

Appendix C Significant Flora Construction Management Plan




PARKER RANGE IRON ORE HAUL ROAD PROJECT
SIGNIFICANT FLORA CONSTRUCTION MANAGEMENT PLAN

REVISION 0



Revision History

Revision Number	Issue Date	Prepared By	Checked By	Reviewed By	Approved By	Signature
0	12 May 2021	L Whitley (Strategen JBS&G)	K Moyle (Strategen JBS&G)	N Smith (MRL) S Osborne (MRL)	A Parker (MRL)	

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APPENDICES

- Appendix A Risk Assessment
- Appendix B Flora Survey Report

Summary

This Significant Flora Construction Management Plan (SFCMP) has been prepared for the construction of the Parker Range Iron Ore Project (PRIOP) Haul Road (the Project) to link the Parker Range surface mining operation with the Koolyanobbing Operations. The SFCMP has been developed to minimise Project impacts from the highest risk activities:

- clearing
- dust emissions associated with construction
- Introduced flora spread associated with construction

Table 1.1 presents the environmental objective that must be met through implementation of this SFCMP.

TABLE 1.1: PURPOSE OF THE SFCMP

Proposal name	Parker Range Iron Ore Project Haul Road
Proponent name	Polaris Metal Pty Ltd, as a subsidiary of Mineral Resources Limited (MRL) Mineral Resources Ltd.
Ministerial Statement	<i>Not applicable</i>
Purpose of the EMP	Provide monitoring and management actions for potential impacts on conservation significant flora taxa and vegetation within the Project Development Envelope and surrounds
Key environmental factor/s, outcome/s and objective/s	<p><i>Flora and Vegetation</i></p> <p>To protect flora and vegetation so that biological diversity and ecological integrity are maintained.</p> <p>To minimise the potential environmental effect of the Project to conservation significant flora species and communities.</p>
Key components in the EMP (if applicable)	Not applicable – refer to Table 2.1
Proposed construction and operation dates	January 2022 until January 2028
EMP required pre-construction?	Yes

This SFCMP is designed to be adaptive and will be implemented for any construction activities over the life of the Project (approximately six years). The SFCMP will be updated as required to be consistent with any new findings on the species in the local, regional and state-wide context, and in consultation with the Commonwealth Department of Agriculture, Water and the Environment (DAWE) and the State Environmental Protection Authority (EPA), Department of Biodiversity, Conservation and Attractions (DBCA) and Department of Mines, Industry Regulation and Safety (DMIRS).

1. CONTEXT, SCOPE AND RATIONALE

1.1 Project description

The Parker Range (Mt Caudan) Iron Ore Project (PRIOP) is approximately 15 km southeast of Marvel Loch, within the Yilgarn Shire, in the Eastern Wheatbelt Region of Western Australia (Figure 1). The existing PRIOP consists of a mining area and haul road area. Mineral Resources Limited (MRL) is proposing to construct and operate a private mining haul road of approximately 88 km in length from the PRIOP to the Koolyanobbing Operations, to facilitate the transport of ore (Figure 1).

The PRIOP Haul Road (the Project) requires clearing of up to 298 ha of native vegetation in addition to the use of up to 54 ha of existing disturbance, resulting in a 352 ha Indicative Footprint within a 539 ha Development Envelope (DE). Key characteristics of the Project are detailed in Table 1.1 and Table 1.2.

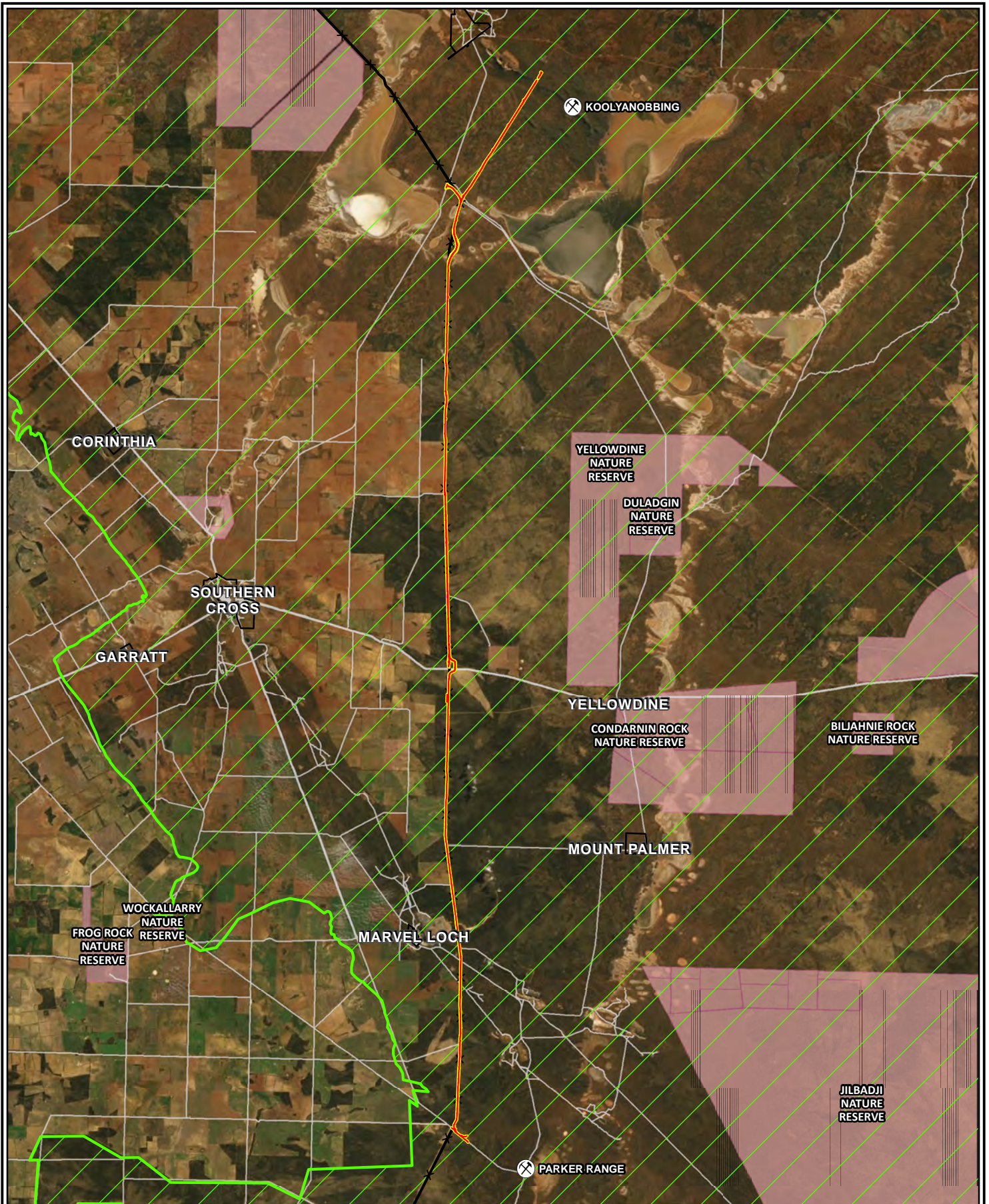
An existing Significant Flora Management Plan (SFMP) (MRL 2020), outlining management and monitoring actions, has been developed to minimise impacts to significant flora, within the PRIOP mining area for mine activities.

TABLE 1.1: SUMMARY OF THE PROJECT

Summary of Project	
Project Title	Parker Range (Mt Caudan) Iron Ore Project Haul Road
Proponent Name	Polaris Metal Pty Ltd, as a subsidiary of Mineral Resources Limited (MRL)
Short Description	The proposal involves the development of a haul road to transport Iron Ore to MRL’s Koolyanobbing Operations for processing.

TABLE 1.2: LOCATION AND PROPOSED EXTENT OF PHYSICAL AND OPERATIONAL ELEMENTS

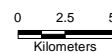
Element	Location	Proposed Extent (Revised Proposal)
<i>Physical Elements</i>		
PRIOP Haul Road	Figure 1	Clearing of no more than 298 ha of native vegetation and use of up to 54 ha of existing disturbance, resulting in a 352 ha Indicative Footprint within a 539 ha Development Envelope (DE).



Legend

- Indicative Footprint
- Development Envelope
- Town sites
- Great Western Woodland
- Nature Reserve
- State barrier fence
- X Mine sites
- Major road
- Minor road

Scale 1:400,000 at A4



Coord. Sys. GDA 1994 MGA Zone 50



Job No: 59770

Client: Mineral Resources Limited

Version: A

Date: 11-May-2021

Drawn By: cthatcher

Checked By: LW

PROPOSAL LOCATION

FIGURE 1



1.2 Key environmental factor: Flora and Vegetation

The EPA's objective for protection of flora and vegetation is to:

"To protect flora and vegetation so that biological diversity and ecological integrity are maintained" (EPA 2016).

In the context of this objective, ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements.

Flora and Vegetation is considered a key environmental factor for the Project due to the potential for direct and indirect impacts from the construction of the haul road.

The key environmental factor, risk activities, botanical values and potential impacts are summarised in Table 1.3. The Project will potentially impact 23 Priority flora taxa, two locally and regionally restricted vegetation communities associated with the Parker Range Priority Ecological Community (PEC) (EcCaLmc and EcMIMc) and seven regionally significant vegetation communities (Figure 2). No impacts to the Koolyanobbing PEC are expected.

TABLE 1.3: KEY ENVIRONMENTAL FACTORS, ACTIVITIES, VALUES AND ASSOCIATED IMPACTS

Key environmental factor	Activities	Significant Flora and Vegetation Values	Impacts
Flora and vegetation	Clearing of native vegetation Construction vehicle movement	Vegetation health, particularly EcCaLmc and EcMIMc locally and regionally restricted vegetation communities associated with Parker Range PEC. Priority flora, with species of concern: Priority 1 (P1) <ul style="list-style-type: none"> • <i>Chamelaucium</i> sp. Parker Range (B.H. Smith 1255) • <i>Lepidosperma lyonsii</i> • <i>Lepidosperma</i> sp. Mt Caudan (N. Gibson & M. Lyons 2081) • <i>Lepidosperma</i> sp. Parker Range (N. Gibson & M. Lyons 2094) • <i>Stylidium validum</i> • <i>Verticordia roei</i> subsp. <i>meiogona</i> • <i>Westringia acifolia</i> Priority 2 (P2) <ul style="list-style-type: none"> • <i>Acacia asepala</i> • <i>Acacia concolorans</i> • <i>Lissanthe scabra</i> • <i>Verticordia multiflora</i> subsp. <i>Solox</i> Priority 3 (P3) <ul style="list-style-type: none"> • <i>Acacia desertorum</i> var. <i>nudipes</i> • <i>Baeckea grandibracteata</i> subsp. Parker Range (K. Newbey 9270) • <i>Bossiaea</i> sp. Jackson Range (G. Cockerton & S. McNee LCS 13614) • <i>Cryptandra crispula</i> • <i>Cyathostemon verrucosus</i> • <i>Hakea pendens</i> • <i>Lepidosperma ferricola</i> • <i>Phebalium drummondii</i> • <i>Rinzia torquata</i> • <i>Verticordia gracilis</i> • <i>Verticordia stenopetala</i> Priority 4 (P4) <ul style="list-style-type: none"> • <i>Stenanthemum bremerense</i> 	Direct loss of flora and native vegetation Indirect impacts: <ul style="list-style-type: none"> • dust deposition • spillage of hydrocarbons • altered surface drainage flow patterns • potential increased spread or introduction of new weeds • alteration of fire regimes

1.3 Rationale and approach

This SFCMP provides monitoring and management actions for potential impacts on conservation significant flora taxa and vegetation within the Project DE and surrounds.

The SFCMP has been developed in alignment with the Environmental Protection Authority Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans (EPA 2020) and current approved PRIOP SFMP (MRL 2020). The SFCMP is relevant to construction activities only, as the potential for impacts during operations has been considered low. An Objective based approach has been adopted, with no early response triggers included, as monitoring of management actions is considered sufficient.

1.3.1 Environmental management objectives

This objectives based SFCMP has been developed to ensure that Project construction actions are managed to minimise impacts to significant flora species and communities. The SFCMP also includes monitoring indicators to evaluate the effectiveness of management measures for direct and indirect impacts on significant flora taxa and vegetation.

Implementation of this plan will also result in broader benefits of reducing impacts to non-significant flora taxa and vegetation.

1.3.2 Survey and study findings

In September 2019, Phoenix Environmental Sciences Pty Ltd (Phoenix) was commissioned by MRL to undertake an ecological desktop review and reconnaissance survey for the Project to identify potential terrestrial ecological values and inform further baseline survey requirements. Detailed flora and vegetation surveys were subsequently commissioned in October 2019, based on outcomes of a reconnaissance survey. The detailed survey extended 80 km north-south from the Parker Range Mine (Southern Haul Road Study Area). An additional area was then surveyed for the northern 12km portion of the haul road to the Koolyanobbing Operations (Northern Extension Study Area).

Southern Haul Road Study Area flora and vegetation surveys were conducted over several seasons, entailing detailed and targeted surveys in October 2019 to October 2020 with additional targeted flora searches in November 2019, July 2020 until October 2020. The initial survey of the Northern Extension Study Area was conducted in October 2020 with the second season surveys conducted in March 2021. Final survey data for the Northern Extension Study Area will be provided when available.

Table 1.4 below outlines the reports prepared by Phoenix Environmental Services for the Project. The surveys were completed in accordance with the standards set out in *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016b) and *Environmental Factor Guideline: Flora and Vegetation* (EPA 2016a).

TABLE 1.4: CURRENT SURVEYS

Report author	Survey description	Project
Phoenix (2021a)	Baseline flora and vegetation fauna surveys for the Parker Range Haul Road Project. Survey consisted of 74 quadrats and 16 relevés across the 1,499ha study area in an extrapolated area of 8,508 ha (refer to Phoenix 2021a - Appendix B Figure 4-1 for survey locations).	PRIOP Haul Road – southern 86 km (Southern Haul Road Study Area)
Phoenix (2021b)	Baseline flora and vegetation fauna surveys for the Parker Range Haul Road Project – summary of one season survey. Preliminary surveys of the Northern Extension Study Area (Phoenix 2021b), consisted of 40 quadrats and seven relevés across the 758 ha study area (refer to Phoenix 2021b - Appendix B Figure 4 for survey locations).	PRIOP Haul Road – northern 12 km (Northern Extension Study Area)

No threatened flora taxa listed under the EPBC Act or BC Act was recorded within the study area by Phoenix (2021a; 2021b).

27 Priority flora taxa were recorded during the field survey by Phoenix (2021a), of which 25 were recorded in the study area, including eight P1, four P2, 11 P3, and two P4 species (Figure 2). One taxa, *Microcorys* sp. nov. was recorded that is considered significant as it represents an undescribed (new) species (Phoenix, 2021a). A substantial (200 km) range extension was recorded by Phoenix (2021a) for *Rhagodia ulicina*, and therefore this record is considered significant for the taxa.

Preliminary surveys of the Northern Extension Study Area (Phoenix 2021b) confirmed pre-existing Priority flora taxa records, as shown in Figure 2 and Appendix B - Figure 2 (Phoenix 2021b). New additional records for existing populations of *Hibbertia lepidocalyx* subsp. *tuberculata* (P3), *Lepidosperma ferricola* (P3), and *Stenanthemum newbeyi* (P3) were recorded on lower hillslopes in the northeast corridor of the study area. One previously recorded population of *Lepidosperma ferricola* (78 plants) within the study area, located approximately 385 m north of the airstrip, adjacent to clearing, was found to be no longer present, with number of regional individuals (Table 1.5) updated. Four new scattered populations of *Lepidosperma ferricola* (P3) were opportunistically encountered around the central area of the Northern Extension Study Area.




Table 1.5 below provides further details of these species regarding population numbers, individuals recorded and typical habitat that were identified within the DE. Table 1.6 details the expected Project impacts to significant flora taxa.


The 'Plant assemblages of the Parker Range System' Priority 3 PEC was found within the Southern Haul Road Study Area. Ten vegetation types were recorded within the Parker Range System PEC, with multiple additional occurrences of those same vegetation types occurring outside of the PEC's current recorded buffer. Occurrences of mapped vegetation types within the PEC buffer represent 1,284.1 ha (15.1%) of vegetation mapped. Occurrences of these same vegetation types outside of the PEC buffer represent a further 4,511.8 ha (53.0%) of the mapped vegetation.



Two of the vegetation types, EcCaLmc and EcMIMc, wholly exist within the Parker Range System PEC buffer and have no occurrences outside of the buffer. As such, EcCaLmc (1.0 ha) and EcMIMc (4.0 ha) are considered restricted vegetation types and therefore locally significant.


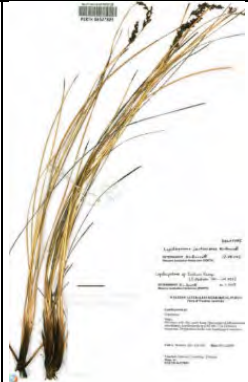
No new occurrences of TECs or PECs were identified in the Northern Extension Study Area. However, vegetation types 8, 9, 10, 11 and 12 were considered regional significant by Woodman (2014) as may be uncommon and possibly restricted based on taxon composition and landform/soil type and are located within the 'Koolyanobbing vegetation complexes – banded ironstone formation' Priority 1 PEC (Koolyanobbing PEC). These vegetation types are considered indicative of the Koolyanobbing PEC.




TABLE 1.5: PRIORITY FLORA SPECIES (PHOENIX, 2021A)



Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Acacia asepala</i>	P2 (DBCA)	Known in WA from 17 records (Phoenix 2021a). Described as abundant for a few records (WA Herbarium 1998-). Previously recorded in the Southern Cross and Western Mallee subregions in <i>Eucalyptus</i> woodlands on undulating plains, along drainage lines (WA Herbarium 1998-). Within the study area was identified from two locations occurring primarily in vegetation type EsppOm.	793	29	 <p><i>Acacia asepala</i> Photos: B. R. Maslin</p> <p>(WA Herbarium 1998-)</p>
<i>Acacia concolorans</i>	P2 (DBCA)	Known in WA from 18 records. Described as fairly common for a few records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1, Southern Cross and Western Mallee subregions in <i>Eucalyptus</i> woodlands and disturbed areas, in red/brown/grey loam, clay, on Low lateritic hills and flats (WA Herbarium 1998-). Within the study area was identified from five locations, occurring primarily in vegetation types EllAh, EpAaaTkHe and EtMpfOm.	10,938	1,140	
<i>Acacia desertorum</i> var. <i>nudipes</i>	P3 (DBCA)	Known in WA from 18 records. Previously recorded in the Southern Cross subregion in tall shrublands and sandplains on yellow sand and lateritic gravel (WA Herbarium 1998-). Within the study area was identified from four locations, occurring primarily in vegetation type AsEcm	14,358	977	 <p><i>Acacia desertorum</i> var. <i>nudipes</i> Photos: W. Johnston</p> <p>(WA Herbarium 1998-)</p>




Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Baeckea grandibracteata</i> subsp. Parker Range (K. Newbey 9270)	P3 (DBCA)	Known in WA from 13 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1 and Southern Cross subregions in open <i>Eucalyptus</i> woodlands, <i>Allocasuarina</i> shrublands and sandplains on yellow sand and occasionally lateritic gravel (WA Herbarium 1998-). Within the study area was identified in vegetation type EpAsDh.	236	12	
<i>Bossiaea</i> sp. Jackson Range (G. Cockerton & S. McNee LCS 13614)	P3 (DBCA)	Known in WA from 18 records. Described as common for most records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1, Southern Cross and Talling subregions in tall shrublands on granite breakaway, drainage lines in sandy loam over (WA Herbarium 1998-). Within the study area, recorded primarily in vegetation type EcAbAe.	3,446	34	
<i>Chamelaucium</i> sp. Parker Range (B.H. Smith 1255)	P1 (DBCA)	Known in WA from 12 records. Described as occurring in small numbers or as locally common (WA Herbarium 1998-). Within the study area, recorded occurring within vegetation type EpAsEm.	23,947	0	
<i>Cryptandra crispula</i>	P3 (DBCA)	Known in WA from 15 records (WA Herbarium 1998-). Previously recorded in the eastern Goldfield and Southern Cross subregions in low <i>Eucalyptus</i> woodlands and tall open shrublands in brown sandy clay, yellow loamy sand, red soil, pebbles on dune ridges, hills and near salt lakes (WA Herbarium 1998-). Within the study area, recorded in vegetation type EpAsDh.	96	1	




Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Cyathostemon verrucosus</i>	P3 (DBCA)	Known in WA from 22 records. Described as locally common for most records (WA Herbarium 1998-). Previously recorded in the eastern Goldfield and Southern Cross subregions in shrublands on yellow sandplans (WA Herbarium 1998-). Within the study area, recorded in vegetation types EpAsDh and EpAsEm.	84	1	 <p>(Royal Botanic Gardens Kew 2020)</p>
<i>Hakea pendens</i>	P3 (DBCA)	Known in WA from 23 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1 and Southern Cross subregions in <i>Allocasuarina</i> thickets and <i>Eucalyptus</i> woodlands in stony loam soil on ironstone ridges and rocky outcrops (WA Herbarium 1998-). Within the study area, recorded from three locations in the study area, primarily in vegetation types EIIAh and EsMpFtC.	6,547	17	 <p><i>Hakea pendens</i> Photos: A.D. Crawford (WA Herbarium 1998-)</p>


Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Lepidosperma ferricola</i>	P3 (DBCA)	<p>Known in WA from 34 records (WA Herbarium 1998-). Previously recorded in the Southern Cross subregion in open <i>Eucalyptus</i> and <i>Acacia</i> woodlands and tall shrublands in well-drained stony loam, silty clay and banded ironstone on rocky ledges, scree slopes, crevices and ravines (WA Herbarium 1998-).</p> <p>Within the study area, recorded from two locations occurring primarily in vegetation types EcCaLmc and EIIAh. An additional 64 plants recorded by Phoenix (2021b) in two locations in the Southern Haul Road Study Area.</p>	69,985	238	 <p>(Barrett 2007)</p>
<i>Lepidosperma lyonsii</i>	P1 (DBCA)	<p>Known in WA from 48 records (WA Herbarium 1998-). Previously recorded in the Eastern Goldfield and Southern Cross subregions in low <i>Eucalyptus</i> woodlands and tall shrublands in pale orange skeletal sandy loam with banded ironstone gravel & rock, well-drained shallow stony loamy with quartz on gentle hill slopes and upper slopes of large hill (WA Herbarium 1998-).</p> <p>Within the study area was recorded from six locations, occurring primarily in vegetation type EIIAaaAcHe and occasionally in AsEcm and EpAsEm.</p>	21,079	2,004	 <p>(Barrett 2007)</p>

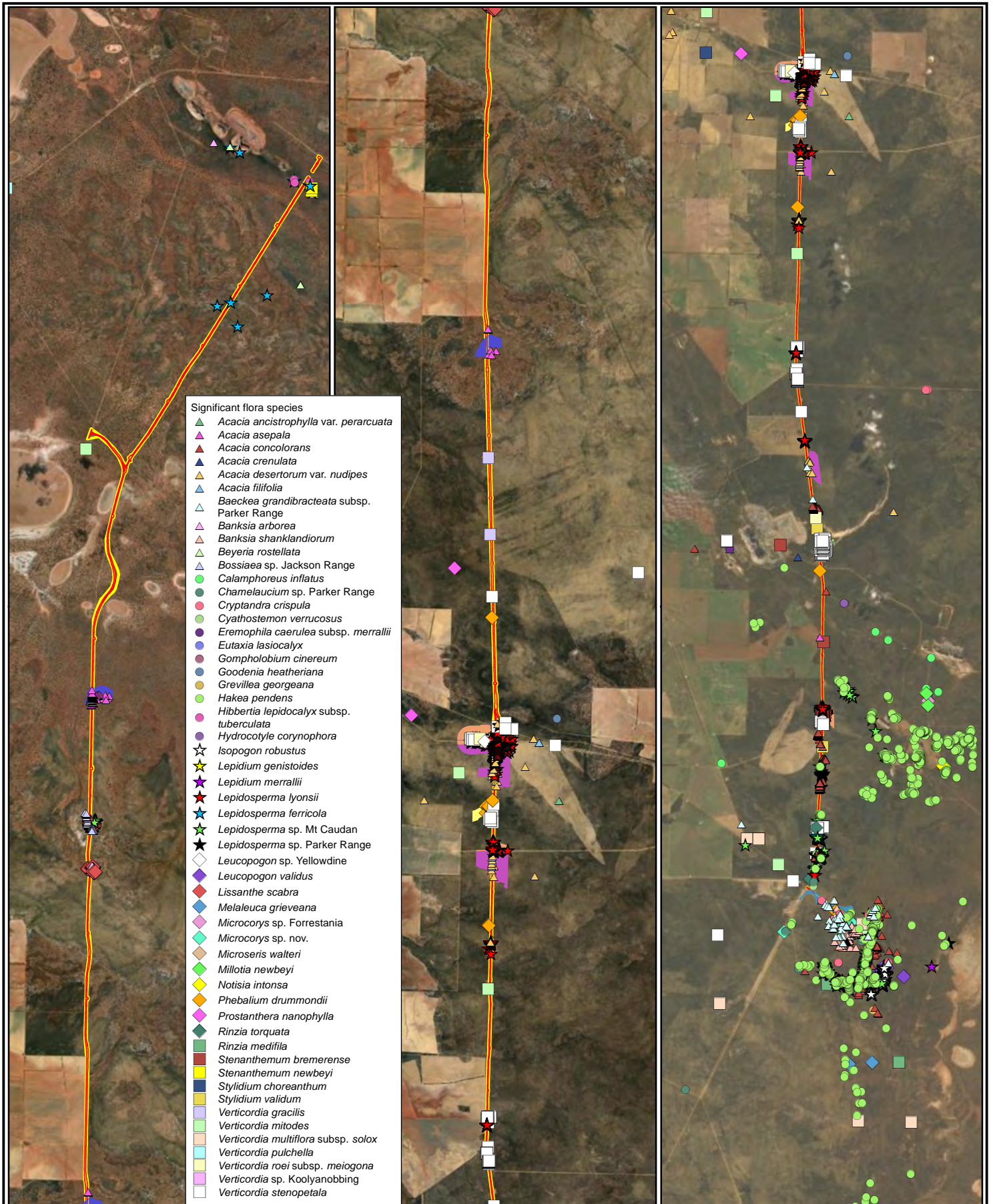
Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Lepidosperma</i> sp. Mt Caudan (N. Gibson & M. Lyons 2081)	P1 (DBCA)	Known in WA from 5 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1 subregion in <i>Eucalyptus</i> woodlands in grey/brown sandy loam, with ironstone gravel, on slopes, uplands and breakaways (WA Herbarium 1998-). Within the study area, was recorded occurring in vegetation types EcCaLmc and EpAsEm.	11,128	230	 (Botanica Consulting 2010a)
<i>Lepidosperma</i> sp. Parker Range (N. Gibson & M. Lyons 2094)	P1 (DBCA)	Known in WA from 8 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1, Eastern Goldfield and Southern Cross subregions in Mallee shrublands in brown clay loam on undulating broad rocky hills with banded ironstone formation outcropping (WA Herbarium 1998-). Within the study area, recorded occurring only in vegetation type EIIAh.	14,279	0	 (Botanica Consulting 2010a)
<i>Lissanthe scabra</i>	P2 (DBCA)	Known in WA from 12 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1 and Southern Cross subregions in open <i>Eucalyptus</i> woodlands and open shrublands in dry, white to orange-brown clay, sandy gravel loams and granite on breakaways and uplands (WA Herbarium 1998-). Within the study area, recorded primarily occurring in vegetation types Bc and EcAbAe.	1,272	108	 <small><i>Lissanthe scabra</i> Photo: M. Hislop</small> (WA Herbarium 1998-)

Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Microcorys</i> sp. nov. (Parker Range)	New species	No known WA records (WA Herbarium 1998-). Phoenix (2021a) recorded the plant in open <i>Eucalyptus</i> woodlands, tall <i>Allocasuarina</i> shrublands and recently disturbed yellow sandplains (WA Herbarium 1998-). Within the study area, recorded at two locations in EpAsDh vegetation type.	2,265	0	
<i>Phebalium drummondii</i>	P3 (DBCA)	Known in WA from 22 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1, Avon Wheatbelt P2, Southern Cross and Western Mallee subregions on flats and roadsides in Mallee woodlands and low shrublands on gravelly sandy or clayey soils (WA Herbarium 1998-). Within the study area, recorded from four locations in the study area, primarily within vegetation type EpAaaTkHe.	557	2	 <small><i>Phebalium drummondii</i> Photos: S.J. Paton (WA Herbarium 1998-)</small>
<i>Rinzia torquata</i>	P3 (DBCA)	Known in WA from 18 records. Previously recorded in the Avon Wheatbelt P1, Southern Cross and Western Mallee subregions in low <i>Eucalyptus</i> open woodlands and <i>Acacia</i> shrublands on yellow-brown gravelly sandy or clayey soils (WA Herbarium 1998-). Within the study area, recorded within vegetation type EpAsEm.	27	0	

Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Stenanthemum bremerense</i>	P4 (DBCA)	Known in WA from 33 records, locally abundant for most records. Previously recorded in the Southern Cross subregion in low woodlands and <i>Allocasuarina</i> / <i>Acacia</i> shrublands in orange-brown sandy loam, orange-red gravelly loam, skeletal red loam, laterite and ironstone on top or sides of outcrops and breakaways (WA Herbarium 1998-). Within study area, recorded from two locations primarily in vegetation type EIIAaaAcHe.	3,803	373	 <p><i>Stenanthemum bremerense</i> (WA Herbarium 1998-)</p>
<i>Stylidium validum</i>	P1 (DBCA)	Known in WA from 12 records (WA Herbarium 1998-). Previously recorded in the Eastern Goldfields and Southern Cross subregions in open <i>Eucalyptus</i> woodlands and shrublands in red-brown sandy loam, red-brown gravelly loam on undulating plains and outcrops (WA Herbarium 1998-). Within the study area, recorded from two locations within vegetation type EpAaaTkHe.	1,166	0	 <p><i>Stylidium validum</i> ms (WA Herbarium 1998-)</p>
<i>Verticordia gracilis</i>	P3 (DBCA)	Known in WA from 13 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1, Southern Cross and Western Mallee subregions in white, yellow sand, gravelly sand and sandy loam on road verges, undulating plains and upper slopes (WA Herbarium 1998-).	15	0	 <p><i>Verticordia gracilis</i> (WA Herbarium 1998-)</p>

Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Verticordia multiflora</i> subsp. <i>solox</i>	P2 (DBCA)	Known in WA from 31 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1, Southern Cross and Western Mallee subregions in mixed low shrublands and heath in yellow sand over gravel and sand over granite on undulating plains hill slopes (WA Herbarium 1998-). Recorded from one location in the study area within vegetation type EllAaaAcHe.	603	29	 <small>Verticordia multiflora subsp. solox Photo: H. Adams</small> (WA Herbarium 1998-)
<i>Verticordia roei</i> subsp. <i>meiogona</i>	P1 (DBCA)	Known in WA from 17 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1 and Southern Cross subregions in low shrublands on yellow sand and sandy loam with gravel on undulating plains and roadside verges (WA Herbarium 1998-). Recorded from two locations in the study area, within vegetation type EpAsEm.	28	0	 <small>Verticordia roei subsp. meiogona Photo: E.A. Bennell</small> (WA Herbarium 1998-)
<i>Verticordia stenopetala</i>	P3 (DBCA)	Known in WA from 25 records (WA Herbarium 1998-). Previously recorded in the Avon Wheatbelt P1, Southern Cross and Western Mallee subregions in open <i>Casuarina/Eucalyptus</i> woodlands and shrublands in yellow sand, sometimes with gravel on hills slopes, road verges and undulating plains (WA Herbarium 1998-). Recorded from seven locations in the study area, primarily within vegetation types EllAaaAcHe, EpAaaTkHe and EpAsEm.	8,504	542	 <small>Verticordia stenopetala Photo: E.A. Bennell</small> (WA Herbarium 1998-)

Species	Status	Distribution and ecology	Individuals		Photograph
			Regional	Development Envelope	
<i>Westringia acifolia</i>	P1 (DBCA)	Known in WA from one record 29 km southwest of Bodallin. Recorded from one dispersed population in the study area, primarily within vegetation type EpAsDh.	4,082	213	 <p>{Guerin, 2009 #13838}</p>

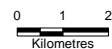


- Significant flora species**
- ▲ *Acacia ancistrophylla* var. *perarcuata*
 - ▲ *Acacia asepala*
 - ▲ *Acacia concolorans*
 - ▲ *Acacia crenulata*
 - ▲ *Acacia desertorum* var. *nudipes*
 - ▲ *Acacia filifolia*
 - ▲ *Baeckea grandibracteata* subsp. Parker Range
 - ▲ *Banksia arborea*
 - ▲ *Banksia shanklandiorum*
 - ▲ *Beyeria rostellata*
 - ▲ *Bossiaea* sp. Jackson Range
 - *Calamphoreus inflatus*
 - *Chamelaucium* sp. Parker Range
 - *Cryptandra crispula*
 - *Cyathostemon verrucosus*
 - *Eremophila caerulea* subsp. *merrallii*
 - *Eutaxia lasiocalyx*
 - *Gompholobium cinereum*
 - *Goodenia heatheriana*
 - *Grevillea georgeana*
 - *Hakea pendens*
 - *Hibbertia lepidocalyx* subsp. *tuberculata*
 - *Hydrocotyle corynophora*
 - ☆ *Isopogon robustus*
 - ☆ *Lepidium genistoides*
 - ☆ *Lepidium merrallii*
 - ☆ *Lepidosperma lyonsii*
 - ☆ *Lepidosperma ferricola*
 - ☆ *Lepidosperma* sp. Mt Caudan
 - ☆ *Lepidosperma* sp. Parker Range
 - ◇ *Leucopogon* sp. Yellowdine
 - ◇ *Leucopogon validus*
 - ◇ *Lissanthe scabra*
 - ◇ *Melaleuca grieviana*
 - ◇ *Microcorys* sp. Forrestania
 - ◇ *Microcorys* sp. nov.
 - ◇ *Microseris walteri*
 - ◇ *Millotia newbeyi*
 - ◇ *Notisia intonsa*
 - ◇ *Phebalium drummondii*
 - ◇ *Prostanthera nanophylla*
 - ◇ *Rinzia torquata*
 - ◇ *Rinzia medifila*
 - ◇ *Stenanthemum bremerense*
 - ◇ *Stenanthemum newbeyi*
 - ◇ *Stylidium choreanthum*
 - ◇ *Stylidium validum*
 - ◇ *Verticordia gracilis*
 - ◇ *Verticordia mitodes*
 - ◇ *Verticordia multiflora* subsp. *solox*
 - ◇ *Verticordia pulchella*
 - ◇ *Verticordia roei* subsp. *meiogona*
 - ◇ *Verticordia* sp. Koolyanobbing
 - ◇ *Verticordia stenopetala*

- Legend**
- Indicative Footprint
 - Development Envelope
 - Significant species
 - *Acacia asepala*
 - *Acacia desertorum* var. *nudipes*
 - *Chamelaucium* sp. Parker Range

- *Lepidosperma lyonsii*
- *Microcorys* sp. nov.
- *Phebalium drummondii*
- *Stenanthemum bremerense*
- *Verticordia stenopetala*
- *Verticordia stenopetala*
- *Westringia acifolia*

Scale 1:165,000 at A4



Coord. Sys. GDA 1994 MGA Zone 50



Job No: 59770

Client: Mineral Resources Limited

Version: A

Date: 11-May-2021

Drawn By: cthatcher

Checked By: LW

CONSERVATION SIGNIFICANT FLORA IN THE SURVEY AREA

FIGURE 2



TABLE 1.6: IMPACT TO SIGNIFICANT FLORA AS A RESULT OF THE PROJECT

		Regional Individuals	Development Envelope		Indicative Footprint					
			Individuals	%	Total Direct	Total Indirect	Total	% Direct	% Indirect	% Total
Priority 1	<i>Chamelaucium</i> sp. Parker Range	23,947	0	0.00%	0	10	10	0.00%	0.04%	0.04%
	<i>Lepidosperma lyonsii</i>	21,079	2,004	9.51%	1,845	3,434	5,279	8.75%	16.29%	25.04%
	<i>Lepidosperma</i> sp. Mt Caudan	11,128	230	2.07%	115	369	484	1.03%	3.32%	4.35%
	<i>Lepidosperma</i> sp. Parker Range	14,279	0	0.00%	0	123	123	0.00%	0.86%	0.86%
	<i>Stylidium validum</i>	1,166	0	0.00%	0	2	2	0.00%	0.17%	0.17%
	<i>Verticordia roei</i> subsp. <i>meiogona</i>	28	0	0.00%	0	1	1	0.00%	3.57%	3.57%
	<i>Westringia acifolia</i>	4,082	213	5.22%	107	489	596	2.62%	11.98%	14.60%
Priority 2	<i>Acacia asepala</i>	793	29	3.66%	27	73	100	3.43%	9.18%	12.61%
	<i>Acacia concolorans</i>	10,938	1,140	10.42%	1,063	2,170	3,233	9.72%	19.84%	29.56%
	<i>Lissanthe scabra</i>	1,272	108	8.49%	82	349	431	6.45%	27.44%	33.88%
	<i>Verticordia multiflora</i> subsp. <i>solox</i>	603	29	4.81%	29	29	58	4.81%	4.81%	9.62%
Priority 3	<i>Acacia desertorum</i> var. <i>nudipes</i>	14,358	977	6.80%	639	2,129	2,768	4.45%	14.83%	19.28%
	<i>Baeckea grandibracteata</i> subsp. Parker Range	236	12	5.08%	10	20	30	4.24%	8.47%	12.71%
	<i>Bossiaea</i> sp. Jackson Range	3,446	34	0.99%	31	1,158	1,189	0.90%	33.60%	34.50%
	<i>Cryptandra crispula</i>	96	1	1.04%	1	1	2	1.04%	1.04%	2.08%
	<i>Cyathostemon verrucosus</i>	84	1	1.19%	1	1	2	1.19%	1.19%	2.38%
	<i>Hakea pendens</i>	6,547	17	0.26%	2	54	56	0.03%	0.82%	0.86%
	<i>Lepidosperma ferricola</i>	69,985	238	0.34%	182	525	707	0.26%	0.75%	1.01%
	<i>Phebalium drummondii</i>	557	2	0.36%	2	11	13	0.36%	1.98%	2.33%
	<i>Rinzia torquata</i>	27	0	0.00%	0	5	5	0.00%	18.52%	18.52%
	<i>Verticordia gracilis</i>	15	0	0.00%	0	2	2	0.00%	13.33%	13.33%
	<i>Verticordia stenopetala</i>	8,504	542	6.37%	433	1,034	1,467	5.09%	12.16%	17.25%
Priority Y 4	<i>Stenanthemum bremerense</i>	3,803	373	9.81%	373	539	912	9.81%	14.16%	23.97%

1.3.3 Key assumptions and uncertainties

The SFCMP and associated management actions have been based on survey and study findings and Project impacts. The key assumptions include:

- The field surveys (Phoenix 2021a, 2021b), undertaken by suitably qualified individuals with experience in flora likely to be encountered, provide sufficient information to confirm the presence and abundance of significant flora with the potential to occur within the area of the Project and surrounds;
- Flora surveys were completed in compliance with Environmental Protection Authority (EPA) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a);
- Dust deposition on plant foliage may impact on the health of priority species as a result of construction activities, and is unlikely to be an ongoing operational impact due to sealing of haul road; and
- By virtue of its presence and private use, the haul road will limit any unauthorised access to areas of uncleared vegetation.

1.4 Management Actions approach

The Project will have a mine life of approximately six years with priority use of existing disturbed areas with a short construction period. Management and mitigation measures have been designed for the proposed construction period of 20 weeks and any future construction activities. Operation of the haul road is not expected to impact flora and vegetation due to design and bituminisation to minimize dust emissions.

Management targets and associated actions have been developed to be risk-based and application of the mitigation hierarchy ensures impacts to the key environmental factors have been avoided or reduced to as low as reasonably practicable. Management actions have been identified and prioritised based on a risk assessment (Appendix A), based on survey outcomes and Project impacts.

The potential environmental effects of the Project on significant flora will be managed through implementing the 'Mitigation Hierarchy' of:

- Avoid;
- Minimise;
- Rehabilitate (or Remediate); and
- Offset.

1.4.1 Avoid

As described above, flora surveys of the area of the Project and surrounds have been completed. Based on data obtained from the surveys completed, the Project has incurred multiple design changes to avoid significant species with the outcome that direct impacts to all species is below 10% of regional population. This included a number of iterative design changes to avoid certain species where higher impacts were originally identified.

1.4.2 Minimise

Dust management measures will be implemented during construction, including applying approximately 1ML per day of water for dust suppression. Bituminisation of the haul road will minimise dust emissions following construction. The haul road has been appropriately designed to minimise impediments to surface water flow or erosion.

1.4.3 Rehabilitate

The post-closure land use of the Project is to be confirmed, however if the haul road cannot be transferred to the local or state government for ongoing use, the area will be rehabilitated.

1.4.4 Offsets

Given no significant residual impacts from the Project are expected, no offsets are proposed.

1.5 Rationale for choice of management actions

This SFCMP utilises objectives-based management actions rather than outcome-based provisions as significant flora taxa as an ecological factor can be difficult to objectively measure.

Objectives-based management actions will be implemented to prevent indirect impacts and to manage direct impacts from vegetation clearing. The management actions focus on all key project construction activities identified as potentially having a medium or higher risk on significant flora and vegetation (Appendix A).

2. SFCMP COMPONENTS

This section identifies the objective based management actions that MRL will implement to ensure protection of significant flora and vegetation. Objectives, management actions, targets and monitoring has been developed based on a risk-based approach as shown in Appendix A.

2.1 Environmental Objective

The objective of this SFCMP is to ensure the Project construction actions are managed to minimise impacts to significant flora species and communities, such that the EPA objective for flora and vegetation is met.

2.2 Management actions

Project specific management actions have been identified to address potential impacts identified for significant flora taxa and vegetation. The management actions focus on all key project construction activities identified as having a medium or higher risk to significant vegetation and species, as determined by the risk assessment included in Appendix A .

Potential impacts from altered fire and surface water regimes and spillage of hydrocarbons are considered to be low risk, and are therefore not considered further in this SFCMP.

2.3 Management targets

Measurable management targets have been developed to assess the success of implementation of the management actions once construction is completed. If management targets are met, then it is expected (based on key assumptions and uncertainties) effects to significant flora have been minimised and the management objectives for flora and vegetation will be achieved.

2.4 Objective-based SFCMP

The objectives-based management actions and targets are outlined in Table 2.1.

TABLE 2.1: FLORA AND VEGETATION OBJECTIVE-BASED SFCMP

PURPOSE OF SFCMP: Provide monitoring and management actions for potential impacts on conservation significant flora taxa and vegetation within the Project DE and surrounds

RATIONALE:

<p>EPA Factor and Objective: Flora and Vegetation - “To protect flora and vegetation so that biological diversity and ecological integrity are maintained.”</p>
<p>Management Objective: To minimise the potential environmental effect of the Project to conservation significant flora species and communities</p>
<p>Key Environmental Values: The following conservation significant flora and vegetation values have been recorded within the area of the Project and surrounds:</p> <ul style="list-style-type: none"> • DBCA-classified ‘priority’ flora taxa; and • DBCA-classified ‘priority’ ecological community
<p>Key impacts and risks:</p> <ul style="list-style-type: none"> • Clearing of native vegetation (including DBCA-classified ‘priority’ flora taxa and DBCA-classified ‘priority’ ecological community); • Potential for construction vehicles and associated earthworks to lead to the introduction and/or spread of introduced flora taxa (weeds); and • Potential for construction vehicles and associated earthworks to generate dust emissions that result in reduced vegetation health.

No.	Management Targets	Management Actions	Monitoring	Timing	Reporting
1	All site personnel to complete a site induction which includes specific information on the conservation significant flora present, and avoidance/management actions.	Environmental induction of site personnel.	Environmental Compliance Inspections	Site induction prior to commencing works (first day) Environmental education ongoing (as required, e.g. toolbox meetings)	CAR
2	Planning and construction of the Project uses accurate flora and vegetation information during implementation of the Project to minimize impacts.	Maintain accurate records of the locations of conservation significant flora taxa and vegetation to inform the planning and construction of the Project.	Environmental Compliance Inspections	Planning and Construction	CAR

No.	Management Targets	Management Actions	Monitoring	Timing	Reporting
3	<p>No native vegetation clearing beyond the approved clearing area.</p> <p>Demarcation of clearing areas.</p> <p>100% compliance with Site Disturbance Permit and Land Clearing Procedures</p>	<p>Native vegetation clearing to be limited to within the approved clearing areas through implementation of infrastructure field survey (including clearing demarcation) and adherence to Site Disturbance Permit and Land Clearing Procedures.</p> <p>Effective rehabilitation has also been achieved through topsoil and vegetation that has been comingled and stockpiled.</p> <p>Haul road to be appropriately designed to minimize ongoing erosion:</p> <ul style="list-style-type: none"> • Re-profile ground with drains and culverts installed as required • Import, place and compact general fill material to sub-grade level • Import, place, compact and final trim of road base pavement material • Installation of bitumen seal 	<p>Environmental Compliance Inspections – Clearing</p> <p>Audit of approved Internal Clearing Permits granted against surveyed clearing area.</p> <p>Clearing inspection to ensure compliance against Internal Clearing Permit:</p> <ul style="list-style-type: none"> • Demarcation of areas • Post-clearing survey pick up • Haul road construction is as per approved design 	Construction (Land clearing)	CAR
4	<p>Compliance with weed hygiene procedures including completion of a weed hygiene certificate for all vehicles/machinery</p> <p>No new weed species introduced through construction activities.</p> <p>No increase in introduced flora extent following construction activities</p>	<p>Control introduced flora taxa through:</p> <ul style="list-style-type: none"> • Identify the extent and distribution of introduced flora taxa within the area of the Project prior and post construction activities. • Maintain introduced flora taxa locations in GIS database • Control known locations of introduced flora taxa (e.g. chemical spray) to minimise potential spread. • Implement vehicle hygiene procedures for the inspection and cleaning of vehicles, machinery and equipment entering the area of the Project. 	<p>Environmental Compliance Inspections – Introduced Flora</p> <p>Inspection of construction area prior to construction to confirm introduced flora locations.</p> <p>Inspection of construction area to identify locations of introduced flora to inform control programs and measure control program outcomes</p>	Construction	CAR

No.	Management Targets	Management Actions	Monitoring	Timing	Reporting
		<ul style="list-style-type: none"> • Introduced flora inspections of imported fill material, which will be sourced from introduced flora-free locations • Periodic inspection of areas susceptible to infestation by introduced flora (e.g. disturbed lands, topsoil/subsoil stockpiles) • Separately stockpiling topsoil/subsoil from areas known to contain introduced flora (from other topsoil/subsoil stockpiles). • Topsoil stockpiles to be managed to minimise weed infestations and maintain viability of seed stock 			
5	Emissions of dust are minimised and controlled to an acceptable level, without detrimental effects to native flora and vegetation adjacent to the Project.	Control emissions of dust through: <ul style="list-style-type: none"> • Minimise the extent of open cleared areas prone to dust lift by wind, where practicable. • Installation of bitumen along haul road to minimise dust emissions • Minimise of land clearing activities during windy conditions. • Restrict vehicle speeds to 40 km/hr along gravel/unsealed roads to minimise dust generation, where practical. • Dampen open cleared areas using water carts (sprays) to minimise dust generation. A full time water cart will be utilised by each construction team. 	Environmental Compliance Inspections – Dust Inspection of construction area to visually observe dust emissions and undertake vegetation health inspections	Construction	CAR

2.5 Monitoring

This section also identifies monitoring measures to be implemented to measure progress against management targets and relevant record keeping/reporting requirements for each management action.

Construction of the entire haul road will be completed within 20 weeks, with a duration of one week to complete approximately 3 km. As a result of the construction timeframe for each section of the road being limited, there is a low likelihood of indirect impacts to significant flora and vegetation during the construction phase. MRL will complete ongoing monitoring of clearing register for compliance to approvals, and subsequently direct impacts to priority flora of clearing activity. Additionally, the monitoring program will include ongoing monitoring for introduced flora to inform control programs and measure the success of the control programs. Table 2.2 summarises monitoring required.

TABLE 2.2: FLORA MONITORING ACTION SUMMARY

Management Target	Monitoring Event	Monitoring Action	Frequency	Records	Responsibility
All site personnel to complete a site induction which includes specific information on the conservation significant flora present, and avoidance/management actions.	Environmental Compliance Inspections	Review of site induction records to confirm: <ul style="list-style-type: none"> all personnel have completed inductions induction contains information on significant flora and vegetation values 	Monthly during construction.	Site induction records to be maintained by MRL.	MRL Environmental Advisor
Planning and construction of the Project uses accurate flora and vegetation information during implementation of the Project.	Environmental Compliance Inspections	Monitoring of clearing register and internal clearing permits to confirm: <ul style="list-style-type: none"> Internal Clearing Permits reviewe current flora and vegetation locations 	Monthly during construction.	Flora and vegetation survey results to be maintained by MRL Environmental Advisor.	MRL Environmental Advisor
No native vegetation clearing beyond the approved clearing area. Demarcation of clearing areas. 100% compliance with Site Disturbance Permit and Land Clearing Procedures	Environmental Compliance Inspections - Clearing	Audit of approved Internal Clearing Permits granted against surveyed clearing area. Clearing inspection to ensure compliance against Internal Clearing Permit: <ul style="list-style-type: none"> Demarcation of areas Post-clearing survey pick up Haul road construction is as per approved design 	One month following construction activities. Weekly during construction.	Approved Internal Clearing Permit authorisation records to be maintained by MRL Environmental Advisor.	MRL Environmental Advisor
Compliance with weed hygiene procedures including completion of a weed hygiene certificate for all vehicles/machinery	Environmental Compliance Inspections – Introduced Flora	Inspection of construction area prior to construction to confirm introduced flora locations. Inspection of construction area to identify locations of introduced	One month prior to construction. Weekly during construction then	Introduced flora survey results to be maintained by MRL Environmental Advisor. Hygiene inspection documentation (for vehicles,	MRL Environmental Advisor

Management Target	Monitoring Event	Monitoring Action	Frequency	Records	Responsibility
<p>No new weed species introduced through construction activities.</p> <p>No increase in introduced flora extent following construction activities</p>		flora to inform control programs and measure control program outcomes.	one month following construction (until Management Target met)	machinery and equipment) to be maintained by MRL Environmental Advisor.	
<p>Emissions of dust are minimised and controlled to an acceptable level, without detrimental effects to native flora and vegetation adjacent to the Project.</p>	Environmental Compliance Inspections - Dust	Inspection of construction area to visually observe dust emissions and undertaken vegetation health inspections	Weekly during construction and one month prior and post construction activities	Visual observation inspection records to be maintained by MRL Environmental Advisor.	MRL Environmental Advisor

2.6 Reporting

Compliance with this SFCMP will be reported to DWER CEO annually through a Compliance Assessment Report (CAR) as required by the Ministerial Statement approval for the Project.

In the event that Management Targets are not met within one month following cessation of construction activities, the DWER CEO shall be notified within seven days. The report will include any impacts to significant flora and vegetation and an investigation will be undertaken.

3. ADAPTIVE MANAGEMENT AND REVIEW OF THE SFCMP

3.1 Review

Adaptive management practices based upon learnings gained from the Management Actions and Monitoring will be adopted where changed management practices may lead towards more effective environmental outcomes. The adaptive management approach may include:

- Annual evaluation against targets;
- Review of Management Actions as the Project implementation progresses and/or new measures/technologies become available; and
- Amendment to Monitoring programme

This SCFMP will be reviewed and updated by MRL (if required) if additional construction activities are required. Any significant changes to this SFCMP will be referred to the CEO DWER for approval prior to implementation of such changes.

4. STAKEHOLDER CONSULTATION

Stakeholder consultation will be undertaken with DBCA as the SFCMP is implemented and it is therefore likely that revisions will be made to the SFCMP if further guidance is provided by these stakeholders.

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Appendix A Risk Assessment

Risk Assessment Methodology

Consequence Rating					Likelihood of Occurrence	
Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Severe (5)		
Minor environmental impacts contained within site	Contamination or damage sufficiently large to impact the environment but without permanent impacts	Limited but non-permanent damage to environment, recoverable within 1 year Repeated or significant breach of regulatory compliance limits	Severe damage requiring extensive measures to restore polluted or damaged environment Repeated significant or a single major breach of regulatory compliance limits	Persistent severe environmental damage extending over a large area. Damage cannot be fully rehabilitated/remediated. Duration of harm >5yrs		
Risk Rating					Likelihood of Occurrence	
H-15	H-10	E-6	E-3	E-1	May occur frequently at site Expect to occur >2 times per year	Almost Certain (A)
M-19	H-14	H-9	E-5	E-2	May occur frequently within the sector Expect to occur 1-2 times/year	Likely (B)
L-22	M-18	H-13	E-8	E-4	May have occurred several times in the past the sector 50% chance of occurring in one year (occurs in 1-10 years)	Possible (C)
L-24	L-21	M-17	H-12	E-7	May have happened before within the sector but only on rare occasions 25% chance of occurring in one year (occurs in 25-100 years)	Unlikely (D)
L-25	L-23	M-20	H-16	H-11	May occur in exceptional circumstances. 5% chance of occurring in one year (occurs >every 100 years)	Rare (E)

Risk Assessment

Activity	Impact	Inherent Risk			Management Targets	Management Actions	Residual Risk		
		Consequence	Likelihood	Rating			Consequence	Likelihood	Rating
Clearing of native vegetation	Direct loss of flora and native vegetation	3	B	H9	All site personnel to complete a site induction which includes specific information on the conservation significant flora present, and avoidance/management actions.	Environmental induction of site personnel.	3	D	M17
					Planning and construction of the Project uses accurate flora and vegetation information during implementation of the Project.	Maintain accurate records of the locations of conservation significant flora taxa and vegetation to inform the planning and construction of the Project.			
					<p>No native vegetation clearing beyond the approved clearing area.</p> <p>Demarcation of clearing areas.</p> <p>100% compliance with Site Disturbance Permit and Land Clearing Procedures</p>	<p>Native vegetation clearing to be limited to within the approved clearing areas through implementation of infrastructure field survey (including clearing demarcation) and adherence to Site Disturbance Permit and Land Clearing Procedures.</p> <p>Effective rehabilitation has also been achieved through topsoil and vegetation that has been comingled and stockpiled.</p> <p>Haul road to be appropriately designed to minimize ongoing erosion:</p> <ul style="list-style-type: none"> • Re-profile ground with drains and culverts installed as required • Import, place and compact general fill material to sub-grade level • Import, place, compact and final trim of road base pavement material • Installation of bitumen seal 			

Activity	Impact	Inherent Risk			Management Targets	Management Actions	Residual Risk		
		Consequence	Likelihood	Rating			Consequence	Likelihood	Rating
Clearing of native vegetation Construction vehicle movement	Potential increased spread or introduction of new weeds	2	B	H14	Compliance with weed hygiene procedures including completion of a weed hygiene certificate for all vehicles/machinery No new weed species introduced through construction activities. No increase in introduced flora extent following construction activities	Control introduced flora taxa through: <ul style="list-style-type: none"> Identify the extent and distribution of introduced flora taxa within the area of the Project prior and post construction activities. Maintain introduced flora taxa locations in GIS database Control known locations of introduced flora taxa (e.g. chemical spray) to minimise potential spread. Implement vehicle hygiene procedures for the inspection and cleaning of vehicles, machinery and equipment entering the area of the Project. Introduced flora inspections of imported fill material, which will be sourced from introduced flora-free locations Periodic inspection of areas susceptible to infestation by introduced flora (e.g. disturbed lands, topsoil/subsoil stockpiles) Separately stockpiling topsoil/subsoil from areas known to contain introduced flora (from other topsoil/subsoil stockpiles). Topsoil stockpiles to be managed to minimise weed infestations and maintain viability of seed stock 	2	D	L21

Activity	Impact	Inherent Risk			Management Targets	Management Actions	Residual Risk		
		Consequence	Likelihood	Rating			Consequence	Likelihood	Rating
Clearing of native vegetation Construction vehicle movement	Dust deposition	2	B	H14	Emissions of dust are minimised and controlled to an acceptable level, without detrimental effects to native flora and vegetation adjacent to the Project.	Control emissions of dust through: <ul style="list-style-type: none"> Minimise the extent of open cleared areas prone to dust lift by wind, where practicable. Installation of bitumen along haul road to minimise dust emissions Avoidance of land clearing activities during windy conditions. Restrict vehicle speeds to 40 km/hr along gravel/unsealed roads to minimise dust generation. Dampen open cleared areas using water carts (sprays) to minimise dust generation. A full time water cart will be utilised by each construction team. 	2	D	L21
Construction vehicle movement	Spillage of hydrocarbons	1	C	L22	Not required – Low risk				
Clearing of native vegetation	Altered surface drainage flow patterns	2	D	L21	Not required – Low risk				
Construction vehicle movement	Alteration of fire regimes	1	D	L21	Not required – Low risk				