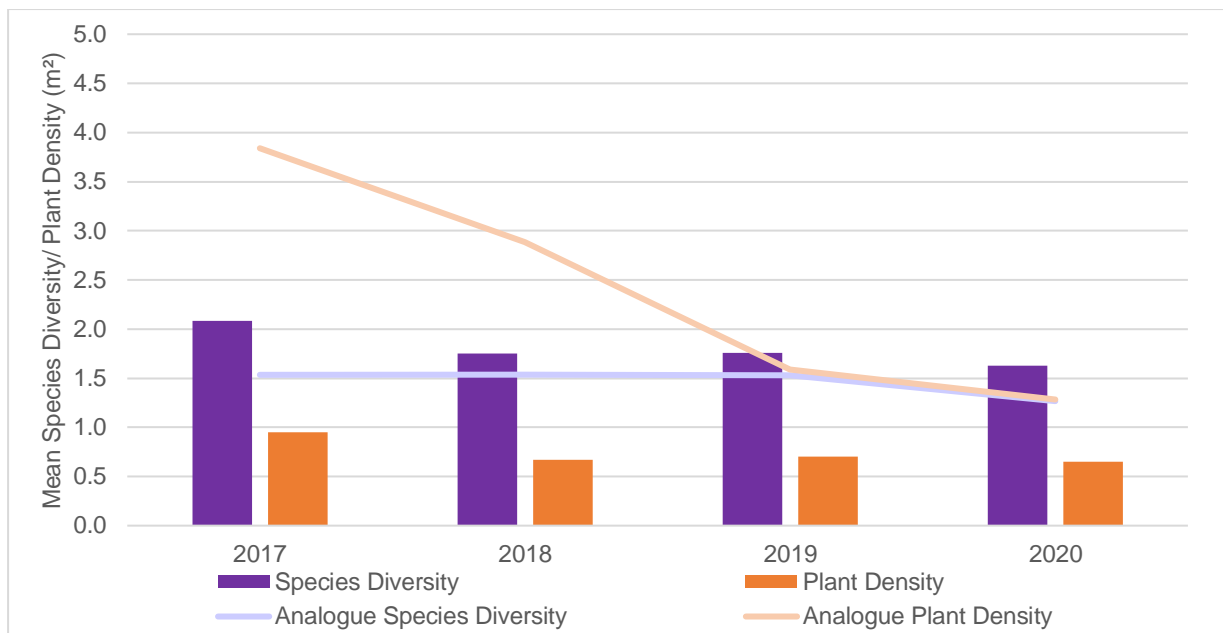


Figure 3-10: Mean species diversity and plant density (m²) of 2016 Rehabilitation sites

Mean vegetation cover for the 2016 rehabilitation sites has increased slightly since 2017 (6% increase). Mean vegetation cover of the analogue sites has also increased in current monitoring by 3% compared to 2017. Mean relative weed cover of the 2016 rehabilitation sites has decreased from 45% in 2017 to 1% in 2020. Mean relative weed cover of the analogue sites remains at 0% (Figure 3-11).

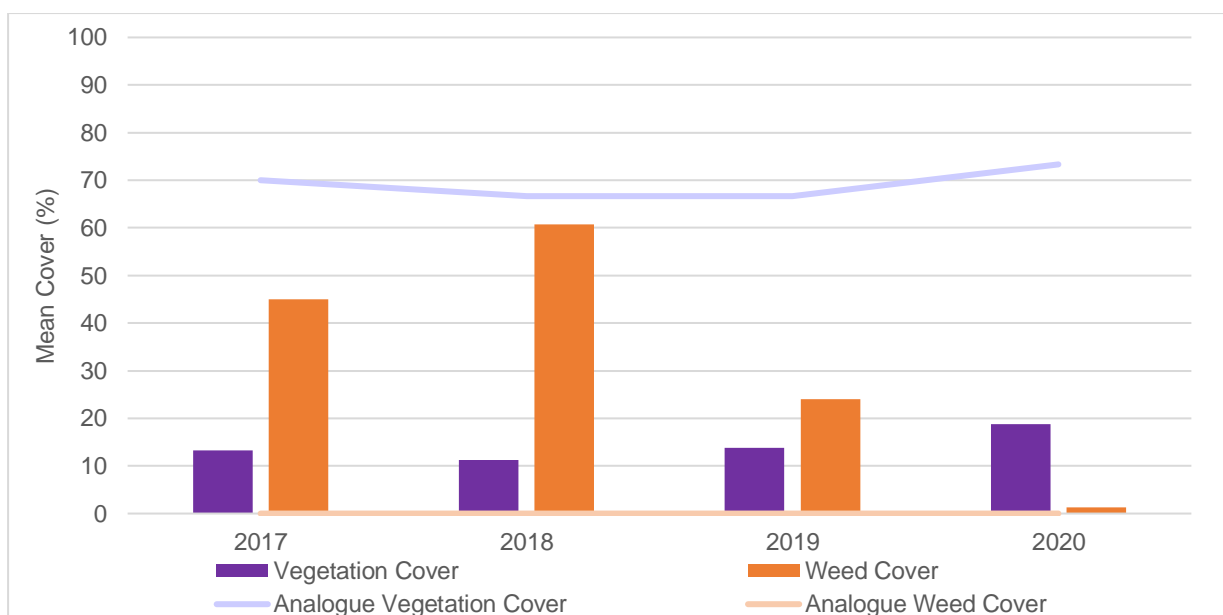


Figure 3-11: Mean vegetation cover and relative weed cover (%) of 2016 Rehabilitation sites

3.1.4 Slippery’s Paddock 2020 Rehabilitation

In 2020, Slippery’s Paddock transects were established and monitoring commenced at two sites. A total of 8 taxa were recorded within the transects including three weed species: *Carrichtera annua* (Ward’s Weed), *Chenopodium album* (White Goosefoot) and *Mesembryanthemum crystallinum* (Common Iceplant). Weed cover for both transects scored satisfactory. Species richness require review for both transects SLP-T1 and SLP-T2, however, species richness for the averaged analogue sites scored quite low in 2020 as well (Figure 3-12). Species diversity scored excellent for SLP-T1 and requires review for SLP-T2. Plant density was satisfactory for SLP-T1 and requires review for SLP-T2, however neither scored significantly lower than the 2020 analogue average (Figure 3-12). Vegetation cover of both SLP-T1 and SLP-T2 both require review. However, the performance of the Slippery’s Paddock transects are more comparable to the analogue averages for 2020 (Figures 3-13 through Figure 3-14) than when they are compared to the analogue averages since 2017 that are evaluated in Table 3-12.

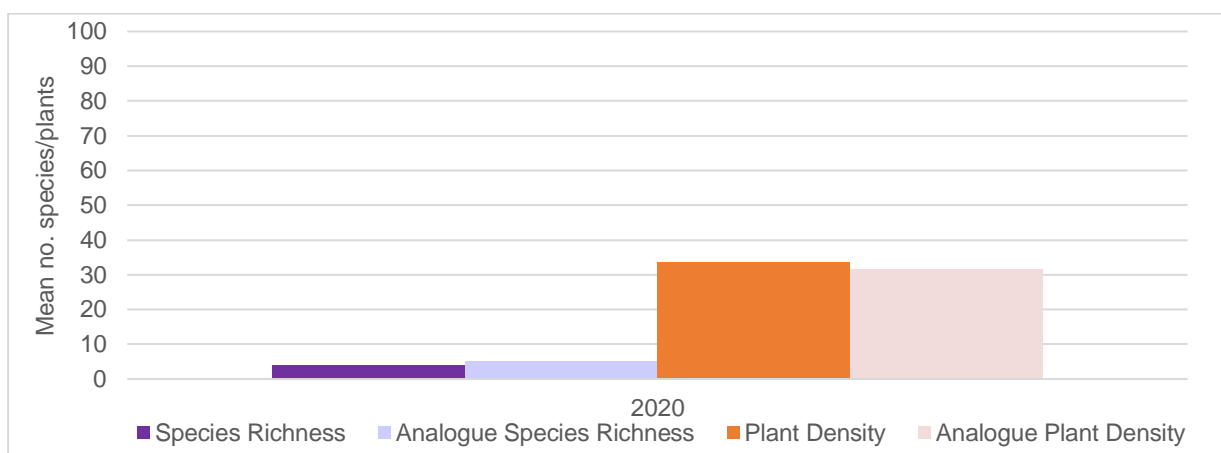


Figure 3-12: Mean species richness and total plant density of Slippery’s Paddock transects

Mean species diversity for Slippery’s Paddock transects SLP-T1 and SLP-T2 was 1.4 and 1.8 respectively, both scoring above the analogue average of 1.3 (Figure 3-13). Mean plant density (per m²) of the Slippery’s Paddock transects was equal to the 2020 analogue average at 1.3 per m² (Figure 3-13).

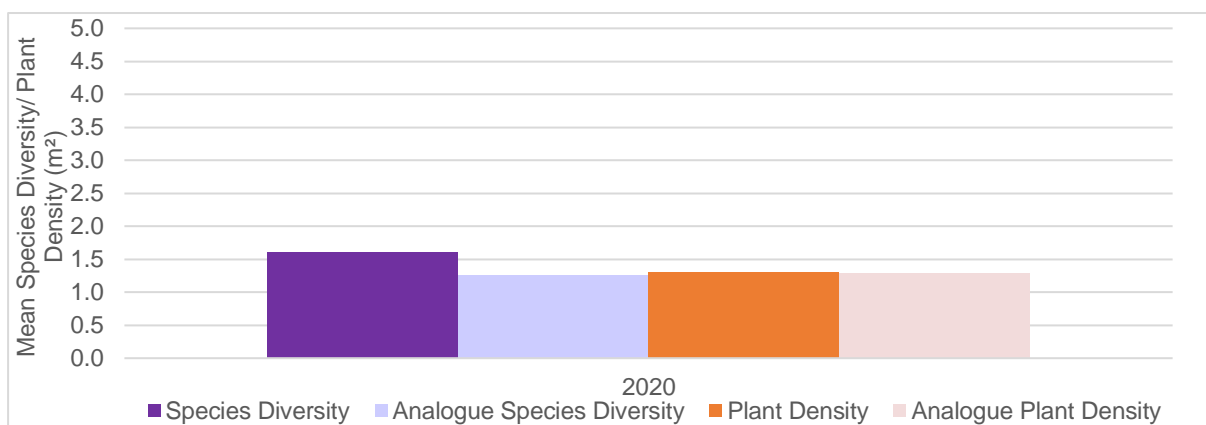


Figure 3-13: Mean species diversity and plant density (m²) of Slippery’s Paddock transects

Mean vegetation cover for the Slippery's Paddock transects scored relatively low (10%) compared to the analogue (73%) (Figure 3-14). Mean relative weed cover of the Slippery's Paddock transects was 15% compared to 0% of the analogues (Figure 3-14).

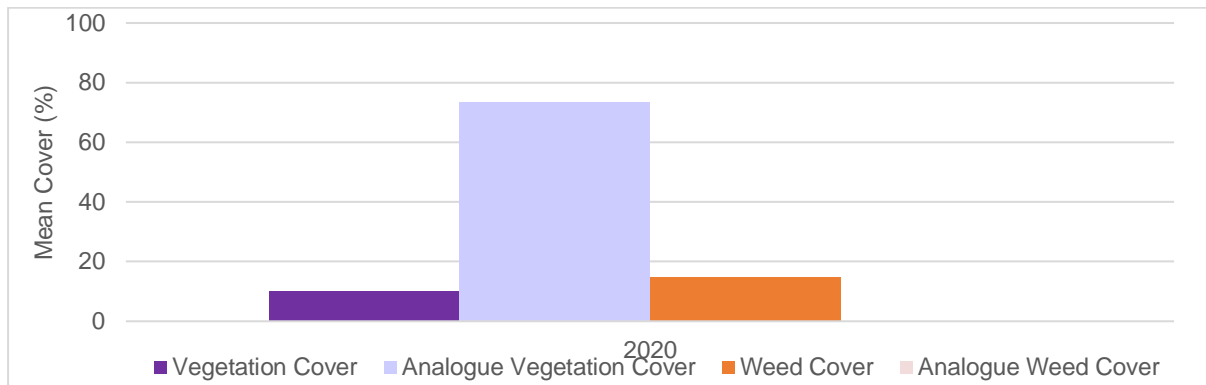


Figure 3-14: Mean vegetation cover and relative weed cover (%) of Slippery's Paddock transects

3.2 EFA MONITORING

Six sites were established and monitored for this monitoring program. Two sites were established on both the Old TSF and Southern WRL waste rock landforms. Two analogue sites were established in native vegetation south west of the Old TSF WRL.

All EFA indices were generally consistent across all sites, with stability scoring higher at the two analogue sites (Figure 3-15). Species richness ranged from five species per site to seven per site for the four sites on the WRLs, and the analogue sites had a species richness of eight and six (Figure 3-16).

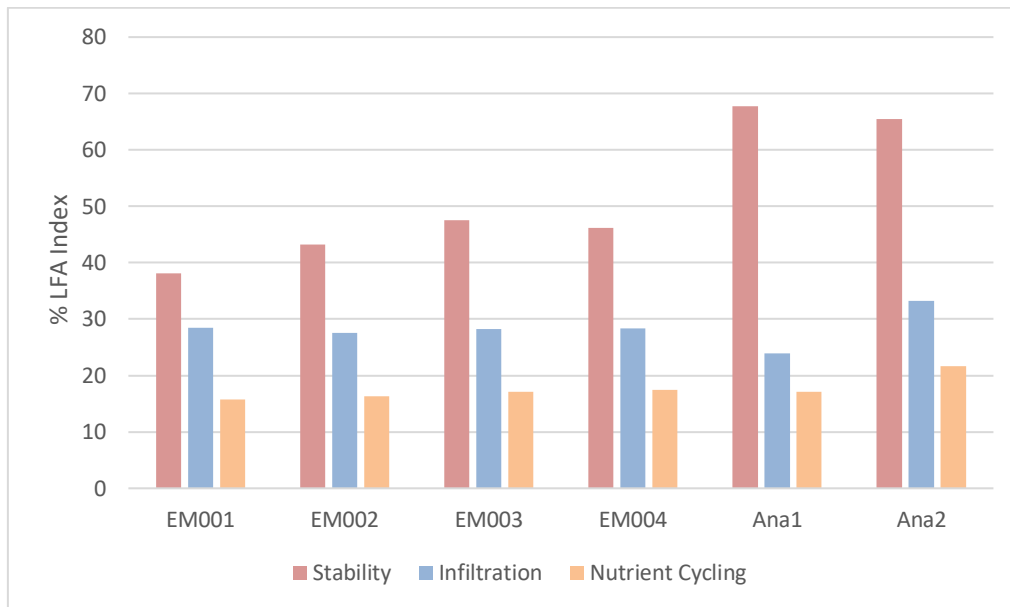


Figure 3-15: EFA indices for sites at Edna May Gold Mine, December 2020

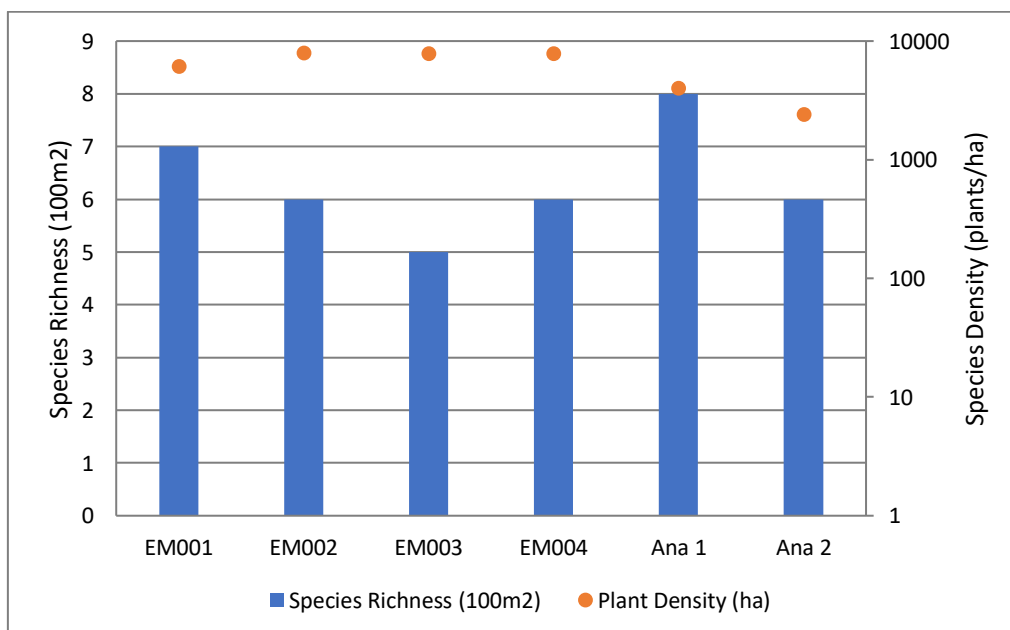


Figure 3-16: Species Richness (per 100m²) and Plant Density (plants/ha) at Edna May Gold Mine, December 2020

3.2.1 Old TSF

EM001

2020 EFA indices for EM001 were: Stability: 38%, infiltration: 28.5% and nutrient cycling: 15.7% as shown in Figure 3-17.

Species richness per 100m² was 7 and plant density was 6,100 plants/ha. Vegetation cover for the 10x10m quadrat area was 25%, with 20% weed cover.

The most dominant native and perennial species in the quadrat area were *Atriplex bunburyana* and *Atriplex vesicaria*. 8 unidentified Eucalypt seedlings were also present. *Carrichtera annua* (Ward's weed) was the dominant at the site, and an unidentified grass species, possibly a weed, was also present. Photographs of the transect are shown in Figure 3-18.

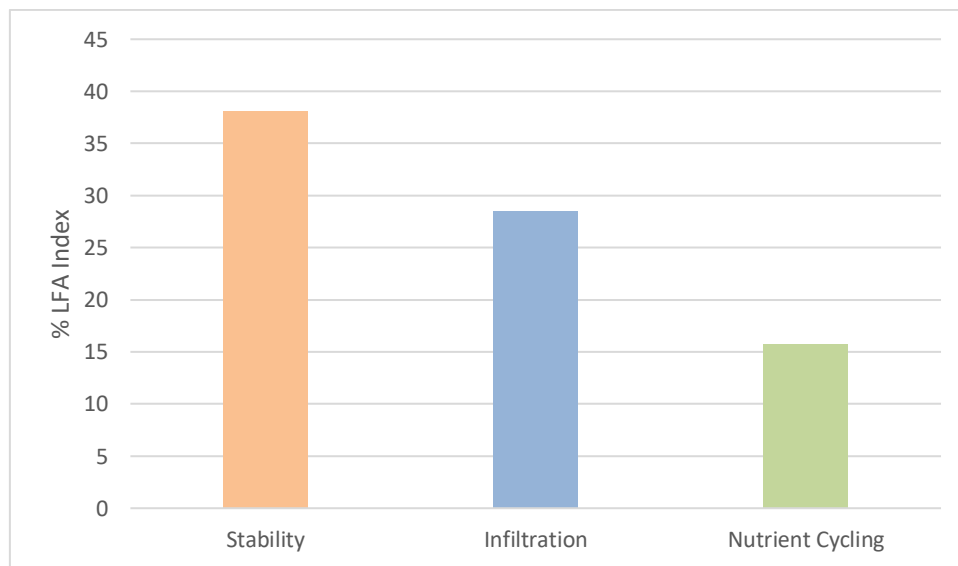


Figure 3-17: EFA indices for EM001, December 2020



Figure 3-18: Top (left) and bottom (right) of EM001

EM002

2020 EFA indices scored for EM002 were: Stability: 43%, Infiltration: 27.5% and Nutrient Cycling: 16.3% as shown in Figure 3-19.

Species richness per 100m² was 6 and plant density was 7,900 plants/ha. Vegetation cover for the 10x10m quadrat area was 25%, with 5% weed cover.

The most dominant native and perennial species in the quadrat area were *Atriplex bunburyana* and *Maireana triptera*. 7 unidentified Eucalypt seedlings were also present. An unidentified grass species, possibly a weed was also present. Photographs of the transect are shown in Figure 3-20.

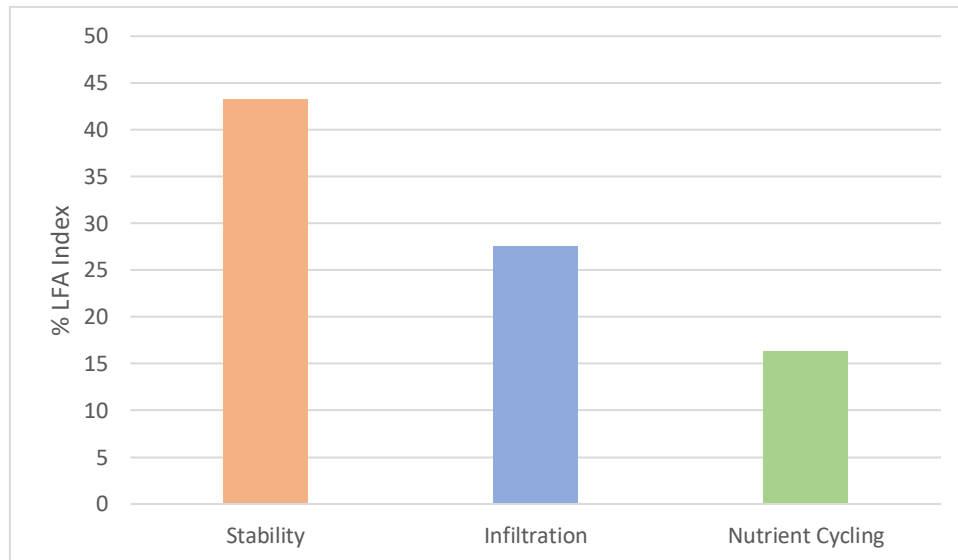


Figure 3-19: EFA indices for EM002, December 2020



Figure 3-20: Top (left) and bottom (right) of EM002

Southern WRL

EM003

2020 EFA indices scored for EM003 were: Stability: 47.5%, infiltration: 28.2% and nutrient cycling: 17.1% as shown in Figure 3-21.

Species richness per 100m² was 5 and plant density was 7,800 plants/ha. Vegetation cover for the 10x10m quadrat area was 40%, with 5% weed cover.

The most dominant native and perennial species in the quadrat area were *Atriplex bunburyana* and *Atriplex semibaccata*. 14 unidentified Eucalypt seedlings were also present. An unidentified grass species, possibly a weed was also present. Photographs of the transect are shown in Figure 3-22.

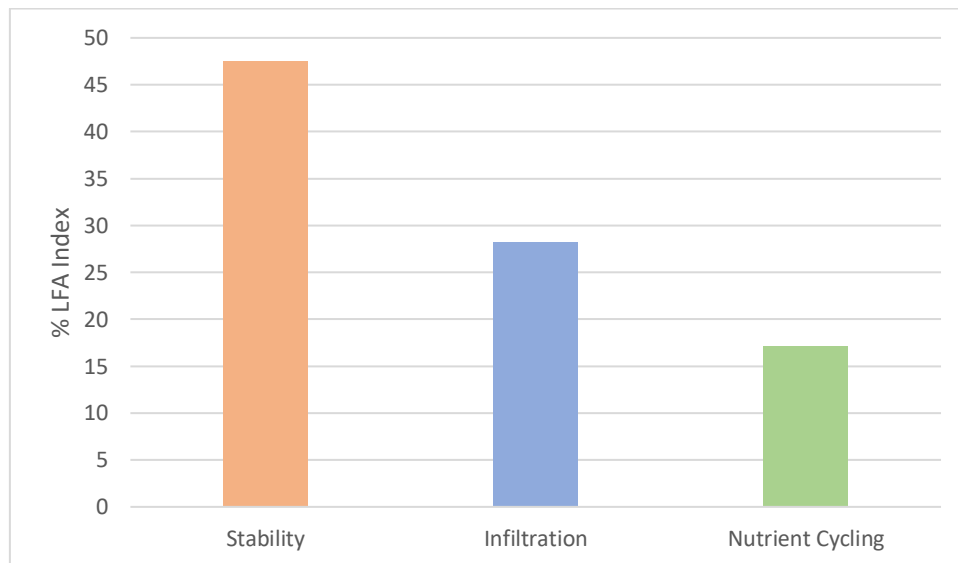


Figure 3-21: EFA indices for EM003, December 2020



Figure 3-22: Top (left) and bottom (right) of EM003

EM004

2020 EFA indices scored for EM004 were: Stability: 46.2%, infiltration: 28.4% and nutrient cycling: 17.4% as shown in Figure 3-23.

Species richness per 100m² was 6 and plant density was 7,800 plants/ha. Vegetation cover for the 10x10m quadrat area was 75%, with 2% weed cover.

The most dominant native and perennial species in the quadrat area were *Atriplex bunburyana* and *Maireana brevifolia*. 6 unidentified Eucalypt seedlings were also present. An unidentified grass species, possibly a weed was also present. Photographs of the transect are shown in Figure 3-24.

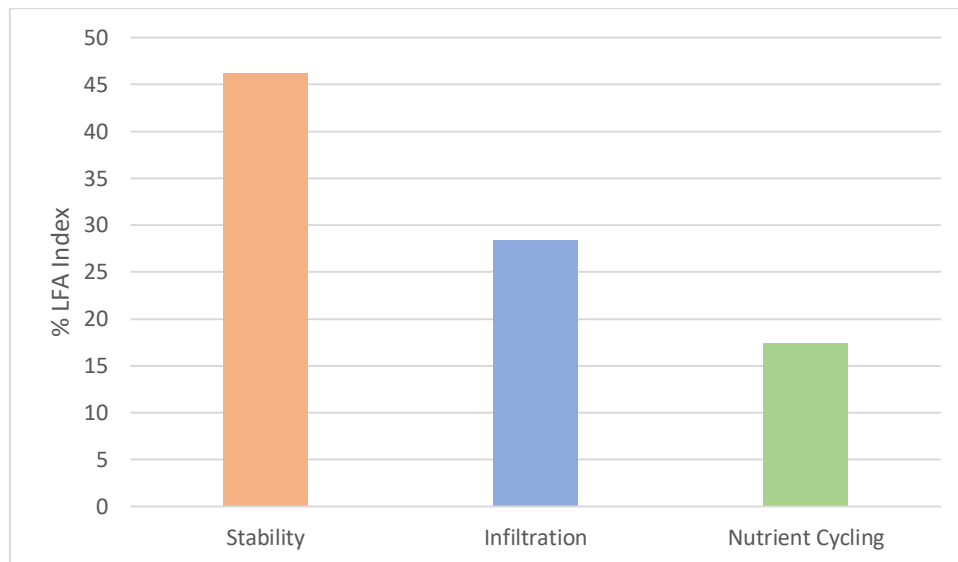


Figure 3-23: EFA indices for EM004, December 2020



Figure 3-24: Top (left) and bottom (right) of EM004

Analogue 1

2020 EFA indices scored for Ana1 were: Stability: 67.7%, infiltration: 23.9% and nutrient cycling:17.1% as shown in Figure 3-25.

Species richness per 100m² was 8 and plant density was 4,000 plants/ha. Vegetation cover for the 10x10m quadrat area was 70%, with no weed cover (Figure 3-16).

The most dominant native and perennial species in the quadrat area were *Atriplex stipitata* subsp. *stipitata* and *Sclerolaena uniflora*. Photographs of the transects are shown in Figure 3-26.

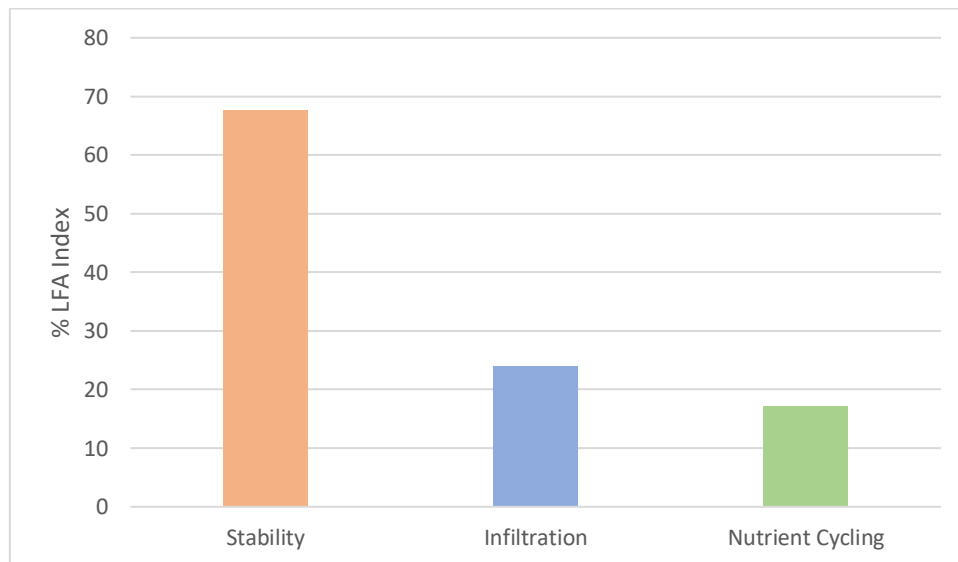


Figure 3-25: EFA indices for Ana1, December 2020



Figure 3-26: Top (left) and bottom (right) of Ana1

Analogue 2

2020 EFA indices scored for Ana2 were: Stability: 65.5%, infiltration: 33.2% and nutrient cycling: 21.6% as shown in Figure 3-27.

Species richness per 100m² was 6 and plant density was 2,400 plants/ha. Vegetation cover for the 10x10m quadrat area was 25%, with no weed cover (Figure 3-16).

The most dominant native and perennial species in the quadrat area was *Acacia acuminata*. Photographs of the transect are shown Figure 3-28.

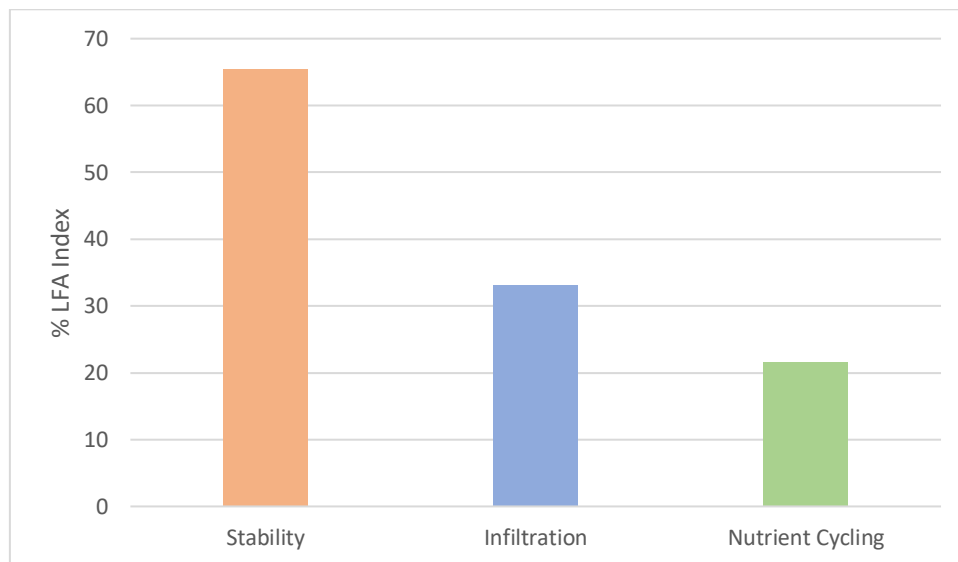


Figure 3-27: EFA indices for Ana2, December 2020



Figure 3-28: Top (left) and bottom (right) of Ana2

4 DISCUSSION & CONCLUSIONS

4.1 VEGETATION MONITORING AND COMPLETION CRITERIA

Vegetation cover and plant density criteria have not yet been met for the majority of rehabilitated sites; however, given the rehabilitation is at an early stage of development (less than six years old) this result is not unexpected. A decline in species richness, diversity and plant density has been identified since the baseline monitoring period for the 2016 rehabilitation areas, however this decline was also evident in the analogue sites, which suggests that decline may be attributed to seasonal variation in rainfall.

Weed coverage (none of which were listed as WONS or Declared Plants) of the rehabilitated sites has reduced since 2017 for farmlands rehabilitation sites. Three weed species currently were found on Slippery's Paddock transects. Given the current relative cover of weeds for four of the six rehabilitation sites at farmlands, and the large number of different weeds present in previous years, continued weed management is advised if there proves to be an increasing trend.

Emergent Eucalypts identified in the first year of monitoring (2017) at the farmlands sites have shown increased growth over the past 12 months and were in healthy condition.

All sites achieved excellent to satisfactory levels for species diversity (except for transect SLP-T2), weeds of national environmental significance and declared plants cover. Majority of sites achieved satisfactory to excellent levels for species richness. Site 1 has shown particular progress and met all the completion criteria across the entire monitoring program. All remaining sites have not achieved satisfactory levels of plant density and vegetation cover. Further recruitment from sown seed may result in attainment of satisfactory levels, or some sites may require supplementary plantings to increase and/or maintain diversity and density until the sites reach an equilibrium state or are comparable to analogues.

4.2 EFA MONITORING AND COMPLETION CRITERIA

The landscape function targets for rehabilitation taken from the Edna May Gold Mine: Mine Closure Plan (Ramelius, 2019) are as follows:

- Mean LFA stability rating of $\geq 50\%$, infiltration rating of $\geq 20\%$, and nutrient cycling rating of $\geq 15\%$ of the analogue average. Rehabilitated landforms to show a similar trend to the analogue sites in the target ecosystem.

And the vegetation composition completion criteria are as follows:

- Monitoring results for vegetation cover (total percentage cover of live vegetation), species diversity (total no. perennial species) and plant density (total no. perennial plants) display a continuing trend towards representative analogue sites in the target ecosystem.

As these sites were established in December 2020 and this is the first round of monitoring, there is no previous data to compare with and assess if the sites have met these completion criteria in terms of a continuing trend. The results summary of the criteria compared to each transect are summarized in Table 4-1.

Table 4-1: Completion Criteria against Transects Data 2020

Landform	Transect	Stability	Infiltration	Nutrients	Species Richness (per 100m ²)	Plant Density (per ha)	% Vegetation Cover	% Weed Cover
Analogue average		66.6	28.55	19.35	6.5	3050	47.5	0
TSF North Face	EM001	38.1	28.5	15.7	7	6100	25	20
TSF North Face	EM002	43.2	27.5	16.3	6	7900	25	5
WRL South	EM003	47.5	28.2	17.1	5	7800	40	5
WRL South	EM004	46.2	28.4	17.4	6	7800	75	2

Green shading = above completion criteria target; Red shading = below completion criteria target.

Data collected shows that all EFA indices were generally consistent across all sites. Stability ranged from 38.1% to 47.5% for the four sites on the WRLs, and stability scored higher at the two analogue sites with a mean of 66.6% (Table 4-1). Infiltration scored similarly for the WRL sites and the analogue sites and the nutrient cycling was slightly higher for the analogue sites.

Species richness ranged from five species per site to seven per site for the four sites on the WRLs, and the analogue sites had a species richness of eight and five (Figure 3-16). Plant density was higher on the four sites on the WRLs compared to the two analogue sites, and percentage vegetation cover was comparable across all sites.

Ward's weed (*Carrichtera annua*) was recorded at EM001. An unidentified grass was found at five of the six sites, and could possibly be a weed. Due to the dryness of the plants and juvenile stage it was not possible to identify to the species level.

It is recommended that monitoring continue at these new transects to observe long term trends across indices on the landform.

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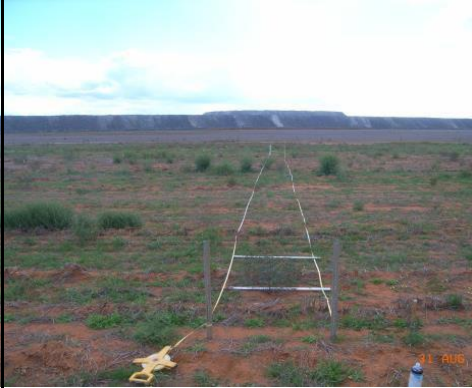
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Appendix 2: Photographic Record of Vegetation Monitoring Transects 2017-2020


Site 2017 2018 2019 2020

Site 2, 2016 T1





Site	2017	2018	2019	2020
Site 3, 2016 T2				
				

Site	2017	2018	2019	2020
Site 4, 2016 T3				
Site 6, 2016 T4				
Site 1, 2015 T1				


	2017	2018	2019	2020
Site 5, 2015 T2				
SLP T1				
SLP T2				





Site	2017	2018	2019	2020
A1 T1				
A1 T2				
A2 T1				





Site	2017	2018	2019	2020
A2 T2	 <p>30/09/2017</p>			
A3 T1	 <p>09/10/2017</p>			
A3 T2	 <p>01/10/2017</p>			

Site	2017	2018	2019	2020
A3a T1			<p><i>A3aT1 to replace A3T1 after it was removed in 2020</i></p>	
A3a T2			<p><i>A3aT2 to replace A3T2 after it was found to be removed in 2020</i></p>	

Appendix 3: Photographic record of EFA Transects

Site	2020	
	Top of Transect	Bottom of Transect
TSM North face EM001		
TSM North face EM002		

Site 2020		
	Top of Transect	Bottom of Transect
WRL South EM003		
WRL South EM004		

Site 2020		
	Top of Transect	Bottom of Transect
Ana 001		
Ana 002		

Appendix 4: Species List for EFA Transects 2020

Green text-introduced taxa; Blue text-annual/short lived taxa (WAHERB, 2020)

Family	Genus	Species	EM001	EM002	EM003	EM004	Ana 001	Ana 002
Brassicaceae	<i>Carrichtera</i>	<i>annua</i>	27					
Amaranthaceae	<i>Enchylaena</i>	<i>tomentosa</i>						3
Asteraceae	<i>Olearia</i>	<i>muelleri</i>					7	
Asteraceae	<i>Siemssenia</i>	<i>capillaris</i>						200
Asteraceae	<i>Waitzia</i>	<i>acuminata</i>						1
Chenopodiaceae	<i>Atriplex</i>	<i>bunburyana</i>	18	39	21	16		
Chenopodiaceae	<i>Atriplex</i>	<i>lindleyi</i>			87			
Chenopodiaceae	<i>Atriplex</i>	<i>semibaccata</i>	9		21	13		
Chenopodiaceae	<i>Atriplex</i>	<i>stipitata</i> subsp. <i>stipitata</i>					12	
Chenopodiaceae	<i>Atriplex</i>	<i>vesicaria</i>	12					
Chenopodiaceae	<i>Maireana</i>	<i>brevifolia</i>	4		16	27		
Chenopodiaceae	<i>Maireana</i>	<i>georgei</i>	6					2
Chenopodiaceae	<i>Maireana</i>	<i>triptera</i>		14	6			
Chenopodiaceae	<i>Sclerolaena</i>	spp.		12				
Chenopodiaceae	<i>Sclerolaena</i>	<i>uniflora</i>					12	
Fabaceae	<i>Acacia</i>	<i>acuminata</i>						14
Fabaceae	<i>Acacia</i>	spp.	4	4		12		
Fabaceae	<i>Acacia</i>	<i>eremaea</i>					1	
Fabaceae	<i>Senna</i>	<i>artemisioides</i> subsp. <i>filifolia</i>					2	
Hemerocallidaceae	<i>Dianella</i>	<i>revoluta</i>						2
Myrtaaceae	<i>Eucalyptus</i>	<i>loxophleba</i>						2
Myrtaaceae	<i>Eucalyptus</i>	<i>melanoxyton</i>					3	
Myrtaaceae	<i>Eucalyptus</i>	<i>salmonophloia</i>					1	
Myrtaaceae	<i>Eucalyptus</i>	spp.	8	7	14	6		
Myrtaaceae	<i>Melaleuca</i>	spp.		3		4		
Myrtaaceae	<i>Melaleuca</i>	<i>trichophylla</i>						1
Poaceae	<i>Austrostipa</i>	<i>elegantissima</i>					2	
Poaceae		spp.	39	300	100	100		6

Santalaceae	<i>Santalum</i>	<i>spicatum</i>						2
		% Vegetation Cover	25	25	40	75	70	25
		% Weed Cover	20	5	5	2	0	0
		Plant Density (100m²)	61	79	78	78	40	24
		Plant Density (ha)	6100	7900	7800	7800	4000	2400
		Species Richness (per 100m²)	7	6	5	6	8	6

Appendix 5: Slippery's Paddock Seedlings (2020)

Quantity	Species
22	<i>Acacia aestivalis</i>
228	<i>Acacia acuminata</i>
64	<i>Acacia erinacea</i>
209	<i>Acacia hemiteles</i>
11	<i>Acacia deficiens</i>
320	<i>Acacia merrallii</i>
790	<i>Eucalyptus longicornis</i>
367	<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>
75	<i>Eucalyptus salmonophloia</i>
1830	<i>Eucalyptus yilgarnensis</i>
140	<i>Eucalyptus salubris</i>
2	<i>Eremophila decipiens</i>
2112	<i>Melaleuca pauperiflora</i>
96	<i>Pittosporum angustifolium</i>
3	<i>Senna artemesioides</i>
118	<i>Solanum orbiculatum</i>
32	<i>Templetonia sulcata</i>