GOVERNMENT OF WESTERN AUSTRALIA

Environmental Protection Authority

EPA REFERRAL FORM
Proponent

Referral of a Proposal to the Environmental Protection Authority under Section 38(1) of the Environmental Protection Act.

Referral by the Proponent

PURPOSE OF THIS FORM

Section 38(1) of the *Environmental Protection Act 1986* provides that where a development proposal is likely to have a significant effect on the environment, a proponent may refer the proposal to the Environmental Protection Authority (EPA) for a decision on whether or not it requires assessment under the Act.

A referral to the EPA by a proponent under Section 38(1) must be made on this form. A request for consideration by the EPA of the likely environmental impacts of a proposal will not be treated as a referral until all information requested by this form has been provided.

Before completing this form, proponents are encouraged to familiarise themselves with the EPA's *General Guide for Referral of Proposals to the EPA under section 38(1) of the EP Act 1986* (accessed at the EPA's website at www.epa.wa.gov.au or by contacting the EPA on 64675419).

Proponents need to complete Parts A and B of the form by marking the appropriate boxes and providing explanatory or additional information where requested. Part B should be completed based on information known to the proponent. Only those sections of Part B that are pertinent to the proposal need to be completed. If space is insufficient, attach additional pages. Where information is contained in a report that is to be submitted with the referral form, the proponent may complete sections of the form by referring to the pertinent section of the report.

Proponents are encouraged to attach any other environmental information they consider may be relevant to the EPA for making a decision on whether or not to assess the proposal, and, if it is to be assessed, the level of assessment. In general, referrals should contain information on the potential environmental impacts of the proposal, the proposed management mechanisms to be implemented to minimise and mitigate for these impacts, and how the principles of the EP Act have been addressed by the proposal.

In addition to providing a hard copy of referral documentation, proponents are also requested to provide an electronic copy of the referral document, noting that section 39(2) of the EP Act provides for a proponent to request that matters of a confidential nature not be kept on the public record. If confidential matters are included in the referral, proponents are requested to identify the confidential information at this stage of the process, specifically request that it be treated as confidential, and submit the confidential information in a separate hard copy attachment to the referral document. The electronic copy of the referral should be identical to the hard copy of the referral document, excluding any confidential attachment.

You may need to contact government agencies or local authorities to obtain information required by this form. A list of key agencies and their contact details is provided in Attachment 1.

Where the EPA decides that a proposal will be assessed at the level of Public Environmental Review or Environmental Review and Management Programme, it will also require the proponent to prepare an Environmental Scoping Document (refer *Environmental Impact Assessment (Part IV Division 1) Administrative Procedures 2002*).

Proponents should also be aware of the need to determine their obligations under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act is separate legislation to the Environmental Protection Act and it identifies a number of matters of national environmental significance which are subject to assessment and approval by the Commonwealth. The matters identified as triggers for the Commonwealth assessment and approval regime are World Heritage properties, Ramsar wetlands, nationally threatened species and ecological communities, migratory species, Commonwealth marine areas, and nuclear actions (refer to the Department of Environment and Water Resources website at www.environment.gov.au). Questions in this referral form that may be relevant to matters of national environmental significance are marked with a #.

MINJAR GOLD

EPA REFERRAL

MINJAR GOLD PTY LTD

MARCH 2013

MINJAR GOLD RECOMMENCEMENT AND EXPANSION PROJECT

AUSTIN, WINDINNE WELL, SILVERSTONE/ EASTERN CREEK, MONACO, RILEY, BUGEYE, MUGS LUCK, BLACKDOG, HIGHLAND CHIEF/BOBBY McGEE, TRENCH AND CAMP

Prepared for Minjar Gold Pty Ltd by Animal Plant Mineral Pty Ltd

ANIMAL PLANT MINERAL

EXECUTIVE SUMMARY

Minjar Gold Project has been on Care and Maintenance since 2010 when the project and the operating company Minjar Gold Pty Ltd were fully acquired by Shandong Tianye Group.

The Project is located 70 kilometres southeast of Yalgoo in the Murchison and approximately 500 kilometres northeast of Perth and overlies the Badja and Warriedar Pastoral Leases. Neighbouring mines include MinMetals Group Golden Grove, Gindalbie's Shine Project, the Karara Project and Sinosteel Midwest Corporation's projects.

The Project has an established 650,000 tonne per annum Carbon in Leach processing facility and Tailings Storage Facility at M1 (Mining Lease M59/406) and existing approvals to operate this including a Prescribed Premises Licence and Works Approval and approved Mining Proposals.

Minjar Gold expect to produce approximately 40,000 ounces of gold per annum from a chain of pits along a 50 kilometre strikeline over an estimated lifespan of 51 months of operations.

This referral takes in the eleven main development areas of the Project: Austin; Windinne Well; Silverstone/Eastern Creek; Monaco; Riley; Bugeye; Mugs Luck; Blackdog; Highland Chief/Bobby McGee; Trench; and Camp deposits. There is existing disturbance of approximately 276 hectares which combined with proposed clearing of approximately 374 hectares, would equate to a total disturbance footprint of approximately 650 hectares.

Cutbacks are proposed for the existing pits of Windinne Well, Silverstone/Eastern Creek, Monaco, Bugeye and Highland Chief.

New pits and waste rock dumps proposed for Austin, Riley, Mugs Luck, Blackdog, Bobby McGee, Trench and Camp plus an additional 16 kilometres of haul roads.

Standard open cut pit mining methods are to be used including drill and blast, a 80-100 tonne excavator, a fleet of four 50 tonne all-wheel-drive dump trucks plus supporting graders and dozers and a semi-trailer will be used to extract and haul ore.

There is an existing 120 person accommodation on M59/406 and Minjar will increase the capacity to enable an average of 130 people on site at any time operating on a Fly-In-Fly-out roster. This expansion will be within the existing camp accommodation development footprint.

Flora and fauna surveys conducted over all development areas at Minjar tenements recorded no DRF. The Minjar Gnows Nest Priority Ecological Community is known from the area, as are the *Environment Protection and Biodiversity Conservation Act* 1999 listed species the Egernia Skink and Malleefowl. No evidence of Egernia was recorded in development areas.

The Project has been referred to the Department of Sustainability Environment Water Population and Communities regarding impacts to Malleefowl. Measures have been developed and will continue to be implemented to protect the Malleefowl from mining and exploration impacts. Particular manners are being negotiated between Minjar Gold and Department of Sustainability Environment Water Population and Communities at present to ensure the protection of Malleefowl.

The developments mainly occur on the plains (apart from Windinne Well) and do not impact parts of the landscape likely to contain the Minjar Gnows Nest Priority Ecological Community.

A variety of Priority Flora are found in disturbance areas however they are fairly well represented across the tenements and within the region in most cases.

Management strategies have been developed to address the environmental aspects likely to be impacted by the Project, and are presented in detail in Section 3.

The Minjar Gold Project has previously achieved approval of Notices of Intent, Mining Proposals and Vegetation Clearing Permits from the Department of Mines and Petroleum and Works Approvals and a Prescribed Premises Licence from the Department of Environment and Conservation. The extent of existing approvals across the relatively small scale Project demonstrates that Minjar Gold has been able to develop and implement strategies to avoid, mitigate and manage potential environmental impacts of the Project to date.

Given the level of investigation of the local and regional environment at the Project and the high level of environmental management commitments, Minjar Gold are seeking a determination of *Not Assessed* for the referral.

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Appendix 1: The 2006 sales agreement between Gindalbie and the purchaser* CONFIDENTIAL

*Only Appendix 1 is attached to the hardcopy - the remainder are provided as electronic files.

Appendix 2: Windinne Well and Silverstone/Eastern Creek Vegetation Clearing Permit CPS 5188/1

Appendix 3: Bugeye Vegetation Clearing Permit CPS 5284/1

Appendix 4: Monaco Vegetation Clearing Permit CPS 3823/2

Appendix 5: Licence for Prescribed Premises L8402/2009/1

Appendix 6: Works Approval W4576/2009/1

Appendix 7: Section 5C Ground Water Abstraction Licence GWL169526(3)

Appendix 8: Peter O'Bryan and Associates (2012) Geotechnical Assessment – Proposed extended Open Pit Mining (Bugeye/Phillip Island, Silverstone, Eastern Creek & Eastern Creek South, Windine Well, Monaco and Highland Chief) – Proposed Open Pit Mining (Bobby McGee, Austin, Keronima, Riley and Mugs Luck). Technical Report for Minjar Gold Pty Ltd.

Appendix 9: Peter O'Bryan and Associates (2012) Geotechnical Review – Austin, Bugeye, Camp, Highland Chief, Keronima, Monaco, Mugs Luck, Riley, Silverstone, Trench and Windine Well Proposed Waste Dumps. Technical Report for Minjar Gold Pty Ltd.

Appendix 10: Mining Schedule

Appendix 11: Hart, Simpson and Associates Pty Ltd (2000) Minjar North Project, Ecological Survey. Unpublished. Technical report prepared for Gindalbie Gold N.L.

Appendix 12: Woodman Environmental Consulting Pty Ltd (2003) Vegetation Survey of the Highland Chief and Monaco areas, Minjar Gold Project. Unpublished. Technical report prepared for Gindalbie Gold N.L.

Appendix 13: Woodman Environmental Consulting Pty Ltd (2003) Vegetation Survey of the Highland Chief and Monaco areas, Minjar Gold Project. Unpublished. Technical report prepared for Gindalbie Gold N.L.

Appendix 14: Gindalbie Gold Report (2004) Priority Flora Management Plan, Minjar Operations. Unpublished. Technical report prepared for Gindalbie Gold N.L.

Appendix 15: Mattiske Consulting Pty Ltd (2004) Review of Priority Species on Golden Grove and Gindalbie Mine Leases. Unpublished. Technical report prepared for Golden Stallion Resources.

Appendix 16: Woodman Environmental Consulting Pty Ltd (2004) Flora and Vegetation Survey of the Keronima, Western Corridor, Austin, Mug's Luck, Bobby McGee, Apollo and Promises Project Areas. Unpublished. Technical report prepared for Gindalbie Gold N.L

Appendix 17: Ecotec Pty Ltd (2006) Priority Flora Handbook – Minjar Project. Unpublished. Prepared for Monarch Gold Mining Company Limited.

Appendix 18: Ecotec Pty Ltd(2006) Priority Flora Survey Simca, Ruby Lou, Desiree, Rotator and Trench Prospects Minjar Project. Unpublished. Prepared for Monarch Gold Mining Company Limited

Appendix 19: Woodman Environmental Consulting (2007) Flora & Vegetation Assessments

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TABLE OF DEFINITIONS

Project Terminology	Meaning
The Project	Minjar Gold Recommencement and Expansion Project
Project Area	Includes the prospects Austin, M1, Windinne Well, Silverstone/Eastern Creek, Monaco, Riley, Bugeye, Mugs Luck, Blackdog, Highland Chief/Bobby McGee, Trench and Camp spanning Tenements M59/457, M59/732, L59/121, M59/406, M59/420, M59/458, M59/431, L59/124, M59/421, L59/44, M59/219, M59/591, L59/122, M59/497, L59/61, M59/425, M59/460, L59/125 and L59/126
Disturbance Footprint	The area subject to clearing (both previous and proposed) and development of mining infrastructure, pits, waste rock dumps, stockpiles, ore pads, access and haul roads.
Proposed Clearing Area	Areas proposed to be cleared that have not previously been cleared.
Previous Clearing Area	Areas that were cleared prior to the current proposal.
Clearing Envelope	An area larger than the clearing area within which clearing is proposed to occur, often to describe an area for a Purpose Vegetation Clearing Permit.

TABLE OF ACRONYMS

Abbreviation	Meaning
AARL	Anglo American Research Laboratories
AER	Annual Environmental Report
APM	Animal Plant Mineral Proprietary Limited
ARD	Acid Rock Drainage
AS	Australian Standard
BIF	Banded Ironstone Formation
CAMBA	China-Australia Migratory Bird Agreement
CIL	Carbon in leach
COS	Coarse Ore Stockpile
CPL	Conservation Pastoral Lease
DEC	Department of Environment and Conservation
DME	Department of Minerals and Energy
DMP	Department of Mines and Petroleum
DoW	Department of Water
DRF	Declared Rare Flora
Ecotec	Ecotec Pty Ltd
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GHG	Greenhouse Gas
Gindalbie	Gindalbie Metals Ltd
GIS	Geographic Information System
GLOS	Groundwater Licence Operating Strategy
GCMP	Ground Control Management Plan
JAMBA	Japan-Australia Migratory Bird Agreement
Ltd	Limited
Mattiske	Mattiske Consulting Pty Ltd
Minjar Gold	Minjar Gold Pty Ltd

Abbreviation	Meaning
MMG	MinMetals Group
MSDS	Material Safety Data Sheets
NA	Not Applicable
NGER	National Greenhouse and Energy Reporting Act
NOI	Notice of Intent
NPI	National Pollutant Inventory
NZS	New Zealand Standard
OEMP	Operational Environmental Management Plan
P1	Priority 1 species
P2	Priority 2 species
P3	Priority 3 species
P4	Priority 4 species
PAF	Potentially Acid Forming
PEC	Priority Ecological Community
Pty	Proprietary
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
ROM	Run-of-Mine
SAG	Semi Autogenous Grinding Mill
SOP	Safe Operating Procedures
sp.	Species
subsp.	Subspecies
TEC	Threatened Ecological Community
TSF	Tailings Storage Facility
VCP	Vegetation Clearing Permit
WA	Western Australia
WC Act	*Wildlife Conservation Act 1950* (WA)
Woodman	Woodman Environmental Consulting Pty Ltd

TABLE OF SYMBOLS AND UNITS

Symbols and Units	Meaning
%	Percentage
>	Less than
°	Degree
°C	Degrees Celsius
Au	Gold
bcm	Bench Cubic Metres
Cm	Centimetre
CO_2-e	Carbon Dioxide Equivalent
dB	Decibel
dB(lin)	Decibel Linear
deg	Degrees
g/t	Grams per tonne
ha	Hectare
hr	Hour
kl	Kilolitre
km	Kilometre
Km^2	Square Kilometre
kV	Kilovolt
kVa	Kilovolt-amps
L	Litre
M	Metre
m^2	Square metre
m^3	Cubic Metres
m^3/hr	Cubic Metres per hour
m^3/yr	Cubic Metres per year
mbgl	Metres below ground level
mg/L	Milligrams per Litre
ML	Mega Litre
Mm	Millimetre
MW	Megawatts
P80	80% material passes screening
pH	A measure of the degree of acidity or alkalinity of a solution; expressed numerically (logarithmically) on a scale of 1 to 14, on which 1 is most acid, 7 is neutral and 14 is most basic (alkaline)
Pop	Population
T	Tonne (1000 kg)
tpa	Tonnes per Annum

PART A - PROPONENT AND PROPOSAL INFORMATION

1 PROPONENT DETAILS, PROPOSAL DESCRIPTION AND LOCATION

1.1 Proponent

- Name of proponent (Person or entity proposing to implement the proposal)

  Minjar Gold Pty Ltd

- Names of Joint Venture entities (if applicable)

  NA

- Australian Company Number (if applicable)

  ACN 119 514 528

- Address of proponent

  PO Box 115, West Perth WA 6872

  Level 3, 50 Kings Park Road, West Perth WA 6005

- Key contact for the proposal

  (Name address and phone/facsimile number and email address. The contact may be a consultant, if one is being used)

  Mr Kevin McCormick
  Environmental Officer
  Minjar Gold Pty Ltd

Phone:	(08) 9212 8900
Fax:	(08) 9212 8999
Email:	Kevin.McCormick@minjargold.com.au
Postal Address:	PO BOX 115, West Perth, WA, 6872
Physical Address:	Spinifex House, Level 3, 50 Kings Park Road West Perth, WA, 6005

- Consultant for the proposal

  Mr Tony Smith
  Environmental Consultant
  Animal Plant Mineral Pty Ltd

Phone:	(08) 6296 5155
Fax:	(08) 6296 5199
Email:	ems@animalplantmineral.com.au
Postal Address:	68 Westgrove Drive, Ellenbrook, WA, 6069
Physical Address:	Unit 3/25 The Broadway, Ellenbrook, WA, 6069

1.2 Proposal

- Proposal title

  Minjar Gold Recommencement and Expansion Project (the Project)

- Description

1.2.1 History

The Project tenements were first systematically explored by Normandy Exploration in the late 1980's and 1990's, with Gindalbie Gold N.L purchasing the Project in December 1999. Gindalbie Gold N.L formed the operating company Minjar Gold Pty Ltd and constructed a 500,000 tonne per annum (tpa) carbon in leach (CIL) treatment facility in 2000 (later expanded to 600,000 tpa and supplied ore from a series of mid-sized open-pits along a strike length of 15 km between December 2001 and June 2004. The plant reverted to care and maintenance between July 2004 and July 2006 at which time Monarch Gold Mining Pty Ltd acquired Minjar Gold. The project remained under Care and Maintenance and Minjar Gold was purchased by Golden Stallion Resources in March 2009. The Project operated for six months during 2010 after which it again went under Care and Maintenance and was sold to current owners Shandong Tianye Group.

Since the change in ownership, exploration activities throughout Minjar tenements have been ongoing to meet the minimum expenditure required by the DMP. Significant resource definition drilling was undertaken during 2011 and 2012 and pit and waste dump designs have now been developed.

Minjar Gold evaluated the economic potential of re-establishing open-pit mining and processing based on the recent improvement in the gold price. Other factors increasing the viability of the Project include the optimisation of resources based on recent drilling and confirmation or extension of previous resource estimates associated with cutbacks of existing pits.

1.2.2 Recommencement and expansion

The Project involves varying the current status of the mine from Care and Maintenance to Operating, expanding a series of existing pits, developing new deposits and making a small addition to the accommodation facilities. Processing facilities and supporting infrastructure, such as haul roads, site offices, fuel storage facilities and workshops are in place and will recommence under existing approvals.

The Windinne Well, Silverstone/Eastern Creek, Monaco, Bugeye and Highland Chief deposits are existing pits on which Minjar proposes to perform cut-backs and deepening for expansion. Austin, Riley, Mugs Luck, Blackdog, Bobby McGee, Trench and Camp are new satellite deposits that Minjar Gold proposes to develop.

The existing Bugeye and Highland Chief pits and new deposits Riley, Blackdog, Bobby McGee, Trench and Camp are within DEC managed land on the Warriedar Pastoral Lease. Development of these deposits within the Conservation Estate forms the basis of this referral. Table 1-1 below shows the underlying Pastoral Lease for each of the prospects.

It is proposed that a single Mining Proposal will be developed for submission to the DMP for all development activities associated with the Project.

Table 1-1: Underlying Pastoral Lease for each Minjar Gold Prospect

Prospect	Tenements	Underlying Pastoral Lease
Austin	M59/457	Badja
	M59/732	
	L59/121	
Monaco	M59/420	Badja
	M59/458	
Mugs Luck	M59/431	Unreserved Crown Land
	L59/124	
Silverstone / Eastern Creek	M59/421	Badja
	M59/458	
Windinne Well	L59/44	Badja
	M59/219	
	M59/421	
M1	M59/406	Badja
Riley	M59/591	Warriedar
	L59/122	
	L59/123	
Bugeye	M59/421	Warriedar
	M59/497	
	L59/61	
Highland Chief/Bobby McGee, Trench, Camp	M59/425	Warriedar
Blackdog	M59/425	Warriedar
	M59/460	

Recommencement of mining at existing pits and development of new pits will require construction of:

- seven new waste rock dumps and expansion of four others;
- temporary ore pads at each deposit;
- 16 km of haul roads to connect to the existing main haulage corridor;
- construction of additional abandonment bunds.

It should be noted that the construction of haul roads will take place on pre-existing tracks, minimising clearing where possible. Table 1-2 provides a summary of the duration of the proposed mining operations at each prospect associated with this referral, depth of pit, total volume mined, tonnes of ore expected to be extracted, ore grade and strip ratio.

Table 1-2: Proposed Mining pit summary

Deposit		Mining Duration Months	Depth (mbgl)	Water Table intersected	Total Material Volume (,000 tonnes)	Ore tonnes (,000 tonnes)	Ore Grade g/t Au	Strip ratio bcm:bcm	Dewatering Disposal
Austin**		3	35	Yes	428,832	114,775	1.4	2.8	Dust Suppression
Black Dog**		6	75	Yes	1,236,788	150,229	4.3	7.4	Dust Suppression
Bugeye*		4	60	Yes	562,125	133,472	1.6	3.3	Dust Suppression
Camp**		3	45	Yes	335,031	95,723	1.5	2.5	Dust Suppression
Highland Chief/Bobby McGee***		3	45	Yes	409,133	76,016	2.2	4.5	Dust Suppression
Monaco*		5	65	Yes	777,698	98,855	1.6	6.9	Dust Suppression
Mugs Luck**		3	55	Yes	585,969	89,452	2.3	5.6	Dust Suppression
Riley**		4	60	Yes	1,108,796	149,303	4.0	6.7	Dust Suppression
Silverstone	**Silverstone North***	41	100	Yes	3,838,807	532,765	1.8	7.2	Process Plant
	Silverstone*	41	115	Yes	4,882,479	329,273	2.8	16.0	Process Plant
	Silverstone South*	3	60	Yes	440,516	35,001	1.4	14.1	Process Plant
	Eastern Creek*	3	50	Yes	451,352	53,737	1.5	7.7	Process Plant
Trench**		3	30	Yes	490,003	145,616	1.6	2.5	Dust Suppression
Windinne Well*		18	100	Yes	1,947,224	144,207	2.5	16.4	Dust Suppression

* Existing pits which will undergo cutbacks and deepening

** Proposed new pits

*** Proposed cutback at Highland Chief and proposed new pit at Bobby McGee

Approximately 180,000 bench cubic metres (bcm) are scheduled to be mined per month leading to an annual mining rate of 2.16 million bcm per annum or approximately 8.64 million bcm for the life of the mine. The life of the mine will be approximately 51 months.

Annual rate of production is expected to be approximately 40,000 ounces of gold.

1.2.3 Mining

1.2.3.1 Mining Process

Mining is to be conducted with traditional open cut pit methods. The mineralisation consists of laterite overlying oxide ore with a varying weathering profile. The proposed method for detailed definition and mining of the ore body is as follows:

1) After clearing and grubbing the pit area, grade control on the laterite cap will be carried out to a depth of approximately 20 m.
2) Production drilling will follow in a pattern suitable for fracture blasting to a depth of 5 m.
3) Production drilling and blasting will be carried out on both ore and selected waste in order to loosen the material.
4) Grade control of the underlying oxide will be carried out using angled Reverse Circulation drill holes on a 5 m x 8 m (along strike) pattern.
5) Grade control drilling will delineate 2.5 m thick mining benches to the base of the pit.
6) Mining of laterite ore will be selective and shall be in 2.5 m flitches. Waste material may be bulk mined where applicable.
7) Ore will be mined from a hanging wall to footwall so that the face angle approximates the boundary dip direction.
8) The minimum mining width of ore will be 4 m.

The pit cutbacks and new pits will be developed with a standard truck and excavator process in an open pit environment. The mining will be directly undertaken by Minjar Gold and the fleet will consist of one 80 T- 100 T excavator and a fleet of four all-wheel-drive dump trucks (50T class). These will be supported by two 230 kW dozers and two 150 kW graders. Two 35 kL watercarts will be used for dust suppression and a 72 T capacity road-train and trailers will be used for supporting activities. Fleet expansion may be required during peak mining periods.

Mining will be conducted on a 24 hour (hr) basis all year round. The ore will be stockpiled on temporary ore pads at the deposits and then transported to the existing M1 plant Run-of-Mine (ROM) pad via road trains utilising the existing main haulage corridor and newly constructed connecting haul roads. The temporary ore pads will be constructed from oxide waste material from the associated pit and the pad base will be approximately 500 mm deep with a slight cross fall to the edges and sediment control systems installed including a sump and settling pond.

1.2.3.2 Geotechnical Summary

Pit design parameters are based on the existing excavations which have demonstrated stability over time periods far in excess of the proposed mining duration. Pits walls have a maximum overall slope of 43° which is achieved by mining batter slopes at 65° over a batter height of 20 vertical metres (m) with minimum 5 m wide berms at 20 m vertical intervals. Access haul roads (ramps) are designed at a gradient of 1 in 8 and width of 14 m for the bottom 20 m vertical. Above the base section the ramps are designed at a gradient of 1 in 8 with a 20 m width. Shallower pits have the steeper and narrower ramps to the surface. Existing and proposed pits have been assessed by Peter O'Bryan and Associates (2012a) (Appendix 8). Pit walls will be developed in conventional batter and berm configuration, with batters up to 20 m high mined at face angles of 55° in weathered rocks and 65° in fresh rocks, separated by 5m wide berms in weathered rocks and 6m wide berms in fresh rocks.

Assessment of geotechnical conditions for new mining at Austin, Riley and Mugs Luck has been based predominantly on precedence (that is, on inferences drawn from inspection of ground conditions within nearby existing open pits).

Observational methods of design assessment and adjustment will be employed during pit development and include:

Pit Wall Mapping
Further structural defect/geotechnical data must be gathered as mining proceeds to confirm, refine or amend (as the case may be) the *base case* wall designs.

Pit Wall Stability Monitoring
Use of qualitative visual and quantitative electro-optical distance measurement (EDM) slope stability monitoring methods are recommended.

Final Wall Blasting
Geotechnical input will be required for the derivation, refinement and assessment of final wall blasting methods and parameters. Input may also be required (or at least be desirable) for production blasting.

Groundwater Monitoring
Water levels and/ or pressures in pit walls should be measured, and surface and in-pit drainage effectiveness monitored and maintained.

Ground Control Management Plan
A formal Ground Control Management Plan (GCMP) will be developed for proposed extended mining.

The design files indicate that Minjar Gold propose to form waste dumps with batter heights of 10m, at face angles of between 14° and 29° (typically 21° or 22°) for concave slopes with berm widths ≥5 m. Maximum height is 30m. A geotechnical assessment of existing waste dump designs indicates that all proposed waste dump slopes would be

stable under dry, static and seismic load conditions (Peter O'Bryan and Associates 2012b) (Appendix 9).

The waste dump configurations proposed by Minjar Gold are considered to be appropriate and these landforms once constructed are expected to be stable in the very long term. These appear in Table 1-3 below.

Allowance will be made to form the final waste dump profiles on a lift by lift basis (that is, establish the final batter angles at every ≤10m vertical advance rather than following completion of dumping).

Provision for surface drainage on the dumps will involve development of gradients on berms direct water to armoured "drop structures" to reduce surface erosion (gullying).

Table 1-3: Minjar Gold Proposed Waste Dump Design Parameters

Area	Angle (°)	Height (metres)	Berm Width (metres)	Elevation (metres Relative Level)	Design*
Austin	21	10	Top	355	A1
Bugeye	22	10	5	380	D1
	22	10	Top	390	
Camp	15-22	10	Top	400	B1
Highland Chief	14-16	10	Top	422	C1
Monaco	21	10	5	370	A2
	21	10	Top	380	
Mugs Luck	20-22	10	5-7	390	F1
	22-29	10	Top	400	
Riley	21	10	5	372	A2
	18	10	Top	382	
Silverstone	21	10	5	370	A3
	21	10	5	380	
	21	10	Top	390	
Trench	21	10	Top	410	A1
Windinne Well	22	10	5	385	E1
	18	10	5	395	
	18	10	Top	406	

* Designs are contained in Appendix 9

1.2.4 Ore Processing

Ore processing will take place at the Project's existing processing plant facility located at M1 on Mining Lease M59/406. The processing plant was previously approved under the

Notices of Intent (NOI) and Mining Proposals displayed in Table 1-7. Throughput is expected to be 600,000 tonnes of ore per annum (tpa).

The processing circuit comprises the following and is shown in Figure 1-1:

- rill tower to reclaim crushed ore from the stockpile
- single stage semi-autogenous grinding (SAG) mill
- gravity concentrator
- carbon in leach Anglo American Research Laboratories (AARL) elution
- tailings storage facility (TSF)

Minjar Gold has a current Licence for Prescribed Premises to operate the processing plant facility and TSF (L8402/2009/1) at M1 (Mining Lease M59/406). A current Works Approval (W4576/2009/1) allows for a further five metre raise of the TSF to accommodate tailings deposition from recommencement of production. Any additional raising or new TSF will require a Works Approval from the DEC and either a mining proposal variation or a new mining proposal to be approved by the DMP.

The major inputs into the processing plant facility will be:

- 600,000 tpa (dry) ore containing variable moisture
- 936.4 ML per annum water for Minjar's raw water consumption

Outputs are expected to be:

- 40,000 ounces gold per annum
- 600,000 tpa (dry) tailings
- 61 Megalitres (ML) per annum waste water combined with tailings

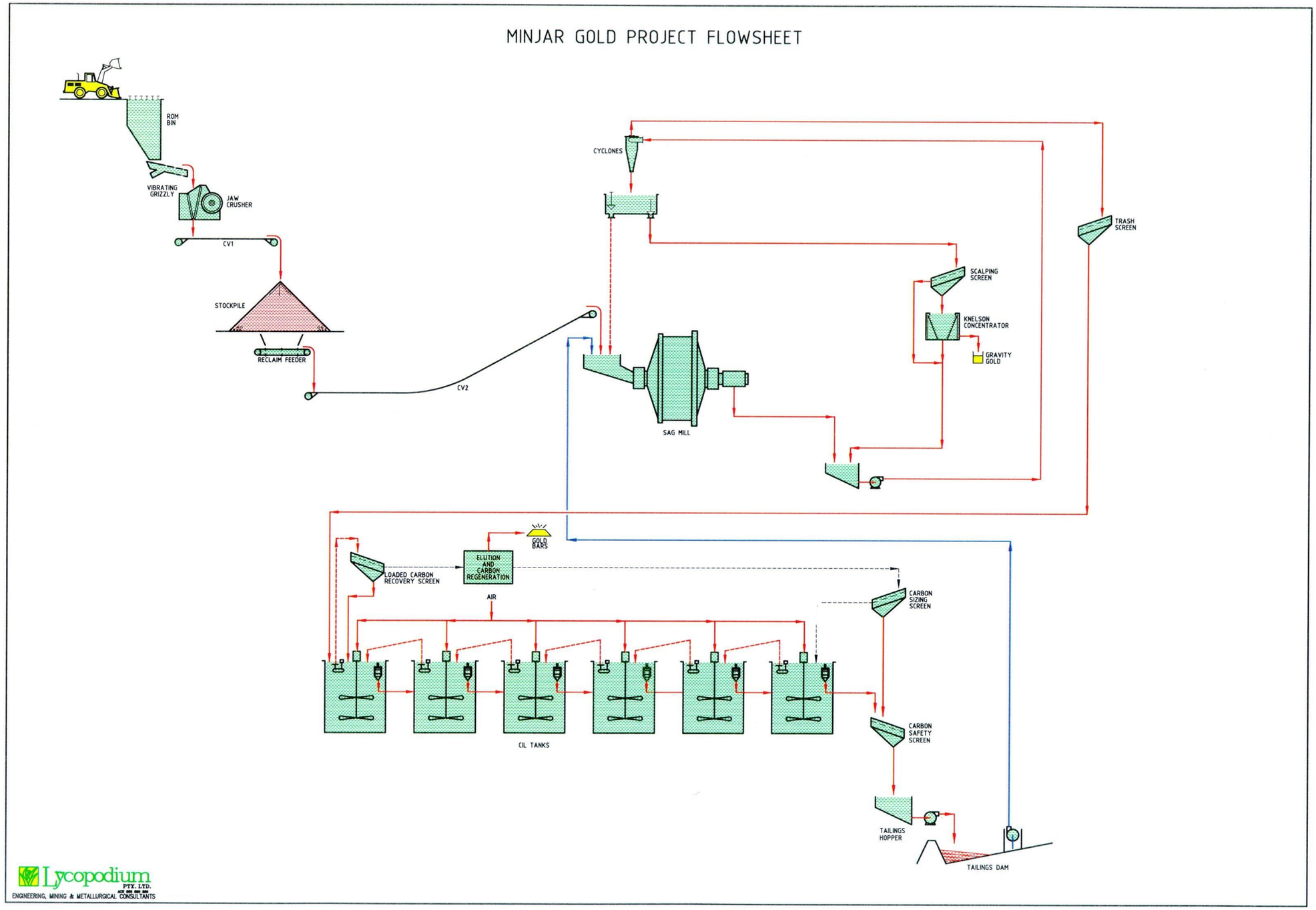

Figure 1-1: Processing Plant Flowsheet on M1 (M59/406)

1.2.4.1 Crushing and Screening

The crushing circuit is a single stage primary crusher, with conveyors to feed ore to the coarse ore stockpile (COS).

ROM ore is loaded through a static grizzly (ore sizing bars) into the crusher ROM bin by a front end loader. The ROM bin has a capacity of 50 tonnes (t) and the vibrating grizzly feeder discharges the oversize material into the primary jaw crusher which then discharges the material onto the CV01 conveyor. The undersize material passes through the vibrating grizzly feeder and discharges directly onto the CV01 conveyor. A variable speed drive on the feeder controls the rate of ore feed.

When 80 percent (%) of the material passes screening at less than 72 mm (P80 at 72 mm) it is transferred via CV01 to the COS. This stockpile has a total capacity of approximately 7,500 m^3 and a live capacity of 3,000 m^3. Water sprays are installed throughout the circuit for dust suppression.

1.2.4.2 Grinding and Classification

The mill feed ore is drawn from the stockpile by a variable speed belt feeder. This material is deposited onto CV03 and transported to the SAG mill. Lime is added to this conveyor for pH control via a 50 t silo and is metered onto the belt via a variable speed screw feeder.

The grinding circuit comprises a SAG mill in closed circuit with hydro cyclones. The SAG mill is planned to operate with a 12% volumetric ball loading producing a product size of P80 at 106 microns.

The SAG mill discharge slurry is diluted with water to approximately 55% solids prior to pumping to the cyclone cluster for classification. The cyclone cluster consists of 8 x 250 mm diameter cyclones with 5 duty cyclones required at a mill circulating load of 250%.

Underflow from the cyclones is directed to a gravity circuit where coarse gold is collected via a Wilfley table. The overflow from this circuit is directed to the leaching tanks.

1.2.4.3 Leaching

The CIL process consists of six 600 m3 tanks. The tanks are interconnected with launders and the slurry gravity flows through the tank train. Each tank is fitted with a dual stage mechanical agitator to ensure uniform mixing, a single mechanically swept woven wire screen to retain the carbon and a bypass facility to allow any individual tank to be removed from service for maintenance. The CIL tanks are constructed on ring beams in a concrete bunded area with a sloping floor to allow any spillage to be recovered via sumps and pumped back into the circuit.

Sodium cyanide solution is metered into the tanks via a ring main system. Carbon enters the circuit at Tank 6 and is advanced counter clockwise to the slurry flow. When the high grade loaded carbon reaches Tank 1 a recessed impellor pump is used to transfer slurry to a loaded carbon recovery screen mounted above the acid wash / elution column in the stripping area. The carbon reporting as screen oversize gravitates to the acid wash column and the slurry reports back to Tank 1 or 2.

1.2.4.4 Gold Room Operations

The following operations are carried out in the stripping and gold room areas:

- Acid wash of carbon
- Stripping of gold from loaded carbon using AARL method
- Electro-winning of gold from pregnant solution
- Smelting of electro-winning products

The stripping and gold room will operate seven days a week with the majority of the work being completed on dayshift.

1.2.4.5 Acid Wash

Loaded carbon is received in a 2.0 t capacity rubber lined column where the acid wash has been pre-prepared by in-line mixing of the correct quantity of concentrated hydrochloric acid and raw water in the column. After a 30 minute soak the carbon is washed with water over four bed volumes (one bed = one volume of the column) to ensure thorough washing. The dilute acid and rinse water is disposed of directly to the tails hopper.

1.2.4.6 Pre-soak and Elution

Sodium hydroxide and sodium cyanide are mixed with raw water in a pre-soak tank to achieve the correct strength solution. The concentrated strip solution of sodium hydroxide and cyanide is heated through the in-line strip solution heater and injected into the base of the column. The loaded carbon is soaked in this solution for 30 min to elude the gold and silver from the carbon creating a pregnant eluate that is then rinsed from the carbon by six bed volumes of 120 °C heated water. The eluate and water is directed to one of the two pregnant liquor tanks to increase the concentration prior to electro-winning.

1.2.4.7 Electro-winning and Gold Room

Direct current is passed through stainless steel anodes and steel wool cathodes within two electro-winning cells arranged in parallel and electrolytic action causes the precious

metals in solution to plate out on the cathodes. The solution discharging from the process is returned to the eluate tanks.

Loaded cathodes are calcined in the calcination oven and then the calcine is direct smelted with fluxes in a Liquified Petroleum Gas (LPG) fired furnace to produce dore bars. Fume extraction equipment is provided to remove any gases from the cells and the oven.

1.2.4.8 Carbon Re-Generation

Following completion of the stripping process, the barren carbon is transferred from the elution column to a dewatering screen prior to entering the feed hopper of the carbon regeneration kiln. Any residual water is drained from the carbon in this hopper. The kiln off-gases are used to aid in the drying of this carbon prior to processing in the kiln.

The carbon is heated to 650-750 °C and held at this temperature for 15 min to allow the regeneration to occur. Regenerated carbon from the kiln passes over a screen to remove any fine particles before it is discharged into a transfer hopper and transferred back into the CIL tanks.

1.2.4.9 Tailings Disposal and Storage

The existing TSF at M1 was built with regard to the *Safe Design and Operating Standards for Tailings Storage* originally published by the DMP (1999). Approvals are in place (Works Approval (W4576/2009/1) and approved Mining Proposal (Reg ID 24073)) to raise the TSF (5 m) to accommodate the recommencement in processing.

The slurry reporting to the underflow from the screen flows into the tails hopper from where it is pumped by a variable speed pump directly into the TSF via a bunded High Density Polyethylene (HDPE) pipeline. The tailings will be discharged at a rate of 70 m^3/hr. The tailings stream measured during previous operations produced a relatively low solids density of 18% within the slurry.

The tails dam is filled from the side of the dam walls via a series of spigots located on the dam walls.

1.2.4.10 Decant system

The TSF has been designed in order to maximise the recovery of water through collection of under drainage as well as decanted supernatant liquor recovered in the central decant tower.

This water is pumped to the process water dam located at the processing facility. The volume of water recovered is dependent upon the release of water following the deposition of tailings, rainfall and evaporation rates. Modelling has estimated that up to 87 ML/yr may be recovered under average conditions.

1.2.4.11 Groundwater Monitoring

A network of ground water monitoring bores has been established around the perimeter of the TSF to allow the ongoing monitoring of groundwater conditions (static water level and quality). Monitoring of these bores is a requirement under the DEC Licence for Prescribed Premises (L8402/2009/1).

1.2.4.12 Support Infrastructure

All support facilities required for the mining operations will be provided through existing infrastructure located at the Plant site and an upgrade to the Camp accommodation (installation of 27 new rooms to house additional staff) at the existing camp located on M1, Mining Lease M59/406). It is not envisaged that any more supporting infrastructure will be required, in addition to that which has already been discussed, over the life of the Project.

Site-specific support facilities include:

- Access road running east-southeast from the Minjar Gold Project to the Yalgoo Ningham Road
- First Aid room and Ambulance
- Workshop and maintenance area
- Raw water pond
- Dewatering bores
- Bunded fuel storage
- Administration office
- Mining contractor office and maintenance area
- Process Facility including crushing, grinding, gravity concentration, CIL, elution and gold recovery
- Tailings Storage Facility and monitoring bores
- Laboratory and sample store
- Reverse Osmosis water treatment facility
- Reverse Osmosis effluent water evaporation pond
- Treated water pond
- Reagent storages
- Warehouse
- Maintenance facility

- Road train unloading/loading area
- ROM pad
- Accommodation (camp)
- Kitchen and mess room
- Games room

The regional support facilities include:

- Airport at MinMetals Group (MMG) Golden Grove
- Telstra "Next G" Mobile Telephone and data transmission via MMG Golden Grove tower installation (6 km distant)
- Overhead Mains Power line from MMG Golden Grove.

1.2.5 Workforce

Upon commencement of operations it is planned the workforce (Minjar Gold and Contractors) will operate for 12 hour shifts on one of two fly-in fly-out (FIFO) rosters from Perth:

- 14 days on site (7 x dayshift, 7 x nightshift) and 7 days off (14/7)
- 9 days (dayshift only) on and 5 days off

The work force will total approximately 172 personnel, averaging 130 personnel on site at any one time. The roles and number of personnel are as shown in Table 1-4 below:

Table 1-4: Minjar Gold Personnel Schedule

Senior Staff	Number
General Manager Operations	1
Manager Mining	1
Mill Manager	1
Finance and Administration Manager	1
Secretary/Receptionist	1
Fleet Maintenance Superintendent	1
Mill Maintenance Superintendent	1
Senior Metallurgist	1
Mining Production	
Mine Foreman	1
Senior Surveyor	1
Senior Mine Geologist	1
Snr Planning Engineer	1

Mine Geologists	**1**
Surveyor	**1**
Shift Mining Supervisor	**3**
Data Clerk	**1**
Junior Engineer	**1**
Junior Geologist	**1**
Samplers/Spotters	**6**
Survey Assistants	**3**
Pump Crew	**3**
Excavator Ops	**4**
Truck Drivers	**12**
Dozer Ops	**6**
Grader Ops	**6**
Road Train Ops	**3**
Loader Ops	**3**
Pump Crew	**3**
Mining Fleet Maintenance	
Foreman	**2**
Fitters	**3**
Boiler Makers	**2**
Auto Electrician	**2**
Servicemen	**6**
Maintenance Planner/Stock Controller	**2**
Processing	
Processsing Operations	
Plant Metallurgist	**1**
Day Shift Supervisor	**1**
Day Crew	**3**
Shift Supervisors	**3**
Crusher Ops	**3**
Mill Ops	**3**
Leach Ops	**3**
Gold Room Ops	**2**
Chemist	**3**
Laboratory Assistants	**3**
Processsing Maintenance	
Maintenance Foreman/Planner	**1**
Fitter	**2**
Boilermaker	**2**
Electrician	**2**
TA's	**3**
Mine Administration	
Camp	
Camp Admin Manager	**1**
Chef	**3**
Kitchen Hands	**6**

Cleaners	**6**
Laundry	**3**
Accounts	
Book Keepers	**2**
HSE	
HSE Supervisor	**1**
Environmental Officer	**1**
Paramedics	**2**
Safety Officer	**2**
Purchasing	
Chief Purchasing Officer	**1**
Storemen/Stock Controllers	**3**
Exploration	**20**
Total	**172**

All mining activities such as hauling waste to the waste dump, hauling ore to the stockpiles, drill and blast activities and rehabilitation will be carried out by Minjar Gold personnel or reputable recognised contractors.

1.2.6 Transportation Corridors

A transport corridor has been established that links the Project with the Yalgoo to Paynes Find road. Construction of this corridor was completed in 2001 within Miscellaneous Licence L59/54. The length of the road is 9 km and is approximately 20 m wide.

Ore haulage from the pits to the processing facility will occur on the existing central, north-south haul road. This haul road is 16 m wide and was constructed with overburden gravels from the existing pits.

Approximately 16 km of new road construction will be required for haul and access roads to new pits to link them with the established central haul road corridor which services the Project. Any additional haul roads proposed for the mining areas will be constructed to 16 m wide to enable safe passage of haul trucks either way on the road at the same time. They will be constructed from overburden material from the nearest associated pit.

1.2.7 Resource Requirements and Regional Infrastructure

It is estimated that the annual water usage for site will be in the order of:

- 920 ML per annum raw water for processing plant facility, sourced from existing pits

- 2 ML per annum potable water sourced from the existing M1 pit and processed through reverse osmosis facility
- 14.4 ML per annum raw water for mine site dust suppression, sourced from existing pits.

The total energy required for the process facility and village will be approximately 2 MW per annum supplied by an 11 kVa overhead power line, running 12 km from the MMG Golden Grove mine site 132 kVa grid power source to the processing facility. A spur line runs from the process facility to the accommodation village. There are back up diesel generators on site if power from MMG Golden Grove is interrupted. Power at the mine pits will be required for dewatering and will be supplied by mobile generators.

The total diesel requirements will be as follows:

- Mining - approximately 280,000 L per month
- Exploration Drilling - approximately 30,000 L per month
- Other (i.e. light vehicles, generators etc.) - 5,000 L per month.

- What is the proposed ultimate extent (area in hectares) of proposed ground disturbance?

Development of the Project will require additional clearing of native vegetation for pit development, waste rock dumps, temporary ROM pads, haul and access roads and abandonment bunds. Table 1-5 below identifies disturbance footprints and clearing requirements for the Project.

Table 1-5: Disturbance Footprint at each Prospect

Prospect	Previous clearing (hectares)	Proposed new clearing (hectares)	Proposed disturbance footprint (hectares)
Austin including haul road	0.3	26	26.3
M1	118	0	118
Windinne Well	30.7	24*	54.7
Silverstone/Eastern Creek	76.3	95*	171.3
Riley including haul road	4.16	31.32	35.5
Monaco	12.6	30.69*	35.29#
Bugeye	22.8	32*	54.8
Mug's Luck including haul road	0.7	43.81	44.51
Blackdog	0.3	27.5	27.8
Highland Chief/ Bobby McGee	10.6	17.7	28.3^
Trench	0.2	24.8	25
Camp including haul road	0.2	21.2	21.4
Total	**276.86**	**374.02**	**642.9**

*Areas approved under vegetation clearing permits (VCPs) granted by DMP
Clearing will remove some rehabilitation area that was cleared previously (overlaps)
^ A proportion of the previous clearing is outside the new disturbance footprint at Highland Chief/Bobby McGee

- Provide the timeframe in which the activity or development is proposed to occur. (Include start and finish dates where applicable)

  Commencing October 2013

  Completion December 2017

- Provide details of any staging of the proposal.

  Pits are to be progressively developed over the 51 months life of mine (See Appendix 10). Please see Table 1-2 for a summary of mining at the various pits.

- Is the proposal a strategic proposal?

  No

- Is the proponent requesting a declaration that the proposal is a derived proposal?

  No

  If so, provide the following information on the strategic assessment within which the referred proposal was identified:

  - title of the strategic assessment; and
  - Ministerial Statement number

  NA

- Indicate whether, and in what way, the proposal is related to other proposals in the region.

  This referral is not related to any other proposals in the region.

  There may however be opportunities for collaboration with other companies within the area regarding co-usage of infrastructure, such as the use of the main Minjar haul road by both Sinosteel Midwest Corporation and Gindalbie, which will have a net environmental benefit to the region. Prior to commencement of such collaborative activities, appropriate procedures/agreements will be developed and all applicable approvals sought.

- Does the proponent own the land on which the proposal is to be established? If not, what other arrangements have been established to access the land?

  Minjar Gold Pty Ltd (Minjar Gold) is the registered tenement holder for the Austin, Monaco, Mugs Luck, Silverstone/Eastern Creek, Windinne Well, M1, Riley and Bugeye prospects. Gindalbie Metals Ltd (Gindalbie) are registered tenement holders for the Highland Chief/Bobby McGee, Trench, Camp and Blackdog prospects and of tenements which the haul road route follows in the southern part of the Project area. The 2006 sales agreement between Gindalbie and the purchaser provides consents to access the Gindalbie held tenements and appears as Appendix 1.

  Table 1-6 below outlines holders of the relevant tenements and access arrangements.

Table 1-6: Holders of relevant tenements

Prospect	Tenements	Holder 1	Access arrangements
Austin	M59/457	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	M59/732	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	L59/121	Minjar Gold Pty Ltd	Proponent is Miscellaneous Licence holder
Monaco	M59/420	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	M59/458	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
Mugs Luck	M59/431	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	L59/124	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
Silverstone / Eastern Creek	M59/421	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	M59/458	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
Windinne Well	L59/44	Minjar Gold Pty Ltd	Proponent is Miscellaneous Licence holder
	M59/219	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	M59/421	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
M1	M59/406	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
Riley	M59/591	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	L59/122	Minjar Gold Pty Ltd	Proponent is Miscellaneous Licence holder
	L59/123	Minjar Gold Pty Ltd	Proponent is Miscellaneous Licence holder
Bugeye	M59/421	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	M59/497	Minjar Gold Pty Ltd	Proponent is Mining Lease Holder
	L59/61	Minjar Gold Pty Ltd	Proponent is Miscellaneous Licence holder
Highland Chief/Bobby McGee, Trench, Camp	M59/425	Gindalbie Metals Ltd	2006 Sales agreement consents
Blackdog	M59/425	Gindalbie Metals Ltd	2006 Sales agreement consents
	M59/460	Gindalbie Metals Ltd	2006 Sales agreement consents

- What is the current land use on the property, and the extent (area in hectares) of the property?

  The current land uses are mining, exploration and conservation.

  The Warriedar Pastoral Lease (CPL46) is approximately 72,000 ha and is used for conservation by DEC and exploration activities by Minjar Gold: the Pastoral Lease has previously been destocked.

Minjar Gold tenements span across approximately 1,400km2 including a significant proportion of Warriedar Pastoral Lease and also the Badja Pastoral Lease, owned by Gindalbie and has been destocked and used primarily for mining and exploration.

1.3 Location

Location information, in accordance with the format and specifications set out below, is required information to accompany a referral. A request for consideration by the EPA of likely environmental impacts without appropriate spatial data is not considered to be a referral and will not be subject to environmental impact assessment until the referral is complete.

- Provide proposal location details in the following two ways:

a) Electronic spatial data

GIS or CAD on CD, depicting the proposal extent, geo-referenced and conforming to the following parameters:

- datum: GDA94
- projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA)
- format: Arcviewshapefile, Arcinfocoverages, Microstation or AutoCAD.

AND

b) Maps and/or directions

Any maps or diagrams of the proposal, together with the following directions:

- for urban areas: street address, lot number, the suburb and nearest road intersection;
- for remote localities: the nearest town, together with distance and direction from that town to the proposal site.

Please also attach the following map/plans, clearly showing the location of the development in its regional and local context.

❖ **Locality plan – Broad Scale**

Provide a locality plan (preferably superimposed on an aerial photograph) to identify:

- proposed development site and any associated infrastructure
- main roads
- urban centres
- wetlands and watercourses
- remnant native vegetation
- adjoining land uses (including recreation)
- sensitive marine areas

❖ **Site Plan – Proposal Details**

Provide a site plan to scale and indicate the location of:

- lot boundaries
- road frontages
- extent of the proposed development area
- extent of the proposed buffer area (if applicable)

❖ **Site Plan – Existing Environment**

Provide a site plan to scale (the same scale as above) and indicate the location of:

- lot boundaries
- road frontages
- any information required to be shown from Section 2 of this form
- extent of native vegetation of the site (the extent of overlap between the proposed development area and the area of native vegetation must be highlighted)
- extent of hydrological features on the site (this includes wetlands, watercourses, creek lines, seasonal creeks and artificial drainage lines)
- sensitive marine areas

- Name of the Shire in which the proposal is located

  Shire of Yalgoo, Shire of Perenjori

- For urban areas – street address, lot number, suburb and nearest road intersection

  NA

- For remote localities – nearest town and distance and direction from that town to the proposal site

  The Minjar Gold Project (the Project) is located in the South Murchison region of Western Australia (WA), 500 kilometres (km) northeast of Perth and approximately 70 km south of Yalgoo. The Minjar Gold tenement package runs in a strike line over 50 km in an approximately north south direction. The Badja and Warriedar Pastoral Leases underlie the tenements. Figure 1-2 shows the locality of the Project.

  Figure 1-3 shows the layout of the prospects for the Project, overlaid with the extent of the Warriedar Pastoral Lease.

Figure 1-2

APM008
19/03/13
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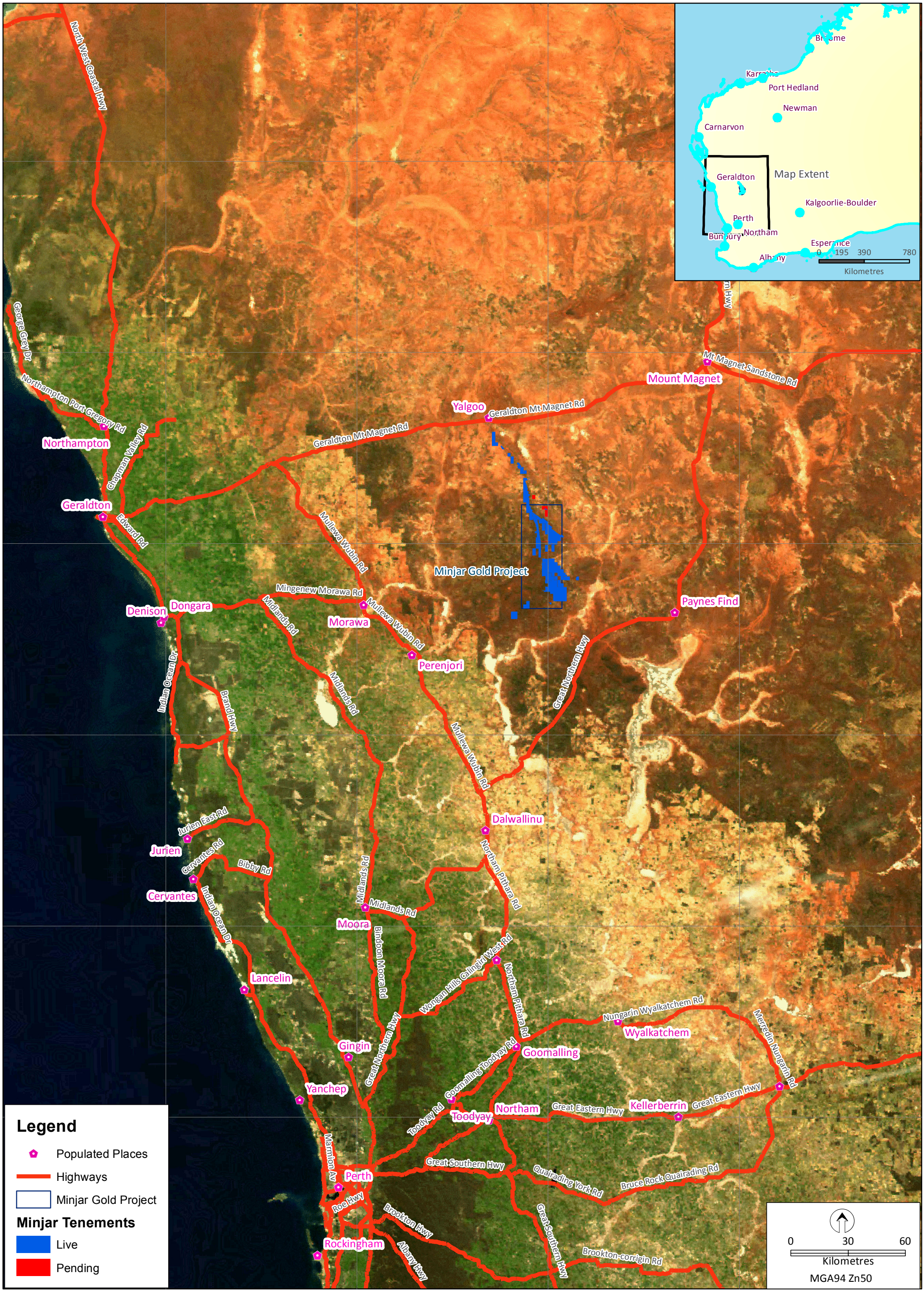
Minjar Gold Project
Location of the Minjar Gold Project



Legend

- Populated Places
- Highways
- Minjar Gold Project

Minjar Tenements

- Live
- Pending

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Figure 1-3

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Minjar Gold Project

Minjar Gold Recommencement and Expansion Project

Austin

Accommodation Village

M1

Winddine Well

Silverstone / Eastern Creek

Monaco

Riley

Bugeye

Mugs Luck

Black Dog, Highland Chief/ Bobby McGee, Trench, Camp

M59/732
M59/457
M59/361
M59/195
M59/227
M59/91
L59/54
L59/121
M59/92
M59/93
M59/406
M59/731
M59/94
M59/143
M59/95
M59/346
M59/219
M59/421
M59/458
M59/497
M59/420
M59/591
M59/343
M59/291
L59/123
M59/315
M59/248
L59/61
M59/743
M59/209
M59/117
M59/431
M59/380
M59/379
M59/649
M59/595
M59/550
M59/596
L59/62
M59/460
M59/425
L59/81
M59/386
M59/387

Mount Magnet
Yalgoo
Minjar Gold Project
Morawa
Paynes Find
Perenjori
Wubin
Dalwallinu
0 25 50 100
Kilometres

6817500
6810000
6802500
6795000
6787500
6780000
6772500

495000
502500
510000

Legend

- Prospect Clearing Areas
- Mining Tenements
- Warriedar Pastoral Lease

0 2.5 5
Kilometres
MGA94 Zn50

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1.4 Confidential Information

- Does the property wish to request the EPA to allow any part of the referral information to be treated as confidential?

  Yes – Appendix 1 The Sales Agreement between Gindalbie and the purchaser that provides access consents

- If yes, is confidential information attached as a separate document in hard copy?

  Yes.

1.5 Government Approvals

- Is rezoning of any land required before the proposal can be implemented?

  (please tick) ☐ Yes **If yes,** please provide details.
  ✓ No

- Is approval required from any Commonwealth or State Government agency or Local Authority for any part of the proposal?

  ✓ Yes ☐ No **If yes**, complete the table below, naming all Agencies and Local Authorities from which any approval is required and identify the approval required.

  Minjar Gold has a number of approvals in place. All approvals related to the ore processing plant and the Tailings Storage Facility (TSF) on Mining Lease M59/406 (M1) are current.

  Twelve previously approved NOIs and Mining Proposals exist for the Minjar Gold Project and are listed in Table 1-7.

  This referral outlines the proposed cutbacks at existing pits (Silverstone/Eastern Creek, Windinne Well, Monaco, Bugeye and Highland Chief) and developing seven new satellite deposits (Austin, Riley, Mugs Luck, Black Dog, Bobby McGee, Camp and Trench).

  The existing Bugeye and Highland Chief pits and proposed satellite deposits Riley, Blackdog, Bobby McGee, Camp and Trench are located within the Department of Environment and Conservation (DEC) managed Warriedar Pastoral Lease (Conservation Pastoral Lease (CPL) 46).

  Processing facilities and supporting infrastructure, such as the main haulage road corridor, site offices, fuel storage facilities and workshops are in place and will recommence under existing approvals. All proposed activities are to be undertaken on previously granted tenements and the newly applied for Miscellaneous Licences L59/121, L59/122, L59/123, L59/124, L59/125 and L59/126. The proposed developments, including a small expansion in accommodation on M1 (M59/406) will be subject to a Mining Proposal application through the Department of Mines and Petroleum (DMP).

Table 1-7: Previously approved Notices of Intent and Mining Proposals for the Minjar Gold Project

Approved NOI/MP	Tenements	Comments
NOI 3543 - Notice of Intent for Proposed works at Minjar Gold Project: Submitted by Gindalbie Gold NL, November 2000.	M59/406 L59/54	Initial NOI for operating the M1 pit, plant, and camp.
Gindalbie Gold Project, Minjar Gold Project, Tailings Storage Facility - Notice of Intent dated 19 March 2001.	M59/406	For construction and operation of the TSF.
NOI 3865 - Addendum to Notice of Intent Minjar Gold Project (lodged November 2000) Silverstone Operations. December 2001. Gindalbie Gold NL.	M59/406 M59/421	Addition of Silverstone prospect to the Minjar Gold Project.
NOI 3991 - Addendum to Notice of Intent - Minjar Gold Project (#3543 lodged November 2000) Winddine Well Operations. May 2002. Gindalbie Gold NL.	M59/219 M59/406 M59/421	Addition of Windinne Well to the Minjar Gold Project.
NOI 4130 - Addendum to Notice of Intent - Minjar Gold Project (#3543 lodged November 2000) Eastern Creek. November 2002. Gindalbie Gold NL.	M59/421	Addition of Eastern Creek (Silverstone South) to the Minjar Gold Project.
NOI 4339 - Addendum to Notice of Intent - Minjar Gold Project (November 2000) - Monaco Open Cut Pit October 2003.	M59/420 M59/421 M59/458	Addition of Monaco to the Minjar Gold Project.
NOI 4361 – Addendums to Notices of Intent (#4361) - Monaco, Bugeye & Highland Chief (lodged October 2003). Gindalbie Gold NL.	M59/420	Addition
NOI 4405 - Addendum to Notice of Intent for Proposed works at Minjar Gold Project (lodged November 2000). Highland Chief Open Cut Pit September 2003. Gindalbie Gold NL.	M59/425 M59/379 M59/380 L59/61	Addition of Highland Chief to Minjar Gold Project including haul road.
Reg ID 24073 - Embankment Raising of Tailings Storage Facility Mining Proposal Golden Stallion Resources Minjar Gold Project dated 14 December 2009 signed by Paul Jago and retained on Department of Mines and Petroleum File No. E0232/200901.	M59/406	TSF Raise
Reg ID 27241 - Minjar Gold Pty Ltd Minjar Gold Mine Monaco Project Mining Proposal June 2010 dated 13 June 2010 signed by Colin Arthur and retained on Department of Mines and Petroleum File No. E0226/201010 and subsequent correspondence.	M59/420 M59/458	Recommencement and extension of the Monaco pit.
Reg ID 24382 - Mining Proposal Minjar Gold Project Recommencement of Mining in the Eastern Creek Area (M59/421 and M59/458) October 2009dated October 2009 signed by Paul Jago and retained on Department of Mines and Petroleum File No. E0294/200901 and subsequent correspondence.	M59/421 M59/458	Recommencement and extension of the Eastern Creek pit.
Reg ID 26832 - Minjar Gold Pty Ltd Minjar Gold Mine Windinne Well Project Mining Proposal April 2010 dated 28 April 2010 signed by Simon Hillyard and retained on Department of Mines and Petroleum File No. E2770/200308 – and subsequent email correspondence.	M59/219 M59/421	Recommencement and extension of Windinne Well pit.

- If yes above, have you lodged any of the necessary applications or have you discussed the proposal with any person(s) at the Agency or Local Authority?

✓ Yes ☐ No **If yes**, name all Agencies and Local Authorities for which applications have been submitted or with whom the proposal has been discussed.

Table 1-8: Approvals required by Agency

Agency/Authority	Relevant Legislation	Approval required	Agency Contact	Status
Department of Mines and Petroleum	*Mining Act* 1978	Mining Proposal	Tyler Sujdovic Ph (08) 9222 3320 Tyler.sujdovic@dmp.wa.gov.au	In preparation
	Environmental Protection Act 1986 *Environmental Protection (Clearing of Native Vegetation) Regulations* 2004	Vegetation Clearing Permits	Ryan Mincham Ph. (08) 9222 3587 Ryan.mincham@dmp.wa.gov.au Or James Best Ph. (08) 9222 3333 James.Best@dmp.wa.gov.au	Two Vegetation Clearing Permit applications approved – Windinne Well/Silverstone/Eastern Creek CPS 5188/1 (Appendix 2), Bugeye CPS 5284/1 (Appendix 3). One VCP amendment approved Monaco 3823/2 (Appendix 4).
	Mine Safety and Inspection Act 1994	Project Management Plan Variation		In preparation
Department of Environment and Conservation	N/A	DEC endorsement of biological survey effort for EPA Level 1 Fauna survey for Mining Proposal and EPA referral	Murray Baker Ph. (08) 9334 0368 Murray.Baker@dec.wa.gov.au	Endorsement granted
	Environmental Protection Act 1986 *Environmental Protection Regulations* 1987	Licence for Prescribed Premises	Clint Joseph (DEC Geraldton Industry Regulation) Ph (08) 9964 0943 Clint.Joseph@dec.wa.gov.au	Current licence (L8402/2009/1) Approved (Appendix 5) Amendment in preparation
		Works Approval		Current Works Approval (W4576/2009/1) Approved (Appendix 6)
Department of Water	*Rights in Water and Irrigation Act 1914*	5C licence to dewater pits 26 D licence to install bores if required	Katherine Tutt (Water Licencing, DoW Geraldton) Ph (08) 9965 7400 Katherine.tutt@water.wa.gov.au	Current Section 5C Groundwater Abstraction Licence (Appendix 7) Amendment In preparation
Department of Sustainability, Environment, Water, Population and Communities	*Environment Protection and Biodiversity Conservation Act* 1999	EPBC referral	Dionne Cassanell SEWPAC Ph (02) 6274 2114 Dionne.Cassanell@environment.gov.au	Submitted 26/11/2012 Under Assessment

PART B - ENVIRONMENTAL IMPACTS AND MANAGEMENT COMMITMENTS

2 ENVIRONMENTAL IMPACTS

Describe the impacts of the proposal on the following elements of the environment, through the questions below:

(i) flora and vegetation #;

(ii) fauna #;

(iii) rivers, creeks, wetlands and estuaries;

(iv) significant areas and/ or land features;

(v) coastal zone areas;

(vi) marine areas and biota #;

(vii) water supply and drainage catchments;

(viii) pollution;

(ix) greenhouse gas emissions;

(x) contamination;

(xi) social surroundings; and

(xii) risk.

These features should be shown on the site plan, where appropriate)

For all information, please indicate:

(a) the source of the information; and

(b) the currency of the information.

2.1 Flora and Vegetation

- Do you propose to clear any native flora and vegetation as a part of this proposal?

  (A proposal to clear native vegetation may require a clearing permit under Part V of the EP Act *(Environmental Protection (Clearing of Native Vegetation) Regulations 2004)*. Please contact the Department of Environment and Conservation (DEC) for more information.

  (please tick) ✓ Yes ***If yes, complete the rest of this section***

  ☐ No ***If no, go to the next section***

- How much vegetation are you proposing to clear (in hectares)?

  Proposed new clearing for the Project is expected to be 374.02 ha. A breakdown of the proposed new clearing is provided in Table 2-1.

Table 2-1: Proposed clearing in EPA referral area

Prospect	Proposed new clearing (hectares)
Austin including haul road	26
M1	0
Windinne Well	24*
Silverstone/Eastern Creek	95*
Riley including haul road	31.32
Monaco	30.69*
Bugeye	32*
Mug's Luck including haul road	43.81
Blackdog	27.5
Highland Chief/ Bobby McGee	17.7
Trench	24.8
Camp including haul road	21.2
Total	**374.02**

*Areas approved under VCPs granted by DMP

- Have you submitted an application to clear native vegetation to the DEC (unless you are exempt from such a requirement)?

  ☐ Yes ✓ No **If yes**, on what date and to which office was the application submitted of the DEC?

Clearing permit applications were submitted to DMP Native Vegetation Assessment Branch as the proposed clearing is for Mining purposes on granted Mining tenements.

Permits submitted include those listed in Table 2-2 below. Other permit applications are proposed for the remaining prospects listed above if the project is determined to be ***Not Assessed*** by the Environmental Protection Authority (EPA).

Table 2-2: Vegetation Clearing Permits applied for in the EPA referral area

Prospect	Permit	Date Submitted	Area proposed for clearing (ha)	Approval
Bugeye	Application for Vegetation Clearing (Purpose) Permit to DMP Perth	September 2012	32	CPS 5284/1
Monaco	Application for Vegetation Clearing (Purpose) Permit (Amendment) to DMP Perth	August 2012	30.69	CPS 3823/2
Windinne Well and Silverstone/Eastern Creek	Application for Vegetation Clearing (Purpose) Permit to DMP Perth	August 2012	119	CPS 5188/1

- Are you aware of any recent flora surveys carried out over the area to be disturbed by this proposal?

  ✓ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey/s. (If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.)

Extensive vegetation mapping and flora searches have been conducted in the Project tenements. Table 2-3 lists the flora survey work conducted in the tenements by author, content, month of field work and year. These are attached as Appendices 11-24.

Table 2-3: Biological surveys conducted at the Minjar Gold Project

Author	Surveyed areas	Scope	Month of Field Work	Year
Hart, Simpson and Associates	M1 Silverstone Windinne Well Processing Facilities Transport Corridors	Landforms, flora, vegetation and fauna of the sites to look at the conservation values of the site and to provide information for environmental management of possible mining.	August	2000
Woodman	Monaco Bugeye Highland Chief Haul Road	Survey of flora and vegetation as well as searching for Declared Rare Flora (DRF) and Priority flora and Threatened Ecological Communities	September	2003
Woodman	Monaco Bugeye Highland Chief Haul Road	Searching for and quantifying Priority flora populations within and outside of proposed disturbance footprints	September & November	2003
Gindalbie Gold	Minjar North, Monaco, Bugeye, Highland Chief, Keronima, Black Dog, Austin, Mug's Luck, Bobby McGee, Apollo, Promises, Western Corridor and Gossan Hill	Priority Flora Management Plan		2004
Mattiske	Gindalbie Mine Lease Golden Grove*	Desktop assessment of field investigations of priority flora populations		2004
Woodman	Keronima Western Corridor Austin Mug's Luck Bobby McGee Apollo Promises	Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches	January	2004
Ecotec	Minjar North, Monaco, Bugeye, Highland Chief, Keronima, Black Dog, Austin, Mug's Luck, Bobby McGee, Apollo, Promises, Western Corridor and Gossan Hill	Desktop Survey Priority Flora Handbook		2006

Author	Surveyed areas	Scope	Month of Field Work	Year
Ecotec	Simca Ruby Lou Desiree Rotator Trench	Desktop Survey Field quantification of Priority Flora	November	2006
Woodman	Beryl West Camp Elroy Elroy North Trench Bobby McGee Lexie	Flora and Vegetation Survey Declared Rare and Priority Flora searches	May	2007
Mattiske	Monaco	Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches	July	2009
Mattiske	Bugeye Eastern Creek	Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches	July	2009
Mattiske	Austin Keronima Silverstone Windinne Well	Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches	November	2009
Animal Plant Mineral	Austin, Windinne Well, Silverstone/ Eastern Creek, Bugeye, Highland Chief/ Bobby McGee	Level 1 Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches	November	2011
Animal Plant Mineral	Austin haul road, Riley, Riley haul road, Windinne Well, Silverstone/ Eastern Creek, Mugs Luck, Mugs Luck haul road, Monaco, Bugeye, Keronima, Black Dog, Highland Chief/Bobby McGee, Trench, Camp	Level 1 Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches	August-October	2012

- Has a search of DEC records for known occurrences of rare or priority flora or threatened ecological communities been conducted for the site?

  ✓ Yes ☐ No If you are proposing to clear native vegetation for any part of your proposal, a search of DEC records of known occurrences of rare or priority flora and threatened ecological communities will be required. Please contact DEC for more information.

  A search of the DEC's (Declared Rare) Flora database, Threatened and Priority Flora List, the Western Australian Herbarium (WAH) Specimen database and Priority Ecological Communities (PECs) list were undertaken, covering the area between Minjar Hill south to Windanning Hill (NW corner 28o46'S, 116o52'E; SE corner 29o12'S, 117o02'E).

A number of database searches have also been conducted to establish the potential occurrence of matters of national environmental significance in the area. A database search for Threatened Flora and Ecological Communities listed under the *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act) was undertaken using the Protected Matters Search Tool (SEWPaC, 2011a). This search was conducted using a polygon that covered all the Minjar project areas and included a 10 km buffer area. The coordinates for the corners of the polygon were as follows: 28°29'17" S, 116°50'34" E; 28°29'17" S, 117°05'59" E; 29°22'23" S, 117°05'59" E; 29°22'23" S, 116°50'34" E.

- Are there any known occurrences of rare or priority flora or threatened ecological communities on the site?

  ✓ Yes ☐ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

2.1.1 Threatened Ecological Communities

No Threatened Ecological Communities (TECs) have been revealed through either desktop database searches or through field assessments.

2.1.2 Priority Ecological Communities

The Project does not significantly impact on any PECs. The database search from DEC Species and Communities Branch returned 54 records of Priority 1 PECs in the region, falling into two main categories of Banded Ironstone Formation (BIF) associated Vegetation Complexes or Groundwater Assemblages. The DEC Species and Communities Branch also supplied Geographic Information System (GIS) shapefiles for all the PECs from the coordinates supplied. These show that 11 Priority 1 Ecological Communities had buffer zones that overlap the Minjar Gold tenements and three that overlap the Project area.

- Ninghan calcrete groundwater assemblage type on Moore palaeodrainage on Ninghan Station;
- Wagga Wagga and Yalgoo calcrete groundwater assemblage type on Yalgoo and Moore palaeodrainage on Wagga Wagga and Bunnawarra Stations;
- Blue Hills (Mount Karara/Mungada Ridge/Blue Hills) vegetation complexes (BIF);
- Mount Gibson Range vegetation complexes (BIF);
- Muralgarra calcrete groundwater assemblage type on Murchison palaeodrainage on Muralgarra Station;
- Bunnawarra calcrete groundwater assemblage type on Moore palaeodrainage on Bunawarra Station;

- Minjar/Gnows Nest vegetation complexes (BIF);
- Warriedar Hill/Pinyalling vegetation complexes (BIF);
- Yalgoo vegetation complexes (BIF);
- WollaWolla (Gullewa) vegetation complexes (BIF)
- Badja calcrete groundwater assemblage type on Moore palaeodrainage on Badja Station

Full search results are shown in Appendix 25.

The following Table (2-4) shows each of the prospects and their location in relation to the PECs' buffer as supplied in GIS shapefiles.

Table 2-4: PECs proximity to Minjar Gold disturbance footprints

Prospect	Tenements	Priority Ecological Community	Unique Occurrence Identifier	Comments
Austin	M59/732-I M59/457-I	Minjar Gnow's Nest Vegetation Complex (BIF)	2587	30km buffer - 15km from the central point of the supplied buffer
M1	M59/406	Minjar Gnow's Nest Vegetation Complex (BIF)	2587	30km buffer – 8.2km from the central point of the supplied buffer
Windinne Well	M59/219 M59/421	Minjar Gnow's Nest Vegetation Complex (BIF)	2587	30km buffer – 5km from the central point of the supplied buffer
Silverstone/Eastern Creek	M59/421 M59/458	Minjar Gnow's Nest Vegetation Complex (BIF) Warriedar Hill/Pinyalling Vegetation Complex (BIF)	2587 2617	30km buffer – 1km from the central point of the supplied buffer 22.5 km buffer – 19 km from centre point of buffer
Monaco	M59/420 M59/458	Minjar Gnow's Nest Vegetation Complex (BIF) Warriedar Hill/Pinyalling Vegetation Complex (BIF)	2587 2617	30km buffer – 4km from the central point of the supplied buffer 22.5 km buffer – 17 km from centre point of buffer
Riley	M59/591-I L59/122	Minjar Gnow's Nest Vegetation Complex (BIF) Warriedar Hill/Pinyalling Vegetation Complex (BIF)	2587 2617	30km buffer – between 1km and 5.5km from the central point of the buffer 22.5 km buffer – over 12 km from central point of the buffer
Bugeye		Minjar Gnow's Nest Vegetation Complex (BIF) Warriedar Hill/Pinyalling Vegetation Complex (BIF)	2587 2617	30km buffer – 8km and 5.5km from the central point of the buffer 22.5 km buffer – over 12 km from central point of the buffer
Mugs Luck	M59/431-I	Minjar Gnow's Nest Vegetation Complex (BIF) Warriedar Hill/Pinyalling Vegetation Complex (BIF) Blue Hills (Mount Karara/Mungada Ridge/Blue Hills) vegetation complexes (BIF)	2587 2617 3505	30km buffer – 23 km from central point of the buffer 22.5km buffer – 6 km from central point of the buffer 15km buffer – Over 12 km from central point of the buffer
Blackdog	M59/425	Minjar Gnow's Nest Vegetation Complex (BIF) Warriedar Hill/Pinyalling Vegetation Complex (BIF) Blue Hills (Mount Karara/Mungada Ridge/Blue Hills) vegetation complexes (BIF)	2587 2617 3496 3505 3515	30km buffer – right at edge of buffer 22.5 km buffer – 15km from centre point of buffer 14kmbuffer – right at edge of buffer 15 km buffer – 7km from centre point of buffer 18km – Right at edge of buffer area
Highland Chief/Bobby McGee	M59/425	Minjar Gnow's Nest Vegetation Complex (BIF)	2587	30km buffer – right at edge of buffer

Prospect	Tenements	Priority Ecological Community	Unique Occurrence Identifier	Comments
		Warriedar Hill/Pinyalling Vegetation Complex (BIF)	2617	22.5 km buffer – 15km from centre point of buffer
		Blue Hills (Mount Karara/Mungada Ridge/Blue Hills) vegetation complexes (BIF)	3496 3505 3515	14kmbuffer – right at edge of buffer 15 km buffer – 6.5km from centre point of buffer 18km – Right at edge of buffer area
Trench	M59/425-I	Minjar Gnow's Nest Vegetation Complex (BIF)	2587	30km buffer – right at edge of buffer
		Warriedar Hill/Pinyalling Vegetation Complex (BIF)	2617	22.5 km buffer – 15km from centre point of buffer
		Blue Hills (Mount Karara/Mungada Ridge/Blue Hills) vegetation complexes (BIF)	3496 3505 3515	14kmbuffer – right at edge of buffer 15 km buffer – 6km from centre point of buffer 18km – Right at edge of buffer area
Camp	M59/425-I	Warriedar Hill/Pinyalling Vegetation Complex (BIF)	2617	22.5 km buffer – 15km,
		Blue Hills (Mount Karara/Mungada Ridge/Blue Hills) vegetation complexes (BIF)	3496 3505 3515	14 km buffer – Over 13 km from central point of buffer 15km buffer – 7 km from central point of buffer 18 km buffer – right at edge of buffer area

The Minjar/Gnows Nest vegetation complexes (BIF) PEC is known to occur on hills with ironstone outcropping. Previous vegetation community mapping at Windinne Well found that vegetation community S12 was associated with exposed BIF in the north-eastern corner of the prospect.

Vegetation community S12 was described by Mattiske Consulting Pty Ltd (Mattiske) (2009a) as Open Shrubland of *Baeckea benthamii*, *Aluta aspera* subsp. *hesperia* and *Thryptomene* spp. over *Eremophila* spp. and mixed low shrubs over annuals, with occasional emergent *Acacia ayersiana* and *Acacia ramulosa* var. *ramulosa* on orange-brown rocky upper-slopes and ridges with occasional exposed BIF outcrops. As such it was deemed the S12 was potentially part of a Minjar Gnows Nest BIF vegetation complex. The area of the S12 vegetation community has been mostly protected through a condition on VCP CPS 5188/1, assessed by DMP and approved after advice from DEC.

The remaining disturbance footprints generally occur on flats and plains within the landscape and are highly unlikely to intersect BIF associated vegetation complexes.

2.1.3 Declared Rare Flora

There are no DRF expected to be impacted by this proposal.

DRF Population Report 40629 shows that DRF species 33556 *Stylidium scintillans*, formerly *Stylidium* sp. Yalgoo (D. Coultas *et a*l. Opp 01) Pop: 8, was recorded adjacent to the existing haul road in tenement M59/380. The DRF record shows that an estimated 700 mature individuals occurred in this location –please see record attached as

Appendix 26. It should be noted that there is no development proposed for that site and therefore the DRF recorded in this location will not be impacted by this proposal.

Other records for *Stylidium scintillans* are found on Minjar Gold tenements (records located on M59/420 – See Appendix 27), however none are located within the proposed disturbance footprint and are of adequate distance to be protected from secondary impacts. No populations of *S. scintillans* have been located during flora and vegetation surveys by Animal Plant Mineral Proprietary Limited (APM) in 2011 or 2012 (APM 2011a; APM 2012c).

2.1.4 Priority Flora

The Project will not have a significant impact on species of conservation significance or alter their current conservation status.

Desktop and field studies have identified 52 species of Threatened and Priority flora that may occur within the Project area. Of the 52 species, it is predicted that the disturbance footprint may cause impacts to 11 Priority flora species. Of the 11 Priority species expected to be impacted, all except the *Acacia subsessilis* (P3), *Grevilla subtiliflora* (P3) and *Gunniopsis propinqua* (P3) are found in multiple areas of the Minjar Gold tenements.

Table 2-5 shows the composited list of Priority Flora found in both desktop and field assessments of Minjar Gold tenements.

Potential impacts to priority flora are displayed in Table 2-6.

Table 2-5: Threatened and Priority flora identified in the desktop searches and surveys

PRIORITY CODE	SPECIES	HABITAT	DATABASE		FIELD SURVEY								IMPACTED BY PROPOSAL
			DEC Threatened (Declared Rare) Flora Database and the Threatened & Priority Flora List	WA Herbarium Specimen Database	H&S (2000)	Wood (2003)	Wood (2004)	Eco (2006)	Wood (2007)	Matt (2009)	APM (2011)	APM (2012a)	
T	*Acacia woodmaniorum*	Mid – upper slope BIF	*										No
T	*Eucalyptus crucis* subsp. *praecipua*	Granite	*										No
T	*Eucalyptus synandra*	Sand with laterite or ironstone	*										No
T	*Stylidium scintillans (Formerly Stylidium* sp. Yalgoo)	Red clay loam with exposed ironstone	*	*									No
P1	*Acacia sulcaticaulis*	Rocky slopes, creek lines	*									*	No
P1	*Baeckea* sp. Paynes Find	Granite outcrops	*										No
P1	*Chamelaucium* sp. Warriedar		*										No
P1	*Chamelaucium* sp. Yalgoo	Granite outcrops	*			*	*					*	Yes
P1	*Cuphonotus humistratus*		*										No
P1	*Eucalyptus jutsonii subsp. kobela*	Broad and subdued rises high in the landscape	*										No
P1	*Hydrocotyle* sp. Warriedar	Red loam	*			*							No

PRIORITY CODE	SPECIES	HABITAT	DATABASE		FIELD SURVEY								IMPACTED BY PROPOSAL
			DEC Threatened (Declared Rare) Flora Database and the Threatened & Priority Flora List	WA Herbarium Specimen Database	H&S (2000)	Wood (2003)	Wood (2004)	Eco (2006)	Wood (2007)	Matt (2009)	APM (2011)	APM (2012a)	
P1	*Labichea obtrullata*		*										No
P1	*Lepidosperma* sp. Blue Hills		*										No
P1	*Micromyrtus mucronulata*				*								No
P1	*Prostanthera* sp. Karara		*										No
P1	*Rhodanthe collina*	Loam and rocky hills	*	*		*						*	No
P2	*Acacia diallaga*	Basalt hills	*								*	*	Yes
P2	*Acacia karina*	Rocky slopes, BIF	*						*			*	Yes
P2	*Calandrinia kalanniensis*	Rock outcrops, herbfields	*										No
P2	*Calandrinia* sp. Warriedar	Slopes and rises	*										No
P2	*Persoonia karare*	Sandplains	*										No
P3	*Acacia formidabilis*	Undulating plains, hillsides	*										No
P3	*Acacia subsessilis*	Red sand or stony gravel over ironstone. Rocky hills.	*									*	Yes

PRIORITY CODE	SPECIES	HABITAT	DATABASE		FIELD SURVEY								IMPACTED BY PROPOSAL
			DEC Threatened (Declared Rare) Flora Database and the Threatened & Priority Flora List	WA Herbarium Specimen Database	H&S (2000)	Wood (2003)	Wood (2004)	Eco (2006)	Wood (2007)	Matt (2009)	APM (2011)	APM (2012a)	
P3	*Angianthus micropodioides*	River edges, saline depressions, claypans	*										No
P3	*Austrostipa blackii*											*	No
P3	*Calytrix uncinata*	Granite or sandstone breakaways, rocky rises								*		*	No
P3	*Cyanicula fragrans*		*										No
P3	*Drummondita fulva*	Shallow orange or red sandy loams on slopes and hilltops	*						*	*	*	*	Yes
P3	*Eremophila grandiflora*	Slopes and along drainage lines	*										No
P3	*Gnephosis cassiniana*	Saline depressions, low wet areas	*										No
P3	*Grevillea globosa*	Red loam and yellow sand and flats	*						*	*	*	*	Yes
P3	*Grevillea scabrida*	Ironstone gravel plain				*	*	*	*	*	*	*	Yes
P3	*Grevillea subtiliflora*	Loamy woodlands				*			*		*	*	Yes
P3 (Formerly P1)	*Gunniopsis divisa*	Loam & quartz								*			No

PRIORITY CODE	SPECIES	HABITAT	DATABASE		FIELD SURVEY								IMPACTED BY PROPOSAL
			DEC Threatened (Declared Rare) Flora Database and the Threatened & Priority Flora List	WA Herbarium Specimen Database	H&S (2000)	Wood (2003)	Wood (2004)	Eco (2006)	Wood (2007)	Matt (2009)	APM (2011)	APM (2012a)	
P3	*Gunniopsis propinqua*	Stony sandy loam. Lateritic outcrops, winter-wet sites.										*	Yes
P3	*Korthalsella leucothrix*		*										No
P3	*Menkea draboides*	Red sand, clay, granite	*										No
P3	*Micromyrtus acuta*	Sand, laterite, granite rock outcrops	*						*	*		*	No
P3	*Micromyrtus trudgenii (Formerly* Micromyrtus sp. Warriedar)	Laterite, BIF, quartz, dolerite and basalt hills	*	*		*	*	*	*	*	*	*	Yes
P3	*Persoonia pentasticha*	Base of granite outcrops				*	*		*	*		*	Yes
P3	*Petrophile pauciflora*	Decaying and dissected granite breakaways	*						*				No
P3	*Polianthion collinum*	Low hills and BIF slopes	*	*				*					No
P3	*Psammomoya implexa*	Stony rises										*	No

PRIORITY CODE	SPECIES	HABITAT	DATABASE		FIELD SURVEY								IMPACTED BY PROPOSAL
			DEC Threatened (Declared Rare) Flora Database and the Threatened & Priority Flora List	WA Herbarium Specimen Database	H&S (2000)	Wood (2003)	Wood (2004)	Eco (2006)	Wood (2007)	Matt (2009)	APM (2011)	APM (2012a)	
P3	*Stenanthemum poicilum*	Red clay or sandy clay loam	*										No
P3	*Triglochin protuberans*	Winter-wet sites, claypans, near salt lakes, margins of pools	*										No
P3	*Verticordia jamiesonii*	Lateritic breakaways	*										No
P3	*Xanthoparmelia dayiana*		*										No
P4	*Acacia speckii*	Rocky soil over granite, basalt or dolerite	*				*						No
P4	*Dodonaea amplisemina*	Red-brown sandy clay on basalt, gabbro and banded ironstone or on dolerite and quartzite. Rocky hills	*										No
P4	*Goodenia neogoodenia*	Red loam, clay. Near water	*										No
P4	*Haegiela tatei*	Clay sandy loam and gypsum in saline areas	*										No

PRIORITY CODE	SPECIES	HABITAT	DATABASE		FIELD SURVEY								IMPACTED BY PROPOSAL
			DEC Threatened (Declared Rare) Flora Database and the Threatened & Priority Flora List	WA Herbarium Specimen Database	H&S (2000)	Wood (2003)	Wood (2004)	Eco (2006)	Wood (2007)	Matt (2009)	APM (2011)	APM (2012a)	
P4	*Wurmbea murchisoniana*	Clay, sandy loam in seasonally inundated clay hollows, rock pools	*										No

Table 2-6: Potential impacts to Priority flora from the Project disturbance footprint

Prospect	Species	Estimated Population size	Individual plants that could be impacted by proposed clearing
Austin	*Drummondita fulva* (P3)	400+	200+
	Grevillea globosa (P3)	32	9
	Micromyrtus trudgenii (P3)	110+	0
M1	NA*	NA	NA
Windinne Well	*Drummondita fulva* (P3)	Up to 1111 individuals	220 – 239
	Micromyrtus trudgenii (P3)	Up to 1061 individuals	95 – 126
Silverstone/Eastern Creek	*Grevillea globosa* (P3)	Up to 329 individuals	88-138
	Micromyrtus trudgenii (P3)	> 15 individuals	5
	Persoonia pentasticha (P3)	3 individuals	3
Monaco	*Drummondita fulva* (P3)	Up to 425 individuals	14 - 25
	Grevillea globosa (P3)	Up to 35 individuals	0
	Micromyrtus trudgenii (P3)	Up to 50 individuals	17-35
Riley	*Austrostipa blackii* (P3)	Approximately 500	0
	Calytrix uncinata (P3)	Approximately 20	0
	Drummondita fulva (P3)	1613	1258
	Grevillea globosa (P3)	8	2
	Grevillea scabrida (P3)	10	0
	Gunniopsis propinqua (P3)	Approximately 100	100
	Micromyrtus trudgenii (P3)	2193	519
	Persoonia pentasticha (P3)	30	7
	Psammomoya implexa (P3)	5	0
	Rhodanthe collina (P1)	Approximately 300	0
Bugeye	*Drummondita fulva* (P3)	301+	102
	Grevillea scabrida (P3)	2	2
	Micromyrtus trudgenii (P3)	466+	116
Mugs Luck	*Acacia diallaga* (P2)	4	4
	Acacia karina (P2)	6	0

Prospect	Species	Estimated Population size	Individual plants that could be impacted by proposed clearing
	Chamelaucium sp. Yalgoo (P1)	114	55
	Grevillea scabrida (P3)	413	239
	Micromyrtus trudgenii(P3)	40	3
	Persoonia pentasticha (P3)	60	41
Blackdog and Highland Chief/Bobby McGee	*Acacia diallaga* (P2)	1432+	634
	Acacia karina (P2)	429	130
	Chamelaucium sp. Yalgoo (P1)	590	207
	Drummondita fulva (P3)	340	0
	Grevillea scabrida (P3)	1917	809
	Gevillea subtiliflora (P3)	410+	122
	Micromyrtus trudgenii (P3)	51	0
	Persoonia pentasticha (P3)	63	23
Trench and Camp	*Acacia diallaga* (P2)	7	0
	Acacia subsessilis (P3)	206	16
	Acacia sulcaticaulis(P1)	1117	0
	Chamelaucium sp. Yalgoo (P1)	1	0
	Grevillea scabrida (P3)	36	0
	Gevillea subtiliflora (P3)	7	0
	Persoonia pentasticha (P3)	32	18

*No clearing proposed for M1 (Mining Lease M59/406)

The Priority Flora that are impacted by the proposed development footprint are discussed below:

- *Chamelaucium sp. Yalgoo (*P1) has also been recorded at Beryl West, Lexie and Monaco (Woodman 2007a, 2007b, 2003) in addition to the records from Mugs Luck, Blackdog and the Trench and Camp areas. Only seven records appear on FloraBase for this species, indicating its restricted distribution. Clearing of 262 individuals or 37 % of the local population will have a localised impact at Mugs Luck and Blackdog, however is unlikely to have a significant impact on the regional population.

- *Acacia diallaga* (P2) was found in the Highland Chief/ Bobby McGee and Blackdog tenement and also from two collections from Mugs Luck. Herbarium and FloraBase records indicate a discontinuous distribution across the former pastoral stations Karara and Warriedar adjacent to Minjar Gold tenements. Clearing 634 individuals or 44% of the population will cause a localised impact to this species but should not cause a significant impact to regional populations.

- *Acacia karina* (P2) is known from 38 FloraBase records around Karara and Warriedar Stations and Mount Gibson. This species is known from Bobby McGee (Woodman 2007c), Beryl West (Woodman 2007a), and Lexie tenements (Woodman 2007b). *Acacia karina* also occurred within the south east section of the Mugs Luck prospect. Clearing 130 individuals or 30.3% will have a local impact on the population but will not have a significant regional impact on this species.

- *Acacia subsessilis* (P3) is known from 31 FloraBase records with a sizeable regional distribution and clearing 16 individuals or <8% will not have a significant local or regional impact on this species.

- G*revilla subtiliflora* (P3) is known from 36 FloraBase records and has also been recorded at Lexie tenement (Woodman 2007b), Keronima and Promises tenements (Woodman 2004) and the Monaco tenement (Woodman 2003) within the Minjar Gold tenements. Clearing 122 individuals or 29.8% of the population at Highland Chief/Bobby McGee and Blackdog will have a minor impact on the local population but will not have a significant impact on the regional population of this species.

- *Gunniopsis propinqua* (P3) are limited to a single record of approximately 100 individuals at the Riley prospect. It is known from 17 FloraBase records with populations widespread including in the Pilbara and Goldfields. It is likely to be found in other areas of Minjar tenements and clearing this population is unlikely to have a significant impact on the local or regional population of the species.

Local impacts on *Drummondita fulva* (P3), *Grevillea globosa* (P3), *Grevillea scabrida* (P3) *Micromyrtus trudgenii* (P3) and *Persoonia pentasticha* (P3) are expected to be minor and will not comprise a significant regional impact on these species.

Further information on the extent of Priority flora in the Minjar Gold tenements, please refer to APM 2011 and 2012 (Appendices 23 and 24), with further information available in the series of Mattiske 2009 reports Appendices 15, 20-22 and Woodman Environmental Consulting Pty Ltd (Woodman) reports Appendices 12-13, 16, 19.)

2.1.5 Summary of Vegetation and Flora by Prospect

2.1.5.1 Austin:

A full flora and vegetation mapping survey of the Austin prospect was conducted by Mattiske (2009b) in November 2009. APM (2011a) conducted a DRF/Priority Flora search of the Austin prospect in November 2011 and APM (2012a) conducted a full flora and vegetation mapping survey of the Austin haul road route, including DRF and Priority Flora searches, in September 2012.

A total of 30 families, 51 genera and 85 species and taxa were recorded within the survey area. Species representation was greatest amongst the *Mimosaceae* (9 taxa), *Asteraceae* (9 taxa), *Myoporaceae* (8 taxa) and *Myrtaceae* (7 taxa) families. No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the survey. However, four Priority species were located during the November 2009 survey (Mattiske 2009b):

Priority 3
Calytrix uncinata
Drummondita fulva
Grevillea globosa
Micromyrtus trudgenii

M. trudgenii (P3), *D. fulva* (P3), and *G. globosa* (P3) were found during the APM 2011 DRF and Priority Flora searches (APM 2011a).

Eight plant communities were defined within the Mattiske survey area (Mattiske 2009b). The communities differed in their structure, dominance and range of associated species and geographic factors. The vegetation varied in condition from Completely Degraded along drill lines and drill pads, Excellent in less disturbed areas of native vegetation (based on the criteria as developed by Keighery, 1994).

A total of 104 species, and taxa, of vascular flora were recorded within the Austin Haul Road survey area (APM 2012a). This includes 69 genera from 34 families. The family with the highest number of species was *Fabaceae* with a total of 16 species. A total of 12 relevés were sampled along the length of the haul road alignment.

Fourteen vegetation communities were identified along the haul road route, falling into three main structural forms including thicket, scrub and open scrub, dominated by either *Acacia effusifolia* or *Acacia ramulosa* var. *ramulosa,* and two dominated by *Acacia victoriae* subsp. *victoriae*. Apart from those communities dominated by *Acacia victoriae* subsp. *victoriae*, plant communities resembled those previously described and mapped within by Woodman (2004) and Mattiske (2009b), occurring within the Austin prospect adjoining the haul road in the north. Table 2-7 shows the proposed impacts to the various vegetation communities within the Austin prospect and haul road.

No DRF or Priority Flora were recorded during the APM 2012 survey (APM 2012a).

Table 2-7: Proposed impacts to vegetation communities at Austin prospect and haul road

Vegetation Community (Mapped Mattiske 2009 & APM 2012)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
A1 – Acacia Tall Open Scrub	62.6	14.17
A6 – Acacia Scrub	2.6	0.08
A17 – Tall Open Shrubland	9.3	0
A18 – Tall Open Shrubland	11.6	0
A19 – Open Shrubland	2.5	0
C3 – Low Open Callitris Woodland	6.4	0
CL - Cleared	0.3	NA
S8 – Open Shrubland	3.8	0
aeOS2 – Open Shrubland	0.07	0.01
aeOS3 – Open low shrubland	1.93	0.91
aeS2 – Acacia scrub over shrubland	1.73	0.76
aeS3 – Scrub over low shrubs	3.96	1.64
aeS4 - Scrub	2.33	1.22
aeS4a - Scrub	1.96	0.91
aeT3 - Thicket	9.3	3.21
aeT5 – Thicket over open shrubland	1.02	0.43
arT1 – Thicket over open shrubland	2.43	1.48
asS1 – Scrub over scattered shrubs	0.83	0.46
avS5 – Scrub over seasonal mixed herbs	1.85	0.66
avT4 – Thicket over seasonal mixed herbs	0.26	0.06
Total	126.77	26

2.1.5.2 Windinne Well:

Windinne Well has been surveyed by Hart Simpson and Associates (August 2000), Mattiske (November 2009a) Level 1 Flora and Vegetation Survey, APM (November 2011a), DRF and Priority Flora survey and APM (October 2012a), vegetation community confirmations and DRF and Priority Flora search.

Mattiske found a total of 32 families, 48 genera and 75 species and taxa were recorded within the survey area (Mattiske 2009a). Species representation was greatest amongst

the *Mimosaceae* (10 taxa), *Myrtaceae* (7 taxa), *Asteraceae* (7 taxa) and *Myoporaceae* (7 taxa) families. One of these taxa was an introduced (weed) species, however it is not declared pursuant to Section 37 of the *Agriculture and Related Resources Act* 1976 [WA].

No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the survey. However, two Priority species have been recorded:

Priority 3
Drummondita fulva
Micromyrtus trudgenii

Further populations of *D. fulva* (P3) and *M. trudgenii* (P3) were located during the APM 2012 survey (APM 2012a).

The PEC 'Minjar/Gnows Nest vegetation complexes (BIF)' is known from the Minjar area. This PEC is known to occur on hills with ironstone outcropping. Vegetation community S12 had occasional exposed Banded Ironstone in the north-eastern corner of the Windinne Well survey area. The area of the S12 vegetation community has been partially protected through a condition on VCP CPS 5188/1, assessed by DMP and approved after advice from DEC. Some very small areas of S12 fall directly in the proposed pit expansion area and the VCP allows clearing of these areas.

Four plant communities were defined in the Windinne Well area. Proposed impacts to the vegetation communities are shown in Table 2-8 below.

Table 2-8: Proposed impacts to vegetation communities at Windinne Well prospect

Vegetation Community (Mapped by Mattiske 2009 & APM 2011-12)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
CL - Cleared	30.7	NA
A9 – Acacia Shrubland	50.86	20.91
A22 – Acacia Shrubland	6.53	1.89
A23 – Acacia Shrubland	18.41	0.22
S12 – Shrubland	3.44	0.98
Total	**109.94**	**24**

2.1.5.3 Silverstone/Eastern Creek:

Silverstone and Eastern Creek were surveyed by Mattiske (2009c; 2009d) in November and July 2009 respectively. APM (2011a) conducted a DRF/Priority Flora search of the Silverstone/Eastern Creek prospect in November 2011 and APM (2012a) conducted a further DRF and Priority Flora search and vegetation community mapping in October 2012.

At Silverstone Mattiske (2009c) recorded a total of 20 families, 38 genera and 68 species and taxa within the survey area. Species representation was greatest amongst the *Mimosaceae (*11 taxa), *Chenopodiaceae* (9 taxa), *Asteraceae* (8 taxa) families. One of these taxa were an introduced (weed) species, however this species is not declared pursuant to Section 37 of the *Agriculture and Related Resources Act* 1976 [WA].

At Eastern Creek Mattiske (2009d) recorded a total of 27 families, 44 genera, 65 species and 66 taxa within the survey area (Appendix 21B). Species representation was greatest amongst the *Mimosaceae* (9 taxa), *Myrtaceae* (7 taxa) and *Myoporaceae* (6 taxa) families. One of these taxa was an introduced (weed) species, however this species is not declared pursuant to Section 37 of the *Agriculture and Related Resources Act* 1976 [WA].

No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the surveys. However, four Priority species have been recorded:

Priority 3
Drummondita fulva
Grevillea globosa
Micromyrtus trudgenii
Persoonia pentasticha

Twelve plant communities were defined within the survey areas. The communities differed in their structure, dominance and range of associated species and geographic factors. Proposed impacts to vegetation communities are shown in Table 2-9 below.

Table 2-9: Proposed impacts to vegetation communities at the Silverstone/Eastern Creek prospects

Vegetation Community (Mapped by Mattiske 2009 & APM 2011-12)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
CL - Cleared	73.64	NA
A1 – Acacia Shrubland	18.09	7.94
A2 – Acacia Shrubland	32.75	14.27
A3 – Acacia Shrubland	53.97	9.57
A4 – Acacia Shrubland	0.59	0.59
A5 – Acacia Shrubland	8.13	4.06
A15 – Acacia Shrubland	74.08	35.26
A16 – Acacia Shrubland	9.39	1.09
S1 – Shrubland	1.97	1.52
S2 – Shrubland	11.61	6.12
C1 – Callitris Woodland	3.02	0.26
E5 – Eucalypt Woodland	25.55	7.66
E6 – Eucalypt Woodland	19.69	6.63
Total	**332.97**	**95**

2.1.5.4 Monaco:

Monaco was surveyed by Woodman (September and November 2003) and Mattiske (July 2009e).

Mattiske (2009e) recorded a total of 32 families, 56 genera, 95 species and 96 taxa within the survey area (Appendix 20). Species representation was greatest amongst the *Mimosaceae* (13 taxa), *Myrtaceae* (9 taxa) and *Chenopodiaceae* (7 taxa) families. One of these taxa was an introduced (weed) species, however this species is not declared pursuant to Section 37 of the *Agriculture and Related Resources Act* 1976 [WA].

No DRF species, pursuant to the *Wildlife Conservation Act* 1950 [WA] or listed by the DEC were located during the survey. Three Priority species were recorded during the survey:

Priority 3
Drummondita fulva

Grevillea globosa
Micromyrtus trudgenii

Ten plant communities were defined within the survey area. The communities differed in their structure, dominance and range of associated species and geographic factors. Proposed impacts to the vegetation communities in the Monaco prospect are displayed in Table 2-10.

Table 2-10: Proposed impacts to vegetation communities at the Monaco prospect

Vegetation Community (Mapped by Mattiske 2009)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
A6 – Acacia Shrubland	5.21	1.24
A7 – Acacia Shrubland	37.64	1.6
A8 – Acacia Shrubland	51.38	14.38
A9 – Acacia Shrubland	16.13	0
A10 – Acacia Shrubland	23.5	0.81
E1 – Eucalyptus Woodland	27.13	2.72
E2 – Eucalyptus Woodland	2.29	0
S3 - Shrubland	1.89	0
S4 – Shrubland	8.39	0
CL – Cleared – some rehabilitation	15.02	9.94
Total	**188.58**	**30.69**

2.1.5.5 Bugeye:

A full flora and vegetation mapping survey of the Bugeye prospect was conducted by Mattiske in July 2009 (Mattiske 2009f). A Rare/Priority Flora search of the Bugeye was conducted on the prospect area by APM in November 2011 with additional work in October 2012 (APM 2011a; APM 2012a).

A total of 93 flora species were recorded within the survey area. Species representation was greatest amongst the *Chenopodiaceae* (10 taxa), *Mimosaceae* (9 taxa), *Myrtaceae* (8 taxa) and *Myoporaceae* (8 taxa) families. Three of these taxa were an introduced (weed) species; however these species are not listed as Declared Plants by Agriculture Western Australia.

No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the survey. However, four Priority species have been recorded:

Priority 3
Micromyrtus trudgenii
Drummondita fulva
Grevillea scabrida
Persoonia pentasticha

Nine plant communities have been defined in the area. Proposed impacts to the vegetation communities in the Bugeye prospect are displayed in Table 2-11.

Table 2-11: Proposed impacts to vegetation communities at the Bugeye prospect

Vegetation Community (Mapped by Mattiske 2009 and APM 2012)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
E3 – Low Woodland	37.12	8.1
E4 – Low Open Woodland	0.98	0.32
A2 – Tall Shrubland	0.68	0.41
A11 – Tall Shrubland	43.05	9.31
A12 – Acacia Shrubland	8.25	0.002
A13 – Tall Shrubland	10.85	3.8
A14 – Tall Shrubland	16.55	7.96
S5 - Shrubland	2.2	1.12
S6 - Shrubland	2.52	0.97
S7 – Tall Open Shrubland	0.94	0
Cl - Cleared	54.8	NA
Total	**177.94**	**31.992**

2.1.5.6 Riley:

A Rare/Priority Flora search of the Riley prospect was conducted by Ecotec Pty Ltd (Ecotec) (2006a) in September 2006 and APM (2012a) conducted flora and vegetation mapping and a DRF and Priority search in September 2012. A total of 240 species, and taxa, of vascular flora were recorded in the survey area. This includes 124 genera from 44 families. The family with the highest number of species was *Asteraceae* with a total of 36 species and taxa. Other families of high diversity included *Fabaceae* within 27

species and taxa *Chenopodiaceae* with 26 species and taxa, *Myrtaceae* with 18 species and taxa and *Scrophulariaceae* with 17 species and taxa.

No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the survey. However, 10 Priority species have been recorded:

Priority 1
Rhodanthe collina

Priority 3
Austrostipa blackii
Calytrix uncinata
Drummondita fulva
Grevillea globosa
Grevillea scabrida
Gunniopsis propinqua
Micromyrtus trudgenii
Persoonia pentasticha
Psammomoya implexa

A total of 32 vegetation communities including three sub communities were identified within the Riley survey area. Proposed impacts to the vegetation communities in the Riley prospect and haul road are displayed in Table 2-12.

Table 2-12: Proposed impacts to vegetation communities at the Riley prospect and haul road

Vegetation Community (Mapped by APM 2012)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
aaMLF – Mulga Low Forest	1.86	0
aaOS11 – Open Scrub	1.87	0
abOS6 – Open Scrub	0.45	0
abOS10 – Open Scrub	5.56	0.73
abS3 – Scrub	9.36	1.25
acOLW1 – Open Low Woodland	0.79	0.00
aeS9 – Scrub	16.14	4.87
aeS9a – Scrub	2.32	0.07
aiMLW – Mulga Low Woodland	10.78	0.98
aiMOLW1 – Mulga Open Low Woodland	6.42	0.21

Vegetation Community (Mapped by APM 2012)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
aqOS10 – Open Scrub	0.69	0.00
aqS4 - Scrub	4.63	0.00
arOS12 – Open Scrub	34.7	9.54
arOS7 – Open Scrub	9.55	0.79
arOS8 – Open Scrub	6.32	0.74
arS6 - Scrub	4.48	0.52
arS7 – Scrub	14.06	0.00
arS7a – Scrub	3.37	0.71
arS8 – Scrub	9.81	6.12
arT1a – Thicket	3.91	0.00
arT6 – Thicket	3.8	0.00
arT7 – Thicket	6	0.07
asOS9 – Open Scrub	3.53	0.00
eeOW6 – Open Woodland	5.10	0.00
ekpOW2 – Open Woodland	10.25	0.00
elaOLW1 – Open Low Woodland	14.2	2.68
elsOW1 – Open Woodland	0.94	0.00
elsOW3 – Open Woodland	15.64	1.00
elsOW5 – Open Woodland	5.75	0.11
elsOW7 – Open Woodland	9.89	0.00
mhOS1 – Open Scrub	1.45	0.00
mhOS1a – Open Scrub	0.68	0.00
mlOS2 – Open Scrub	6.61	0.93
CRK – Creek	0.42	0.00
CL – Cleared	4.16	0
Total	**235.49**	31.32

2.1.5.7 Mugs Luck:

Mugs Luck was surveyed by Woodman in January 2004 (Vegetation Community Mapping, DRF/Priority Flora searches) and APM conducted additional vegetation community mapping to the east of Woodman's survey area in September 2012, plus DRF and Priority Flora searches across the whole of the proposed development footprint (Woodman 2004; APM 2012a).

Woodman (2004) recorded a total of 100 vascular plant taxa within the current survey area. All of these taxa were native taxa. The taxa recorded belong to 28 plant families, with *Myrtaceae* (16 taxa), *Myoporaceae* (13 taxa) and *Mimosaceae* (12 taxa) the most common families present. It is estimated that this survey recorded approximately 65-70% of the species present within the project area, due to the time of year of survey (Summer).

APM (2012a) recorded a total of 83 species and taxa of vascular flora from the additional Mugs Luck survey area. This includes 57 genera from 30 families. The family with the highest number of species was *Asteraceae* with a total of 14 species.

No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the survey. However, six Priority species have been recorded by Woodman (2004) and APM (2012a):

Priority 1
Chamelaucium sp. Yalgoo

Priority 2
Acacia diallaga
Acacia karina

Priority 3
Grevillea scabrida
Micromyrtus trudgenii
Persoonia pentasticha

A total of 11 vegetation communities were identified within the Mugs Luck prospect and haul road route. These fell into four main structural forms of thicket, scrub, open scrub and open woodland. Proposed impacts to the vegetation communities in the Mugs Luck prospect and haul road are displayed in Table 2-13.

Table 2-13: Proposed impacts to vegetation communities at the Mugs Luck prospect and haul road

Vegetation Community (Mapped by Woodman 2003 and APM 2012)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
aqOS5 – Open Shrubland	2.03	0.85
elsOW – Open Woodland	0.68	0.68
maT1 – Thicket	0.08	0.08
aeS2 – Shrubland	5.42	4.96
T1 - Thicket	18.07	15.78
T3 – Thicket	1.24	0.55
T4 - Thicket	20.3	2.21
T6 – Thicket	7.8	2.86
T8 – Thicket	1.36	0
W1 – Woodland	40.04	15.84
W3 – Woodland	12.67	2.36
Total	**109.69**	**43.81**

2.1.5.8 Highland Chief/Bobby McGee and Black Dog:

A full flora and vegetation mapping survey of the Highland Chief/Bobby McGee prospects including Blackdog and haul road was conducted by Woodman in September 2003. A Rare/Priority Flora search of the Highland Chief/Bobby McGee prospect was conducted on the prospect area by APM in November 2011 and in September 2012 and on Blackdog during October 2012 (APM 2011a; APM 2012a).

A total of 190 vascular plant taxa were recorded within the survey area. Two of these were introduced (weed) species, neither of which are listed as Declared Plants by Agriculture Western Australia. The taxa recorded belong to 48 plant families, with *Myrtaceae* (23 taxa), *Chenopodiaceae* (18 taxa), *Myoporaceae* (16 taxa) and *Asteraceae* (16 taxa) the most common families present.

No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the survey. However, 11 Priority species have been recorded:

Priority 1
Chamelaucium sp. Yalgoo (Y. Chadwick 1816)

Hydrocotyle sp. Warriedar (P.G. Wilson 12267)
Rhodanthe collina

Priority 2
Acacia diallaga
Acacia karina

Priority 3
Drummondita fulva
Grevillea scabrida
Grevillea subtiliflora
Micromyrtus trudgenii
Persoonia pentasticha

Sixteen plant communities and one mosaic unit have been defined in the area. Proposed impacts to the vegetation communities in the Highland Chief/ Bobby McGee and Blackdog are displayed in Table 2-14 (also integrating Trench and Camp prospects below).

2.1.5.9 Trench and Camp:

The original flora and vegetation surveys of the Highland Chief and Keronima prospects conducted by Woodman (2003) included the Trench and Camp areas. Woodman mapped the vegetation units in the prospect and conducted a Rare/Priority Flora search in May 2007. Additionally, Ecotec (2006b) conducted a Rare/Priority Flora search for the Trench prospect in November 2006, but did not find any Rare or Priority species. APM (2012a) searched for DRF and priority species in September and October 2012.

No DRF species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act* 1950 (WA) were located during the survey. However, eight Priority species have been recorded:

Priority 1
Acacia sulcaticaulis
Chamelaucium sp. Yalgoo

Priority 2
Acacia diallaga
Acacia karina

Priority 3
Acacia subsessilis
Grevillea scabrida

Grevillea subtiliflora
Persoonia pentasticha

Five plant communities were defined within the survey area. Proposed impacts to the vegetation communities in the Trench and Camp prospects are displayed in Table 2-14 (also integrating Highland Chief/Bobby McGee, and Blackdog prospects).

Table 2-14: Proposed impacts to vegetation communities at the Highland Chief/Bobby McGee, Blackdog, Trench and Camp prospects.

Vegetation Community (Mapped by Woodman 2003)	Area of Vegetation Community Mapping (ha)	Proposed Clearing (ha)
W1 – Open Low Woodland	211.27	6.48
W2 – Open Low Woodland	157.69	36.08
W4 – Low Woodland	54.41	3.75
W5 – Open Low Woodland	24.55	0.28
W9 – Low Woodland to Scrub	184.62	15.42
T1 - Thicket	65.95	11.15
T2 – Thicket	14.43	0
T3 – Thicket	6.08	1.5
T4 – Thicket	98.76	9.24
T5 – Thicket	1.19	0
Cleared	11.6*	7.3
Total	**818.95**	**91.2**

* Cleared - Mapping was conducted prior to clearing.

- If located within the Perth Metropolitan Region, is the proposed development within or adjacent to a listed Bush Forever Site? (You will need to contact the Bush Forever Office, at the Department for Planning and Infrastructure)

  ☐ Yes ✓ No **If yes**, please indicate which Bush Forever site is affected (site number and name of site where appropriate).

  N/A

- What is the condition of the vegetation at the site?

2.1.6 Vegetation condition

Vegetation condition has been described by APM (2011), Mattiske (2009) and Woodman (2004) according to the scale in Table 2-15 below, modified from Keighery (1994).

Table 2-15: Vegetation condition scale modified from Keighery 1994

Vegetation Condition	Description
E – Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
VG - Very Good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
G – Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
P – Poor	Still retains basic vegetation structure or ability to regenerate after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
D - Completely Degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

APM (2012) used the scale adapted from Keighery 1994 and Kaesehagen 1995 (Table 2-16) and provided relative % for each condition rating.

Table 2-16: Vegetation condition scale modified from Keighery 1994 and Kaesehagen 1994

Rating	Condition	Descriptive Features
1	Excellent	• >80% native flora composition • Vegetation structure intact or nearly so • Minor signs of disturbance • Weeds are non-aggressive species (cover <5%)
2	Good	• 60-80% native flora composition • Vegetation structure altered in places • Obvious signs of disturbance • Weed cover/ abundance 5-20%
3	Fair	• 40-60% native flora composition • Vegetation structure significantly altered yet retains basic vegetation structure or ability to regenerate it • Very obvious signs of multiple disturbance • Weed cover/abundance 20-50%
4	Poor/ Partially degraded	• 20-40% native flora composition • Vegetation structure severely impacted by disturbance • Scope for regeneration but not to state approaching good condition without intensive management • Weed cover/abundance 50-80%
5	Completely degraded	• <20% native flora composition • Vegetation structure no longer intact • Extensive disturbance/ modification present • Weeds are highly invasive (cover/abundance >80%

These scales both appear in DEC document N*ative Vegetation Condition Assessment and Monitoring Manual for Western Australia* (Casson *et al.* 2009) and while the respective condition scaling is somewhat overlapping as described in that document, in this instance the condition ratings are used comparatively as close approximations as displayed in Table 2-17

Table 2-17: Comparison of modified Keighery and modified Keighery and Kaesehagen

Modified Keighery Condition	Modified Keighery and Kaesehagen Condition
E – Excellent	1 - Excellent
VG - Very Good	2 - Good
G – Good	3 - Fair
P – Poor	4 - Poor/ Partially degraded
D - Completely Degraded	5 - Completely degraded

Generally the vegetation of the area was rated as Good in areas of little disturbance through to Completely Degraded where there is existing infrastructure including pits, waste rock dumps, abandonment bunds and access and haul roads. At prospects that

are yet to be mined there is clearing over limited areas for exploration drill lines, drill pads and access tracks.

2.1.6.1 Austin Prospect

The vegetation varied in condition from Completely Degraded along drill lines and drill pads, to Good in less disturbed areas of native vegetation (Mattiske 2009b; APM 2011a) See Table 2-18.

Table 2-18: Vegetation condition expressed as a % of all vegetation communities identified in the Austin prospect survey area

Rating	Condition	%
1	Excellent	
2	Good	87
3	Fair	
4	Poor / Partially degraded	2
5	Completely degraded	11

2.1.6.2 Austin Haul Road

Vegetation condition in the survey area ranged from Good to Completely Degraded. Those sites considered to be in good Sites considered to be in Fair condition were fragmented and had been impacted by light grazing by either goats or rabbits. Sites classed as Completely Degraded (8%) had been subject to intense grazing, with the composition and structure of vegetation completely modified (APM 2012a) – see Table 2-19.

Table 2-19: Vegetation condition expressed as a % of all vegetation communities identified in the Austin Haul Road survey area

Rating	Condition	%
1	Excellent	-
2	Good	61
3	Fair	31
4	Poor / Partially degraded	-
5	Completely degraded	8

2.1.6.3 Windinne Well

The plant communities varied in condition from Completely Degraded within the existing pit area and where current infrastructure is in place, to Good in less disturbed areas of native vegetation – see Table 2-20.

Table 2-20: Vegetation condition expressed as a % of all vegetation communities identified in the Windinne Well survey area

Rating	Condition	%
1	Excellent	
2	Good	64
3	Fair	
4	Poor / Partially degraded	2
5	Completely degraded	34

2.1.6.4 Silverstone/Eastern Creek

The plant communities varied in condition from Completely Degraded within the existing pit area and where current infrastructure is in place, to Good in less disturbed areas of native vegetation – see Table 2.21

Table 2-21: Vegetation condition expressed as a % of all vegetation communities identified in the Silverstone/Eastern Creek survey area

Rating	Condition	%
1	Excellent	
2	Good	77
3	Fair	
4	Poor / Partially degraded	7
5	Completely degraded	16

2.1.6.5 Monaco

The plant communities varied in condition from Completely Degraded within the existing pit area and where current infrastructure is in place, to Good in less disturbed areas of native vegetation – see Table 2-22

Table 2-22: Vegetation condition expressed as a % of all vegetation communities identified in the Monaco survey area

Rating	Condition	%
1	Excellent	
2	Good	58
3	Fair	6
4	Poor / Partially degraded	18
5	Completely degraded	18

2.1.6.6 Bugeye

Nine plant communities have been defined in the area. The plant communities varied in condition from Completely Degraded within the existing pit area and where current infrastructure is in place, to Good in less disturbed areas of native vegetation (APM 2011a) – see Table 2-23.

Table 2-23: Vegetation condition expressed as a % of all vegetation communities identified in the Bugeye survey area

Rating	Condition	%
1	Excellent	
2	Good	80
3	Fair	
4	Poor / Partially degraded	2
5	Completely degraded	18

2.1.6.7 Riley

A total of 32 vegetation communities including three sub communities were identified within the Riley survey area which varied in condition from Good in less disturbed areas of the prospect to Poor and Partially Degraded in areas adjacent to drilling (APM 2012a)- see Table 2-24.

Table 2-24: Vegetation condition at Riley expressed as a % of all vegetation communities identified in the survey area.

Rating	Condition	%
1	Excellent	3
2	Good	90
3	Fair	-
4	Poor/Partially degraded	7
5	Completely degraded	-

2.1.6.8 Mugs Luck

Vegetation condition in the survey area was classified as Good or Poor/Partially Degraded. Those sites considered to be in good condition had no or few introduced (weed) species present and had not been subject to any obvious disturbance. However most of the vegetation within the survey area had been fragmented by roads or exploration drilling gridlines. Sites considered Poor/Partially Degraded were fragmented or had been impacted by heavy grazing by either goats or rabbits – see Table 2-25.

Table 2-25: Vegetation condition at Mugs Luck expressed as a % of all vegetation communities identified in the survey area

Rating	Condition	%
1	Excellent	-
2	Good	25
3	Fair	-
4	Poor / Partially degraded	75
5	Completely degraded	-

2.1.6.9 Highland Chief/ Bobby McGee, Black Dog, Trench and Camp

Sixteen plant communities and one mosaic unit have been defined in the area and the vegetation was generally considered to be in Good condition where less disturbed and Completely Degraded in areas of mining and exploration – see Table 2-26.

Table 2-26: Vegetation condition expressed as a % of all vegetation communities identified in the Highland Chief/Bobby McGee, Blackdog, Trench and Camp survey area

Rating	Condition	%
1	Excellent	4
2	Good	71
3	Fair	4
4	Poor / Partially degraded	16
5	Completely degraded	5

2.2 Fauna

- Do you expect that any fauna or fauna habitat will be impacted by the proposal?

  (please tick) ✓ Yes ***If yes, complete the rest of this section***

  ☐ No ***If no, go to the next section***

- Describe the nature and extent of the expected impact.

Nature and extent of impact

The development of the Project will result in some habitat loss for various fauna species. A survey of the Project areas has shown that there is no unique fauna habitat present within the disturbance footprints. A description of the fauna habitat available within the Project area can be found in the Fauna Assessment (Appendix 28). Similar habitat could be found throughout the neighbouring tenements and as such habitat loss will be relatively minor with the clearing of 361.69ha out of a total of 140,000ha or 0.26% of the area covered by all the Minjar Gold tenements.

During project operations every effort will be made to avoid direct impacts to fauna. However, some localised mortality is unavoidable during large-scale vegetation clearing. Small burrowing and ground-dwelling species are especially vulnerable, since they are unable to vacate the area rapidly enough. Additionally, the local population may suffer an increased mortality rate due to increased traffic in the area. The impacts to the local population will be minimised and mitigated by:

- No clearing of native vegetation outside the clearly defined disturbance footprint within the Project area.
- Rehabilitation of disturbed areas to provide sustainable habitat for fauna.
- Implementing management strategies to minimise project-related injuries or deaths to fauna in the Project area.

A full description of the management strategies to address potential fauna impacts is provided in section 3.1.3.2 below.

Noise disturbance caused by construction will cause some of the more mobile fauna species to leave the area. As there is suitable habitat in neighbouring tenements this should not pose a problem.

This proposal will directly impact on 12 inactive Malleefowl mounds which fall within proposed clearing areas of the project proposal. A further 20 historic Malleefowl mounds that have lost structural integrity and are unlikely to be used again also fall within the proposed clearing areas of the project proposal. None of the Malleefowl mounds proposed to be cleared were active when surveyed in the APM 2012 survey (APM 2012b)

The project area is identified as potentially providing habitat for the Western Spiny-tailed Skink, *Egernia stokesii* subsp. *badia*, both in rocky outcrops and in hollow logs. This species is listed as Endangered under the *EPBC Act* and as Schedule 1 under the *Wildlife Conservation Act* 1950 (WA) (*WC Act*). No *Egernia* Skinks were found during APM's 2012 survey and an assessment of the habitat found that most potential habitat within the project area was unlikely to support family groups of *Egernia*. Where Woodland was found it was most often Open Woodland predominantly comprised of Gimlet, *Eucalyptus salubrus*, which is prone to cracking lengthways down branches and

not forming sufficient hollows to enable family groups to shelter. The Open Woodland creates sparse fallen limbs, with lengthy distances between potential habitat, making it less likely that *Egernia* would move between. The rocky habitat that *Egernia* may inhabit was not present at any of the proposed disturbance areas except at Windinne Well, where it was well outside the development footprint, and adjacent to the haul road to Riley – but again outside the development footprint.

- Are you aware of any recent fauna surveys carried out over the area to be disturbed by this proposal?

  ✓ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey/s. (If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.)

A number of fauna surveys and studies have been carried out for the Minjar Gold tenements and are outlined in Table 2-27.

Table 2-27: Fauna surveys and studies completed for the Minjar Gold tenements

Author	Prospect	Type of Survey	Month of Survey	Year
Bamford	Highland Chief/ Bobby McGee	Desktop Fauna Assessment		2003
Mattiske	Monaco	Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches EPA Level 1 Fauna Survey	July	2009
Mattiske	Bugeye Eastern Creek	Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches EPA Level 1 Fauna Survey	July	2009
Mattiske	Austin Keronima Silverstone Windinne Well	Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches EPA Level 1 Fauna Survey	November	2009
Outback Ecology	M1 Pit Area, Minjar Well, Silverstone, Metters Well	Stygofauna Pilot Study	March	2009
Animal Plant Mineral	M1, Silverstone, Austin haul road, Riley, Riley haul road, Windinne Well, Silverstone/ Eastern Creek, Mugs Luck, Mugs Luck haul road, Monaco, Bugeye, Keronima, Black Dog, Highland Chief/Bobby McGee, Trench, Camp	Level 1 Flora and Vegetation Survey Declared Rare and Priority Flora searches TEC/PEC searches EPA Level 1 Fauna Survey	November August-October	2011 2012

As a part of ongoing fauna survey of the Minjar Gold prospects, APM (2012b) conducted targeted searches at proposed disturbance areas for Western Spiny-tailed Skink (*Egernia stokesii* subsp. *badia*) and Malleefowl (*Leipoa ocellata*) habitat as well as opportunist recordings of avifauna, reptiles, mammals and invertebrates. This constituted a Level 1 (EPA 2004) survey and was carried out during August-October 2012. Additional data from November 2011 field assessments and data from exploration clearance surveys in August and October 2012 and August/September 2011 has been combined to create a comprehensive fauna dataset for the project areas. The APM 2012 report appears as Appendix 28.

A previous desktop fauna review was conducted by Bamford (2003) (Appendix 29) for the Highland Chief/Bobby McGee prospect, reviewing desktop database materials, relevant literature and observations from Woodman Environment's botanical surveys.

Each of Mattiske's 2009 reports (2009a – 2009g) contained a fauna component resulting from a Level 1 Survey carried out in July 2009 in accordance with EPA Guidance Statement No.56 and EPA Position Statement No. 3. It incorporated a desktop review, literature search and a site reconnaissance. This report includes a species list of native vertebrate fauna that could potentially occur in the general survey area and also includes the results of a Nature Map search and an EPBC search using coordinates of the area.

Outback Ecology (2009) has conducted a pilot study to identify the presence of stygofauna in the Project area (Appendix 30). Five bores and a pastoral well were sampled in July 2009, targeting the fractured rock aquifer associated with the ore body and a shallow perched alluvial aquifer.

From the six sites, four bores yielded low numbers of invertebrates. Stygofauna taxa were only found in Minjar Bore, which intersected the perched alluvial aquifer. The deeper, fractured rock aquifer that would be dewatered with the pit expansion did not yield any stygofauna. These findings were found to be consistent with the few surveys previously conducted in the area. Taxa were typical for the region, consisting of *syncarids*, *oligochaetes* and *copepods*. All these stygal groups have been shown in other studies to prefer alluvial aquifers and have dispersal capabilities.

Previous hydrogeological studies found the alluvial aquifer was underlain by an impermeable clayey oxide subcrop and connection between the fractured rock aquifer and alluvial aquifer was unlikely. While stygofauna were identified within the Minjar Project area, diversity and abundance were comparatively low compared to the calcrete and alluvial aquifers in the northern Yilgarn. As stygofauna were not present in the fractured rock aquifer that would be dewatered, and the impact to the alluvial aquifer was considered negligible, the risk to the stygofauna within the Minjar Project area was considered to be very low to nil.

- Has a search of DEC records for known occurrences of Specially Protected (Threatened) fauna been conducted for the site?

  ✓ Yes ☐ No (please tick)

  A search of the EPBC Act list of protected species was undertaken using the Protected Matters Search Tool to identify fauna considered to be a Matter of National Environmental Significance (SEWPaC, 2011a). This search was conducted using a polygon that covered all the Minjar Prospects and included a 10 km buffer area. The coordinates for the corners of the polygon were as follows: 28°29'17" S, 116°50'34" E; 28°29'17" S, 117°05'59" E; 29°22'23" S, 117°05'59" E; 29°22'23" S, 116°50'34" E.

  A request was made for a search of the Department of Environment and Conservation's databases for Threatened and Priority fauna. This search was conducted on a defined rectangular area with NW corner at 28o46'S, 116o52'E and the SE corner at 29o12'S, 117o02'E).

- Are there any known occurrences of Specially Protected (Threatened) fauna on the site?

  ✓ Yes ☐ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

  Table 2-28 shows the composited list of Conservation Significant Species potentially occurring in the Minjar Gold tenements.

  Table 2-29 shows the composite list of invasive species potentially occurring in the Minjar Gold tenements.

Table 2-28: List of Conservation Significant Species Potentially occurring in the Minjar Gold Project Area.

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
BIRDS					
Malleefowl *Leipoa ocellata*	Vulnerable; Migratory Terrestrial under JAMBA	Schedule 1		Malleefowl occurs in semi-arid and arid zones in temperate Australia. It mainly occupies shrubland and low woodland dominated by multi-stemmed Eucalypt species on sandy or loamy soils with an abundance of leaflitter (SEWPaC SPRAT, 2012).	**Likely to occur** Species has been recorded on NatureMap and active mounds have been observed during the Mattiske 2009, APM 2011 (b) and APM 2012 surveys.
Cattle Egret *Ardea ibis*	Migratory Wetland Species under JAMBA and CAMBA			The Cattle Egret is classed as a migrant, as it was originally from Asia. In reality, the species is actually now a resident in the Kimberley, breeding in big numbers. The species often feeds with cattle, eating insects disturbed by the cattle as they graze. The Cattle Egret can also be seen feeding in fresh water environments if conditions are favourable and frogs and tadpoles are abundant. This species can be present at all times of the year and roosts in colonies (SEWPaC SPRAT, 2012).	**Unlikely to occur** Suitable habitat is not present.

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
Great Egret *Ardea alba*	Migratory Wetland Species under JAMBA and CAMBA			This species is classified as migratory but there is little evidence to support this. The Great Egret is present at all times of year in fresh and saltwater environments. Towards and during the end of the wet, numbers peak as the water levels begin to recede. Great Egrets are widespread in Australia. They occur in all states and territories of mainland Australia and in Tasmania. They often occur solitarily, or in small groups when feeding. They roost in large flocks that may consist of hundreds of birds. They live in a wide variety of habitats ranging from inland to coastal. The species usually frequents shallow waters. They mainly forage by wading through water consuming a diet of fish, molluscs, crustaceans, lizards, snakes, frogs and small mammals and birds (SEWPaC SPRAT, 2012).	**Unlikely to occur** Suitable habitat is unavailable.
Peregrine Falcon *Falco peregrinus*		Schedule 4		The Peregrine Falcon is found in most habitats and altitudes throughout Australia. This species requires abundant avian prey and secure nest sites. The Peregrine Falcon prefers coastal and inland cliffs or open woodlands near water, but can even be found nesting on tall city buildings (SEWPaC, 2012).	**Possible occurrence**
Grey Falcon *Falco hypoleucos*		Schedule 1		The Grey Falcon is widespread across Australia, but in low densities. They occur in timbered lowland plains, particularly acacia shrublands along tree-lined inland drainage systems (Garnett and Crowley, 2000).	**Possible occurrence**

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
Australian Bustard *Ardeotis australis*			Priority 4	Australian Bustards are found in tussock grassland, *Triodia* hummock grassland, grassy woodland, low shrublands and structurally similar artificial habitats such as croplands and golf-courses. They will also use denser vegetation when this has been opened up by recent burning (Garnett and Crowley, 2000).	**Likely to occur** Species has been recorded on NatureMap.
Bush Stone-curlew *Burhinus grallarius*			Priority 4	Bush Stone-curlews require sparsely grassed, lightly timbered open forest or woodland. They are thought to be sedentary, but abundance in central Australia appears to vary with rainfall (Garnett and Crowley, 2000).	**Possible occurrence**
Australian Painted Snipe *Rostratula australis*	Vulnerable; Migratory Terrestrial under CAMBA	Schedule 1		This species is extremely cryptic and can often be found sheltering in dense grass or under the shade of trees well away from water. However, typical habitat comprises ephemeral or permanent water, usually with muddy edges (SEWPaC SPRAT, 2012).	**Unlikely to occur** Suitable habitat is unavailable; however could occur around shallow pools after heavy rain.
Major Mitchell's Cockatoo *Cacatua leadbeateri*		Schedule 4		Major Mitchell's Cockatoos occur in sparsely timbered grasslands, scrublands, stands of Casuarinas along sand ridges and covering rocky outcrops, and mallee. They are always found in the vicinity of water and they require large, old, hollow-bearing Eucalypts for breeding (Johnstone and Storr, 1998).	**Likely to occur** Species has been recorded on NatureMap.

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
Night Parrot *Pezoporus occidentalis*	Endangered	Schedule 1		The distribution of the Night Parrot is very poorly understood and there have been many controversial sightings. There are a number of well-regarded observations that place the Night Parrot in arid and semi-arid regions of all mainland states and territories. Based on accepted records the species utilizes *Triodia* grasslands in stony or sandy environments and samphire and chenopod shrublands on floodplains and claypans, and on the margins of saltlakes, creeks or other sources of water (SEWPaC SPRAT, 2012).	**Unlikely to occur** This species had been 'lost' for decades since its widespread decline in 1900. The last sighting in this area is from 1961; however, the validity of the sighting is deemed 'moderately certain'. This species is likely to occur anywhere in inland Australia.
Masked Owl (southern subsp.) *Tyto novaehollandiae* subsp. *novaehollandiae*			Priority 3	The Masked Owl occupies wooded habitat that support large hollow-bearing trees for nesting and roosting adjacent open areas for hunting. The open areas may consist of grasslands, agricultural lands or open inland plains. This species will occasionally roost in caves (Garnett and Crowley, 2000).	**Unlikely to occur** This species was last recorded in the area in 1964. Its current distribution is along the north and east coast of Australia, Tasmania, the Nullarbor and the south-west of Western Australia.

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
Fork-tailed Swift *Apus pacificus*	Migratory Marine Species under JAMBA, CAMBA and ROKAMBA			The Fork-tailed Swift is a migratory species that is only present in the late dry and wet season, usually arriving in October and leaving in April. Individuals are almost exclusively aerial and feed at high altitudes. During thunderstorms and cyclones birds forage lower to the ground, and emergent termites are one source of food that brings this species down to lower altitudes (SEWPaC SPRAT, 2012).	**Possible occurrence** Could possibly utilise the Banded Ironstone Formation while hawking for insects.
Rainbow Bee-eater *Merops ornatus*	Migratory Terrestrial Species under JAMBA			This species is moderately common to common in open woodland and near water. Though the Rainbow Bee-eater is classified as a migratory, not all individuals of the species migrate. Those that do, start arriving in late September and leave in April. Birds that are resident breed throughout the dry often in dirt banks along roads, rivers and dunes. They hawk insects, including bees, flies and grasshoppers, over grasslands from perches in nearby trees. It is most commonly observed in ones and twos but is occasionally seen in small flocks of up to 100 individuals (SEWPaC SPRAT, 2012).	**Likely to occur** Species has been recorded on NatureMap
Shy Heathwren *Hylacola cauta* subsp. *whitlocki*			Priority 4	The Shy Heathwren occupies dense mallee heathland where it forages on the ground. It builds its nests in low shrubs or on the ground below dense vegetation (Garnett and Crowley, 2000).	**Possible occurrence** The Minjar Project area is on the edge of their distribution range.
Slender-billed Thornbill *Acanthiza iredalei* subsp. *iredalei*	Vulnerable			This species prefers chenopod shrublands in arid and semi-arid regions. They will occasionally occupy acacia shrublands when they are adjacent to more suitable habitat. In inland areas the Slender-billed Thornbill is often found in close proximity to saltlakes (SEWPaC SPRAT, 2012).	**Possible occurrence** The Minjar Project area is on the edge of their distribution range.

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
White-browed Babbler *Pomatostomus superciliosus* subsp. *ashbyi*			Priority 4	The White-browed Babbler lives in family groups and occurs in Eucalypt forests and woodlands where it forages for insects on or near the ground (Garnett and Crowley, 2000). The subspecies intergrades with *P. s. superciliosus* between Dongara-Geraldton.	**Unlikely to occur** The subspecies present is most likely *P. s. superciliosus*.
Crested Bellbird *Oreoica gutturalis* subsp. *gutturalis*			Priority 4	The Crested Bellbird occupies the shrub-layer of Eucalypt woodland, mallee, acacia shrubland, *Triodia* hummock grassland, saltbush and heath (Garnett and Crowley, 2000). The subspecies *O. g. gutturalis* generally occurs south of 30°S in Western Australia.	**Unlikely to occur** The subspecies present is most likely *O. g. pallescens*.
MAMMALS					
Western Brush Wallaby *Macropus irma*			Priority 4	The Western Brush Wallaby is a grazer and prefers open forest or woodland, particularly open, seasonally wet flats with low grasses and open scrubby thickets. It is less often found in areas of mallee and heath (DEC, 2012).	**Possible occurrence** One individual sighted in the area in 2006 (NatureMap).
REPTILES					
Gilled Slender Blue-tongue *Cyclodomorphus branchialis*		Schedule 1		This species occurs in semi-arid shrublands on heavy red soils (Wilson and Swan, 2010).	**Possible occurrence** Three specimens were collected in the area in 1965.

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
Western Spiny-tailed Skink *Egernia stokesii* subsp. *badia*	Endangered	Schedule 1		There are two colour morphs of the Western Spiny-tailed Skink: The brown form and the black form. The brown form mostly occurs in *Eucalyptus loxophleba* woodland, but some populations have been found to occupy *E. salubris* and *E. salmonophloia* woodlands. Populations can exist in isolated woodland patches as small as 1 ha. Their preferred refuges are piles of overlapping hollow logs. The black form is known from locations at Woolgerong Rock and 4 km east of Yalgoo. This form solely occupies horizontal rock crevices and boulder patches in stony hills. Both forms deposit their faecal droppings in a communal latrine outside of used shelters (SEWPaC SPRAT, 2012).	**Likely to occur** Species has been recorded on NatureMap and faecal samples have been found during the APM 2011 (b) survey.
Woma Python *Aspidites ramsayi*			Priority 1	Woma Pythons occur in woodlands, heaths and shrublands, often with Spinifex in subhumid to arid inland Australia (Wilson and Swan, 2010).	**Possible occurrence Suitable habitat is available, but the Project area is on the edge of the known distribution.**
Carpet Python *Morelia spilota* subsp. *imbricata*			Priority 4	This species occurs in semi-arid coastal and inland habitat, *Banksia* woodland, Eucalypt woodlands and grasslands (DEC, 2012).	**Possible occurrence Suitable habitat is available, but the Project area is on the edge of the known distribution.**

Species	Conservation Status			Habitat Description	Likelihood of Occurrence in Project area
	Commonwealth Level (EPBC Act)	State Level (WC Act)	Department of Environment and Conservation (Priority Status)		
INVERTEBRATES					
Shield-backed Trapdoor Spider *Idiosoma nigrum*		Vulnerable		This species inhabits burrows in heavy clay soils in areas of open York Gum (*Eucalyptus loxophleba*), Salmon Gum (*E. salmonophloia*) and Wandoo (*E. capillosa*) woodland where Jam (*Acacia acuminata*) forms a sparse understorey. It forages in the leaf litter surrounding the burrow.	**Possible occurrence** **The species has been found in the local area, but the majority of the Project area consists of unsuitable habitat.**

Table 2-29: List of Invasive Species Potentially occurring in the Minjar Gold Project Area.

Species	Habitat Description	Likelihood of Occurrence in Project area
Red Fox *Vulpes vulpes*	The Red Fox occupies a variety of habitats, including arid regions. They are most abundant in lightly wooded areas where there is wide variety of shelter and food. Foxes have played a major role in the decline of many native species (SEWPaC, 2011b).	**Likely to occur**
Cat *Felis catus*	Feral cats are found in all habitats except the wettest rainforests on the mainland and some offshore islands. They can survive in areas with minimal water supply. The feral cat predates on native mammals and causes declines in local populations (SEWPaC, 2011b).	**Likely to occur**
Rabbit, European Rabbit *Oryctolagus cuniculus*	Rabbits occur throughout Australia wherever there is suitable soil for digging warrens. They are scarce in areas with clay soils and abundant where soils are deep and sandy. They require daily access to water sources in arid areas, but can obtain enough moisture from their food in other area. Rabbits cause degradation of the ecosystems they inhabit and compete with native animals for food sources (SEWPaC, 2011b).	**Likely to occur**
Goat *Capra hircus*	Feral goats live in herds and are common in the rocky or hilly semi-arid areas in Western Australia, New South Wales, South Australia and Queensland. They occur in a variety of habitats and do well in areas where feral dogs and dingoes are absent. They compete with native fauna and cause land degradation, threatening plant and animal species and communities (SEWPaC, 2011b).	**Likely to occur** Has been recorded on NatureMap.

Current surveys by APM conducted in 2011 and 2012 have recorded the presence of Malleefowl, Australian Bustard, Peregrine Falcon, Crested Bellbird and White-browed Babbler on the prospects (APM 2011b; APM 2012b). The Rainbow Bee-eater and Major Mitchell's Cockatoo have been observed in neighbouring tenements and are likely to occur on the proposed sites.

There have been no recordings of *Idiosoma nigrum* Shield-backed Trapdoor Spider within the development footprints.

Three populations of Shield-backed Trapdoor Spider are recorded in the vicinity of the Project area: Karara Hills, Blue Hills and Shine (Bamford 2007, 2012). Two additional records from DEC's database for Threatened and Priority fauna occur adjacent the Project area. The database lists the records only as invertebrates. However, APM has been advised by DEC that the records are in fact Shield-backed Trapdoor Spiders.

Previous survey results from Weld Range (Ecologia, 2009), Karara (Bamford, 2007) and Shine projects (Bamford, 2012) show that the Shield-backed Trapdoor Spider mainly occurs on the upper to lower slopes of ranges, with only small numbers on the crest. In the Weld Range the species occurs in large numbers on the plains, but within this area individuals are restricted to the banks of well-established drainage lines. In the Karara and Shine projects, located in close proximity to the current proposed project areas, the species was largely restricted to the ranges, being virtually absent from the plains.

APM (2012b) found no evidence of Shield-back Trapdoor Spiders in the proposed development areas in the August-October survey in 2012.

2.3 Rivers, Creeks, Wetlands and Estuaries

- Will the development occur within 200m of a river, creek, wetland or estuary?

  (please tick) ☐ Yes ***If yes, complete the rest of this section***

  ✓ No ***If no, go to the next section***

- Will the development result in the clearing of vegetation within the 200 m zone?

  ☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

- Will the development result in the filling or excavation of a river, creek, wetland or estuary?

  ☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

- Will the development result in the impoundment of a river, creek, wetland or estuary?

  ☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

- Will the development result in draining to a river, creek, wetland or estuary?

  ☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

- Are you aware if the proposal will impact on a river, creek, wetland or estuary (or its buffer) within one of the following categories? (please tick)

Conservation Category Wetland	☐ Yes	☐ No	☐ Unsure
Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998	☐ Yes	☐ No	☐ Unsure
Perth's Bush Forever site	☐ Yes	☐ No	☐ Unsure
Environmental Protection (Swan & Canning Rivers) Policy 1998	☐ Yes	☐ No	☐ Unsure
The management area as defined in s4(1) of the Swan River Trust Act 1988	☐ Yes	☐ No	☐ Unsure
Which is subject to an international agreement, because of the importance of the wetland for waterbirds and waterbird habitats (e.g. Ramsar, JAMBA, CAMBA) #	☐ Yes	☐ No	☐ Unsure

2.4 Significant Areas and/ or Land Features

- Is the proposed development located within or adjacent to an existing or proposed National Park or Nature Reserve?

  ✓ Yes ☐ No **If yes**, please provide details.

  Warriedar Pastoral Lease - CPL46.

- Are you aware of any Environmentally Sensitive Areas (as declared by the Minister under section 51B of the EP Act) that will be impacted by the proposed development?

  ☐ Yes ✓ No **If yes**, please provide details.

- Are you aware of any significant natural land features (e.g. caves, ranges etc) that will be impacted by the proposed development?

☐ Yes ✓ No **If yes**, please provide details.

2.5 Coastal Zone Areas (Coastal Dunes and Beaches)

- Will the development occur within 300m of a coastal area?

  (please tick) ☐ Yes ***If yes, complete the rest of this section***

  ✓ No ***If no, go to the next section***

- What is the expected setback of the development from the high tide level and from the primary dune?

- Will the development impact on coastal areas with significant landforms including beach ridge plain, cuspate headland, coastal dunes or karst?

  ☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

- Is the development likely to impact on mangroves?

  ☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

2.6 Marine Areas and Biota

- Is the development likely to impact on an area of sensitive benthic communities, such as seagrasses, coral reefs or mangroves?

  ☐ Yes ✓ No **If yes**, please describe the extent of the expected impact.

- Is the development likely to impact on marine conservation reserves or areas recommended for reservation (as described in A *Representative Marine Reserve System for Western Australia,* CALM, 1994)?

  ☐ Yes ✓ No **If yes**, please describe the extent of the expected impact.

- Is the development likely to impact on marine areas used extensively for recreation or for commercial fishing activities?

  ☐ Yes ✓ No **If yes**, please describe the extent of the expected impact, and provide any written advice from relevant agencies (e.g. Fisheries WA).

2.7 Water Supply and Drainage Catchments

- Are you in a proclaimed or proposed groundwater or surface water protection area?

  (You may need to contact the Department of Water (DoW) for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

  ✓ Yes ☐ No **If yes**, please describe what category of area.

  The project lies within the Gascoyne groundwater area proclaimed under the *Rights in Water and Irrigation Act* 1914. Management plans for the protection of this groundwater resource have been finalised, the relevant DoW documents include:

  - Lower Gascoyne water allocation plan Statement of Response (October 2011a)
  - Lower Gascoyne water allocation plan methods report (October 2011b)
  - Lower Gascoyne water allocation plan (October 2011c).

  Licences are required under Section 5C of the *Rights in Water and Irrigation Act* 1914 for taking groundwater, including pit dewatering. The Groundwater Licence GWL169526(3) is current and applies to the M1 and Silverstone prospects (Mining Lease M59/406 and M59/421).

- Are you in an existing or proposed Underground Water Supply and Pollution Control area?

  (You may need to contact the DoW for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

  ☐ Yes ✓ No **If yes**, please describe what category of area.

- Are you in a Public Drinking Water Supply Area (PDWSA)?

  (You may need to contact the DoW for more information or refer to the DoW website. A proposal to clear vegetation within a PDWSA requires approval from DoW.)

  ☐ Yes ✓ No **If yes**, please describe what category of area.

- Is there sufficient water available for the proposal?

  (Please consult with the DoW as to whether approvals are required to source water as you propose. Where necessary, please provide a letter of intent from the DoW)

  ✓ Yes ☐ No (please tick)

  Minjar Gold has a current volume of 807,000kl approved under Groundwater Licence GWL169526(3).

Minjar requires a total of 936,400kl per annum which is achievable from the main water source at Silverstone/Eastern Creek that is yielding at 70 litres/second, or approximately 2,207,000kl per annum.

A licence amendment is required to approve water extraction from the additional pits and for the increased volume.

- Will the proposal require drainage of the land?

  ✓ Yes ☐No **If yes**, how is the site to be drained and will the drainage be connected to an existing Local Authority or Water Corporation drainage system? Please provide details.

Dewatering of proposed pits is likely to be required at each of the prospects in the proposed Project area. The Silverstone/Eastern Creek chain of pits intersects a shear hosted aquifer which has a flow through of approximately 70 litres/second.

Existing bores at Silverstone/Eastern Creek have previously been used to extract water from the aquifer to dewater the pits and to provide process water for the Minjar Gold Plant.

Dewatering requirements at other pits range from approximately 12 litres/second at the Windinne Well pit, down to < 1 litre/second at the Riley pit. In-pit sumps will be used to contain the water prior to using the water for dust suppression.

A hydrogeological assessment is attached as Appendix 31.

- Is there a water requirement for the construction and/ or operation of this proposal?

  (please tick) ✓ Yes ***If yes, complete the rest of this section***

  ☐ No ***If no, go to the next section***

Water from the pits above will be used for dust suppression. Water required for the operation of the processing plant is licenced under a Groundwater Licence from the Department of Water (GWL169526(3)).

- What is the water requirement for the construction and operation of this proposal, in kl/year?

  - 920,000 kl/annum raw water for Processing Facility, sourced from existing pits
  - 2,ooo kl/ annum potable water sourced from the existing M1 pit and processed through reverse osmosis facility
  - 14,400 kl/ annum raw water for mine site dust suppression, sourced from existing pits.

- What is the proposed source of water for the proposal? (eg dam, bore, surface water etc.)

  The proposed source of the water is from dewatering the open pits, utilising the in-pit sumps. Dewatering bores will be considered if required.

2.8 Pollution

- Is there likely to be any discharge of pollutants from this development, such as noise, vibration, gaseous emissions, dust, liquid effluent, solid waste or other pollutants?

  (please tick) ✓ Yes ***If yes, complete the rest of this section***

  ☐ No ***If no, go to the next section***

- Is the proposal a prescribed premise, under the Environmental Protection Regulations?

  (Refer to the EPA *General Guide for Referral of Proposals to the EPA under section 38(1) of the EP Act 1986* for more information)

  ✓ Yes ☐ No **If yes**, please describe what category of prescribed premise.

  The Mining Lease M59/406 is a Category 5 prescribed premises which is licenced by DEC under Licence for Prescribed Premises L8402/2009/1. This enables processing or beneficiation of ore, with the processing plant having a nominated throughput of 650,000 tonnes per annum.

- Will the proposal result in gaseous emissions to air?

  ✓ Yes ☐ No **If yes**, please briefly describe.

  Gaseous emissions to air will result from diesel fuel combustion.

  Diesel use will be approximately 315,000 litres per month or 3.78 million litres of diesel per annum resulting in approximately 10,198 tonnes CO2-e emissions annually.

  If the Project trips the relevant thresholds it will submit an annual National Pollutant Inventory (NPI) report to comply with the National Environment Protection Measures (NEPM) legislation in 1998.

  In addition if the appropriate thresholds are exceeded then the Project will provide a National Greenhouse Emissions Report to comply with the *National Greenhouse and Energy Reporting Act* (*NGER)* 1997.

- Have you done any modelling or analysis to demonstrate that air quality standards will be met, including consideration of cumulative impacts from other emission sources?

  ☐ Yes ✓ No **If yes**, please briefly describe.

- Will the proposal result in liquid effluent discharge?

  ✓ Yes ☐ No **If yes**, please briefly describe the nature, concentrations and receiving environment.

  Water as precipitation on infrastructure areas will be discharged to the environment. Each infrastructure/mining area will have structures including bunding, sumps and sediment traps to ensure that water is contained to allow sediment to settle out and contaminants to be contained prior to treated water being discharged to the environment.

  Used process water will be cycled through the Tailings Storage Facility and then decanted and recirculated to the process water pond. This water will not be discharged to the environment.

  The Waste Water Treatment Plant (WWTP) that services the Minjar Camp facilities is a facultative lagoon system, designed to cater for the 120 person camp and was approved by the Shire of Yalgoo prior to commencement of previous operations. The facultative lagoon system utilises the action of both aerobic and anaerobic bacteria to break down solid waste, leaving a sludge to settle out at the bottom of the lined ponds. The system is designed with three working ponds of varying depth and a large evaporation pond which receives treated outfall (See Appendix 32).

  The wash-down bay adjacent to the site office facilities utilises a triple interceptor to capture any hydrocarbon residue from vehicle washing. Excess water is discharged. Total Petroleum Hydrocarbon concentrations discharged to the environment will be less than 15mg/L.

- If there is likely to be discharges to a watercourse or marine environment, has any analysis been done to demonstrate that the State Water Quality Management Strategy or other appropriate standards will be able to be met?

  ☐ Yes ✓ No **If yes**, please describe.

- Will the proposal produce or result in solid wastes?

  ✓ Yes ☐ No **If yes**, please briefly describe the nature, concentrations and disposal location/ method.

  Waste rock will be produced from the pits. The waste rock classification to date has found that there is no Acid Rock Drainage potential and waste rock will be disposed adjacent to pits in geotechnical engineer designed waste rock dumps. Further test work is currently being undertaken to confirm that waste rock from proposed pits will also be non-acid forming.

Putrescible wastes are produced from the Minjar Camp facilities and deposited in the existing landfill on M1.

It is expected that approximately 1.1 tonnes per person per annum will be produced by employees at the camp requiring disposal of approximately 66 tonnes of putrescible wastes per annum. Disposal will take place in the existing trench and fill landfill system. If additional trenches are required the relevant approvals will be sought through the DEC and DMP.

- ❑ Will the proposal result in significant off-site noise emissions?

  ☐ Yes ✓ No **If yes**, please briefly describe.

- ❑ Will the development be subject to the Environmental Protection (Noise) Regulations?

  ✓ Yes ☐ No **If yes**, has any analysis been carried out to demonstrate that the proposal will comply with the Regulations?

  Please attach the analysis.

Specific analysis has not been undertaken however, mitigating strategies are to be applied, including:

- Only conducting blasting, if required, during daylight hours;
- Regular maintenance of plant and machinery to ensure operating with maximum efficiency and within designated noise operating levels;
- Notification of neighbours if activities within 2 km are likely to cause noise impacts.

- ❑ Does the proposal have the potential to generate off-site, air quality impacts, dust, odour or another pollutant that may affect the amenity of residents and other "sensitive premises" such as schools and hospitals (proposals in this category may include intensive agriculture, aquaculture, marinas, mines and quarries etc.)?

  ☐ Yes ✓ No **If yes**, please describe and provide the distance to residences and other "sensitive premises".

- ❑ If the proposal has a residential component or involves "sensitive premises", is it located near a land use that may discharge a pollutant?

  ☐ Yes ✓ No ☐ Not Applicable **If yes**, please describe and provide the distance to the potential pollution source

Camp accommodation facilities are located 3 km north of the processing plant and 3 km from the closest proposed mining areas.

The MMG Golden Grove Camp is located approximately 1.3 km east of the proposed Austin pit.

2.9 Greenhouse Gas Emissions

- Is this proposal likely to result in substantial greenhouse gas emissions (greater than 100 000 tonnes per annum of carbon dioxide equivalent emissions)?

  ☐ Yes ✓ No **If yes**, please provide an estimate of the annual gross emissions in absolute and in carbon dioxide equivalent figures.

- Further, if yes, please describe proposed measures to minimise emissions, and any sink enhancement actions proposed to offset emissions.

2.10 Contamination

- Has the property on which the proposal is to be located been used in the past for activities which may have caused soil or groundwater contamination?

  ✓ Yes ☐ No ☐ Unsure **If yes**, please describe.

  Previous mining has the potential to have caused soil or groundwater contamination.

- Has any assessment been done for soil or groundwater contamination on the site?

  ✓ Yes ☐ No **If yes**, please describe.

  Groundwater monitoring has been ongoing through Care and Maintenance at monitoring bores adjacent to the TSF, near the waste landfill and near the potable water supply. None of the results indicate a contamination event has taken place.

- Has the site been registered as a contaminated site under the Contaminated Sites Act 2003? (on finalisation of the CS Regulations and proclamation of the CS Act)

  ☐ Yes ✓ No **If yes**, please describe.

2.11 Social Surroundings

* Is the proposal on a property which contains or is near a site of Aboriginal ethnographic or archaeological significance that may be disturbed?

  ✓ Yes ☐ No ☐ Unsure **If yes**, please describe.

The Minjar Gold Project occurs within the Widi Mob and the Badimia People Native Title Claim areas. Minjar Gold has undertaken desktop and field investigations of proposed disturbance areas for archaeological and ethnographic significance in partnership and with the contribution of the Widi and Badimia.

The survey reports are attached as Appendices 33 and 34. In summary the surveys found three sites of significance. The only site to be potentially impacted by the development was located on the proposed Austin haul road route. This site will be subject to an application to disturb the site under Section 18 of the *Aboriginal Heritage Act* 1972.

* Is the proposal on a property which contains or is near a site of high public interest (for example, a major recreation area or natural scenic feature)?

☐ Yes ✓ No **If yes**, please describe.

The Warriedar Pastoral Lease, CPL46, was purchased using public monies provided by the State and Commonwealth governments for inclusion in the public conservation estate. DEC has indicated that there may be some public interest as a result of the use of public monies for the purchase.

* Will the proposal result in or require substantial transport of goods, which may affect the amenity of the local area?

☐ Yes ✓ No **If yes**, please describe.

A goods truck will resupply site weekly for camp and food provisions.

Diesel will be resupplied on a weekly/fortnightly basis during operations from a road train diesel distributor from Geraldton.

Staff will be transported to site via aeroplane to MMG Golden Grove airstrip and bus to site (5km).

2.12 Risk

* Is the proposal located near a hazardous industrial plant or high-pressure gas pipeline?

☐ Yes ✓ No **If yes**, please describe.

* Does the proposal have the potential to generate off-site risk?

☐ Yes ✓ No **If yes**, will the proposal be a major hazardous facility regulated under the *Explosives and Dangerous Goods Act*?

3 MANAGEMENT

3.1 Principles of Environmental Protection

- Have you considered how your project gives attention to the following Principles, as set out in section 4A of the EP Act? (For information on the Principles of Environmental Protection, please see EPA Position Statement No. 7, available on the EPA web.)

1.	The precautionary principle.	✓ Yes	☐ No
2.	The principle of intergenerational equity.	✓ Yes	☐ No
3.	The principle of the conservation of biological diversity and ecological integrity.	✓ Yes	☐ No
4.	Principles relating to improved valuation, pricing and incentive mechanisms.	✓Yes	☐ No
5.	The principle of waste minimisation.	✓Yes	☐ No

- Is the proposal consistent with the EPA's Position Statements (available on the EPA web)?

  ✓ Yes ☐ No

3.1.1 Management Commitments

- How has the proposal been developed to avoid, minimise and manage potential impacts?

  Please describe any specific commitments you make as the proponent to minimising the potential environmental impacts of this development.

  Minjar Gold is committed to protecting the environment. This commitment encompasses not only compliance with all applicable laws and regulations, but also encouraging employees to exercise exemplary environmental practices. The Minjar Gold approach to environmental management may include:

  - monitoring programs;
  - operational environmental management plans;
  - training and competencies;
  - auditing and inspections;

- incident investigation;
- reporting requirements.

3.1.2 Risk Assessment and Environmental Management Strategies

An initial risk assessment has been conducted for the Minjar Gold recommencement and expansion project to determine the level of risk associated with aspects of operations at the site. Table 3-1 shows the risk matrix used to assess the likelihood and consequences of impacts associated with project activities. Commitments have been made to address those areas where risk has been determined as medium, high or extreme. Although Minjar anticipate no environmental incidents during their operations, if a particular aspect of the project does result in adverse environmental impacts, mitigation measures will be promptly implemented and procedures changed as required to avoid re-occurrence and ensure continuous improvement. The management strategies for each aspect of its operations are outlined in Table 3-2 and detailed within this section.

Table 3-1: Risk Matrix for Operations at Minjar

		Likelihood (L)				
Consequence (C)		**Almost Certain**	**Likely**	**Possible**	**Unlikely**	**Rare**
	Catastrophic	Extreme 1	Extreme 2	Extreme 4	High 7	Medium 11
	Major	Extreme 3	Extreme 5	High 8	Medium 12	Medium 16
	Moderate	High 6	High 9	Medium 13	Medium 17	Low 20
	Minor	High 10	Medium 14	Medium 18	Low 21	Low 23
	Insignificant	Medium 15	Medium 19	Low 22	Low 24	Low 25

Table 3-2: Assessment of Environmental Risks and Management Strategies for Minjar Gold Project

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
Clearing Native Vegetation	Deterioration of remaining vegetation health	Likely	Minor	Medium	• Vehicle traffic will be limited to the use of designated roads only. • Clearing areas shall be delineated in the field by using a GPS, demarcated with flagging tape used solely for that purpose. • Integrate dust management into the Minjar Operational Environmental Management Plan (OEMP), including inspection and notification requirements and suppression techniques to be employed (primarily water spray) to limit dust impacts to vegetation. • Develop a dust monitoring program, including establishment of photographic vegetation monitoring points. • Sediment controls including bunding, sumps and settling ponds are to be installed to intercept water prior to discharge to vegetation.	Possible	Minor	Medium
	Loss of flora and fauna of conservation significance	Unlikely	Major	Medium	• All native vegetation within the project area that may potentially be disturbed must be surveyed prior to any disturbance. • Ensure all required licences and permits have been obtained prior to clearing activities commencing. • Include fire management into the Minjar OEMP to ensure wildfire impacts to threatened species are minimised. • Manage and monitor impacts on Priority Flora species within the Minjar Operations area. • Prior to clearing a specific area, a fauna specialist will inspect the area for Malleefowl mounds and *Egernia* habitat. Where possible Malleefowl mounds and *Egernia* habitat will be retained.	Rare	Major	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					• No clearing will occur within at least a 50 metre perimeter of the area where an inactive Malleefowl mound is identified, without the express permission from the appropriate regulator. • No clearing will occur within at least a 250 metre perimeter of the area where an active Malleefowl mound is identified, without the express permission from the appropriate regulator. • Conduct regional surveys as required to confirm the conservation status of particular taxa.			
	Loss of fauna habitat	Almost Certain	Moderate	High	• Minimise clearing wherever possible. • Use pre-existing haul roads and access tracks where possible to minimise clearing. • Only clear areas necessary for efficient and safe operations. Clearing operations are to be staged where possible. • Areas to be cleared will be adequately marked to ensure only the required clearing is undertaken. Pre and post clearing inspections will be undertaken by the site environmental representative. • Any suitable *Egernia* habitat (hollow logs) that are within a clearing area to be moved to suitable microhabitat within close vicinity, outside of the clearing envelope.	Likely	Moderate	High
	Loss of soil viability	Possible	Moderate	Medium	• Conduct clearing in a manner that facilitates the re-use of surface soils for rehabilitation activities. • Surface soil should be utilised between 1 and 5 years after removal, wherever possible. • Topsoil to be stockpiled a maximum of 1.8 m high. • Topsoil to be stockpiled separately from subsoils.	Unlikely	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
	Adverse impacts on natural drainage patterns	Possible	Minor	Medium	• Stockpiles of surface soil and vegetation debris will be located to avoid impeding on critical surface drainage lines.	Unlikely	Minor	Low
	Increased erosion	Almost Certain	Moderate	High	• Vegetation that is removed shall be either directly placed on disturbed areas to reduce erosion or stockpiled in one centralised location for later use in rehabilitation. • The topsoil stockpile area will have an appropriate drainage system in place to ensure minimum loss of topsoil during storm/rain events. • Where exposed areas are presenting signs of wind or water erosion, measures such as surface water management and dust suppression techniques will be implemented.	Possible	Moderate	Medium
	Spread of weeds	Likely	Minor	Medium	• Inspect machinery and vehicles used to conduct clearing for weeds and clean where appropriate prior to commencement of works. • Maintain a wash-down bay for washing vehicles to prevent the spread of weeds. • Incorporate weed management into the Minjar OEMP to maintain and enhance the condition of fauna habitat on the site.	Unlikely	Minor	Low
	Expansion of feral animal population	Likely	Moderate	High	• Incorporate feral animal control into the Minjar OEMP to reduce impacts on local flora and fauna resulting from feral animal occurrence.	Possible	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
	Disturbance to Aboriginal Heritage Sites	Unlikely	Major	Medium	• Ensure clearing only occurs once the site has been surveyed for Aboriginal heritage significance. • The supervisor of the works shall notify all personnel involved in clearing activities of protected areas and the conditions that apply to each site.	Rare	Major	Medium
Atmospheric Pollution and Noise	Unacceptable levels of noise to neighbouring receptors	Possible	Major	High	• Ensure vehicles, plant and equipment are serviced and maintained to system requirements to avoid unnecessary noise. • Implement noise mitigation measures where appropriate this may include providing hearing protection (mufflers) around areas subject to noise such as machinery. • Where hearing protection is required, signs displaying the symbol for the wearing of hearing protectors as shown in the Australian Standards will be displayed at appropriate locations. • Where practicable, sound-proof areas where personnel spend the majority of the time (e.g. vehicle cabs). • Ensure generators are serviced and maintained to system requirements, to minimise noise. • Conduct blasting only during daylight hours.	Unlikely	Major	Medium
	Unacceptable levels of dust generated that result in vegetation death and	Likely	Moderate	High	• Dust on haul roads, access roads, dump areas and in the pit will be managed via use of a water cart using suitably installed "dribble bars". • Dust suppression will be managed for percussion drilling through water injection and vacuum dust collectors. • All trafficked areas maintained with water carts.	Possible	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
	visual impact.				• All clearing activities will be kept to a minimum wherever practicable to limit the extent of exposed soil surfaces. • Dust generated from winds will be reduced due to the use of cleared vegetation on topsoil stockpiles and the minimisation of the areas cleared for mining. • Establish photographic monitoring points of vegetation adjacent to high dust generating sources. • Implement a dust monitoring program.			
	Excessive Greenhouse Gas (GHG) Emissions	Possible	Moderate	Medium	• Minimising the extent of vegetation clearing as far as practically needed. • Progressive rehabilitation of Project areas as these become available. • Ensuring that all mining equipment, process plant and mobile equipment is regularly maintained and operating efficiently. • Training of staff and contractors in methods to minimise the Project's greenhouse footprint, and to encourage identification of opportunities to increase the efficiency of operations. • Diesel consumption will be monitored during use and reported on through the National Pollutant Inventory (NPI) and National Greenhouse and Energy Reporting (NGER).	Unlikely	Moderate	Medium
	Complaints of atmospheric pollution and noise received	Unlikely	Moderate	Medium	• Continue stakeholder consultation throughout the life of the project. • All complaints regarding excessive air pollution and/or noise generation will be investigated and mitigating	Rare	Moderate	Low

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
	from stakeholders				measures implemented where required.			
Water	Surrounding environment impacted by water abstraction.	Possible	Moderate	Medium	• Ensure appropriate licences are obtained for water abstraction on the site. • No extraction of groundwater beyond that permitted under the water licence. • Develop and revise the Groundwater Licence Operating Strategy (GLOS) as required by the Department of Water. • Continue a quarterly monitoring programme to assess groundwater levels, physical and chemical attributes in accordance with the GLOS. • Incorporate techniques to minimise water use into the Minjar OEMP. • Report annual water use to the Department of Water. • Incorporate management of the production bores into the Minjar OEMP. Include conducting regular inspections of the bores and associated pipelines to ensure any leaks are detected and repaired promptly. • Develop a water balance for the site. • Recycling of process water to offset demands.	Unlikely	Moderate	Medium
	Surrounding environment impacted by discharge of water.	Possible	Moderate	Medium	• Dewatering Silverstone/ Eastern Creek to be used for process water. Dewatering from all other pits to be used for dust suppression. • If a stand pipe is required an appropriately sized lined dam will be constructed that will have animal escape walkways installed. • Pit dewatering pipe lines to be bunded.	Unlikely	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					• Pit dewatering lines that require release valves to drain the line, will be designed so that the water is captured in a sump and not discharged into the native vegetation. • Monitor water quality prior to discharge into the environment. Report in AER and review adequacy of monitoring program annually. • Establish photographic monitoring sites at water discharge points.			
	Contamination of surrounding surface water due to run-off from site.	Possible	Moderate	Medium	• Clean water runoff from the surrounding environment will be diverted away from the mine infrastructure areas to ensure this water does not become sediment laden or contaminated. This water will be directed to sumps and sediment traps prior to discharge. • Stockpiles of surface soils and vegetation debris will be located to avoid impeding on critical surface drainage lines. • Vegetation debris will be incorporated into the post-mine land surface to facilitate infiltration of rainfall and minimise overland flow and potential sediment loss. • Drainage of the working areas, ROM pad, haulage roads, access roads, and waste dumps will be managed via contouring of the ground together with channelling into appropriately located silt traps to ensure silt is not transported into native vegetation areas. • Dammed water will not be allowed to be drained into the native vegetation until sump catchments are	Unlikely	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					constructed. • Ensure all hydrocarbons are stored on site in suitably bunded areas in accordance with Australian Standard AS:1940 and fixed areas where hydrocarbons are to be handled, such as refuelling bays, are also bunded. • Where any hydrocarbons spill occurs, immediately cleaned up with a spill-kit. • Develop a surface water monitoring program. Report in AER and review adequacy of monitoring program annually. • Water that comes in contact with waste material at the landfill site will be retained on site.			
	Contamination of subsurface water sources occurs as a result of activities on site.	Possible	Major	High	• Continue the quarterly monitoring programme to assess groundwater quality around critical infrastructure areas at the site, utilising the network of monitoring bores. Report in AER and review adequacy of monitoring program annually. • Design contaminated water storages to minimise seepage. • Incorporate storage and handling requirements for dangerous goods and hazardous materials into the Minjar OEMP. Include bunding requirements and spill response procedures. • Ensure appropriate licences are obtained for storage and handling of dangerous goods and hazardous materials. • Ensure all hydrocarbons are stored on site in suitably bunded areas in accordance with Australian Standard AS:1940 and fixed areas where hydrocarbons are to be handled, such as refuelling bays, are also bunded. • Stormwater will be diverted away from the tipping area at the landfill site.	Unlikely	Major	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					• Water that comes in contact with waste material at the landfill site will be retained on site.			
Domestic Waste	Contamination of surrounding environment occurs through inappropriate waste disposal.	Possible	Moderate	Medium	• Construct a Landfill Facility with consideration for requirements of the *Environmental Protection (Rural Landfill) Regulations 2002* and in accordance with the DEC Environmental Protection Licence conditions. • Waste storage areas will be appropriately signposted, regularly inspected and kept clean. • Establish a waste segregation and recycling program wherever possible. • Only approved wastes will be disposed into the landfill facility. Wastes such as medical wastes, hydrocarbons and other chemicals will not be disposed of at the facility. • A 3m wide firebreak will be created within the boundary fence of the facility. • Dust suppression techniques, such as the use of a water cart, will be implemented as required. • The waste material will be covered in accordance with Licence conditions. This is to reduce food supply to feral animals (e.g. cats and wild dogs), breeding of insects and minimise the generation of odour. • Adhere to MSDS requirements.	Unlikely	Moderate	Medium
	Contamination of surface and ground water	Possible	Moderate	Medium	• The tipping area will be at least 100m from a surface water body, at least 3m above the highest groundwater	Unlikely	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
	from Rural Landfill Facility				level and not within a 100year, 72hr event flood plain. • Stormwater will be diverted away from the tipping area. • Water that comes in contact with waste material will be retained on site.			
	Contamination of surrounding environment occurs through inappropriate sewage disposal.	Possible	Moderate	Medium	• Sewage disposal from the camp facilities will be treated with the existing facultative lagoon system, approved by the Yalgoo Shire. • Sewage from mine-site based toilet facilities will be stored in septic tanks in accordance with regulatory guidelines, with all piping bunded to ensure non-contamination of native vegetation.	Unlikely	Moderate	Medium
Waste Rock Dumps	Alteration of natural drainage lines causing erosion.	Likely	Moderate	High	• At closure the waste rock dumps will have a concave top surface with appropriate drainage channelling to ensure water does not cause erosion of the outer surface of the dump. • A one metre high berm wall will be constructed around the perimeter edge of the top surface. • During development of the waste dump the area will be bunded to reduce erosion and runoff impact on adjacent areas. • Batter slopes will be contour ripped at two (2) metre intervals. • If any waste rock containing potentially acid forming sulphides require disposal, the dump will be designed and constructed with an encapsulation to contain and prevent acid drainage into the underlying and	Possible	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					surrounding soil. • The waste dump will follow the previous approved designs and according to recommendations of a geotechnical engineer. • The final design of the waste dumps will be in accordance with DMP guidelines to blend in with the natural surroundings and topography. • During rehabilitation of the dump, rain-runoff will be directed into "armoured" drop structures to stop gully erosion. The directed water will flow through silt traps at the base of the dump, before being allowed to flow out into the undisturbed shrubland. The top surface will be cone graded to ensure no pooling of rainwater, ensuring water is directed to the drop structures. • Contouring, ripping and seeding with vegetation top-dress and local provenance species will occur to minimise erosion.			
Tailings Storage Facility	Significant contamination of surrounding environment due to TSF breach or spill	Possible	Major	High	• The TSF lift will be undertaken in accordance with the specifications and drawings. • Construction of the TSF lift will be supervised and monitored by personnel with experience in this type of construction. • A minimum operational freeboard (vertical height between the tailings beach and embankment crest) of 300 mm and a minimum beach freeboard of 200 mm, will be maintained. • Details of the TSF lift will be provided to DMP and DEC in a construction report. • The TSF is managed and operated in general	Unlikely	Major	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					accordance with the TSF Operation Manuals. • In order to recover any seepage losses, seepage trenches and recovery bores have been established. • A groundwater monitoring program associated with the TSF will be continued. • Periodically review TSF system performance against design standard. • Independent TSF audits will be performed on an annual basis.			
Hydrocarbons	Adverse impact on surrounding environment	Possible	Major	High	• Provide a suitable level of training to staff and contractors identified to be involved in hydrocarbon management to ensure they are aware of Minjar's requirements for use, storage and disposal. • Ensure spill response equipment is available and procedures are communicated effectively to staff involved with hydrocarbon use in their work areas. • Development of an incident management system, with corrective action processes, to facilitate continuous improvement of hydrocarbon storage, handling and disposal. • Use self bunded diesel generators to ensure diesel/oil spillage capture. • Maintain bund and collection sump at the vehicle refuelling area. • Develop procedures for refuelling of mobile equipment. • All vehicles will be washed in the existing washbay which contains all run-off that is directed to a sump and treated by a triple interceptor pit prior to discharge. • Storage of hydrocarbons to be in accordance with	Unlikely	Major	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					AS/NZS 1940:2004 • Utilise existing self bunded fuel storage tanks at fuel farm. • Oils and lubricants to be located undercover in workshop area on self bunded pallets. • Any requirements to store oils or fuels in drums at the mining areas will be stored in a lined and bunded storage facility. • Any industrial spills, i.e. hydrocarbons, will be collected, together with the contaminated soils and stored in a bunded area for further processing. • An inventory of hydrocarbons and quantities will be maintained and reported to the appropriate authority, as required. • Regular inspections of storage areas will be conducted to identify any leaks or issues with hydrocarbon storage areas. • MSDSs will be located at storage areas and will be regularly maintained. • Recycle waste oil and oily rags wherever possible. • Develop a bioremediation facility to treat contaminated soil in situ.			
Hazardous Substances/ Dangerous Goods	Contamination of the environment resulting from inappropriate storage of hazardous substances.	Possible	Major	High	• Develop procedures on the handling and storage of dangerous goods on site, incorporating spill response requirements. • Provide a suitable level of training to staff and contractors identified to be involved in dangerous goods use, storage and disposal to ensure they are aware of Minjar's requirements and procedures. • Specifically designed, labelled storage areas will be identified and installed, with consideration to	Unlikely	Major	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					segregation requirements. • All dangerous goods will be stored in these storage areas at the process facility. • Explosives will be stored in accordance with appropriate regulations governing these materials. • A stock inventory will be maintained. • Appropriate fire response equipment will be located near storage areas. • Regular inspections of storage areas will be conducted. • Fuel will be stored in a bunded facility in accordance with DMP guidelines. • Any inherited used oil drums and any other material contaminated by hydrocarbons (filters, rags etc) will be relocated and stored in a bunded storage area. • Filters, rags and other contaminated items will be placed in lined, self bunded containers. • All waste hydrocarbons, batteries and coolants will be temporarily stored at the waste disposal site before being removed from site by a licenced recycler/reprocessor.			
	Contamination of the environment resulting from inappropriate transport of dangerous goods and hazardous	Possible	Major	High	• Diesel will be transported to the individual mining areas via a service truck. • If a leak is detected, emergency maintenance will be carried out in the mining area to allow the safe transportation of equipment back to the maintenance workshops located next to the process facility. • Explosives will be transported in accordance with appropriate regulations governing these materials.	Unlikely	Major	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
	substances.							
	Contamination of the environment resulting from inappropriate disposal of hazardous substances.	Possible	Major	High	• Disposal of dangerous goods and hazardous materials will be in accordance with MSDSs and any requirements from DEC.	Unlikely	Major	Medium
Soil	Topsoil which is not viable for use in rehabilitation.	Possible	Moderate	Medium	• Selective excavation will take place to ensure the topsoil is suitable for rehabilitation. • Ensure the surface 80cm of soil is segregated as a growth media (10 cm topsoil and 70 cm subsoil). • The topsoil will be placed in stockpiles not exceeding 1.8 m in height to minimise risk of erosion and loss of seed viability • Wherever practical topsoil will be stockpiled as near as possible to where it will be ultimately placed. • Drainage will be developed around the stockpile area to ensure minimum loss of topsoil during storm/rain events. • Ensure an inventory of stockpile volumes is undertaken. • Incorporate monitoring of stockpiles for water and wind erosion into the Minjar OEMP and implement	Unlikely	Moderate	Medium

Aspect	Impact	Likelihood	Consequence	Risk Rating	Management Strategy	Likelihood	Consequence	Residual Risk Rating
					immediate mitigation measures as required.			

3.1.3 Biological Impacts

3.1.3.1 Flora

A number of vegetation and flora surveys have been completed for the Minjar tenements, identifying all Threatened and Priority Flora that potentially occur within the Project areas. Population records for the DRF *Stylidium scintillans* do not coincide with development areas in this referral and will not be impacted.

Populations of Priority species were identified and confirmed through targeted flora searches. Population estimates and expected impacts on Priority Flora are contained within Section 2.1.4 above. Clearing will be minimised to limit impacts to Priority species.

The potential impacts on vegetation communities are discussed above in section 2.1.5 which shows the relative impacts on community by prospect.

The vegetation condition is recorded above in section 2.1.6. Much of the vegetation that is proposed to be cleared is known to be in Completely Degraded or Poor condition.

New VCPs will be sought for clearing areas that have not yet been approved.

3.1.3.2 Fauna

Targeted searches for fauna of conservation significance revealed Malleefowl habitat both inside and outside the Project areas.

Any active Malleefowl mounds or those that may be used in the future will be buffered and management actions put in place to prevent disturbance of the mounds where possible. Old/inactive mound sites that have the potential to be used in the future i.e. those that have maintained their structural integrity, will be buffered from disturbance activities where possible.

In order to prevent potential fatalities to Malleefowl the following management strategies will be implemented:

- Traffic speeds lowered in vicinity of recorded mounds and signage installed to show motorists of potential for Malleefowl to inhabit the area.
- Driving off tracks when unauthorised is prohibited.
- Vehicle movements are limited to authorised vehicles and scheduled operations except in the occurrence of emergency management.
- Existing mounds surveyed annually for evidence of use.
- Time activities such as clearing and ground disturbance to coincide with the non-breeding season, to ensure that minimal disruption to Malleefowl is likely during the breeding season.

- Disturbance of old/inactive mounds to be avoided and buffered by at least a 50 m no disturbance zone where possible.
- Avoid disturbance of any actively used mound with a buffer of 250 m where possible.
- Where disturbance of a Malleefowl mound is unavoidable, undertake development with regard to advice from the DEC.
- Malleefowl identification training to be conducted during induction of staff and contractors
- Sitings of Malleefowl to be recorded.
- Any discovery of previously unrecorded Malleefowl mounds to be recorded.

No primary or secondary evidence of habitation by *Egernia* was found within the proposed development areas despite significant trapping effort. Any habitat that is considered suitable for *Egernia* will be retained where possible and if within a disturbance area, hollow log habitat will be moved to adjacent areas deemed suitable for potential rehabitation.

3.1.3.3 Ecosystems

No TECs have been found within the project areas.

The PEC, Minjar/Gnows Nest BIF formation vegetation assemblies is known from the Minjar region. There is a small section of BIF outcropping in the far north-east corner of the Windinne Well survey area defined by the S12 vegetation community mapped by Mattiske (2009a). The area of the S12 vegetation community identified in the northeast corner of Windinne Well has been protected, where possible, through a condition on VCP CPS 5188/1, assessed by DMP and approved after advice from DEC.

The remaining activities in the Project area are proposed in the flats/ plains and do not appear on upper slopes and hill-tops where BIF is likely to occur. Analysis of the location of PECs and their buffers in relation to the Project disturbance footprint is undertaken above in Table 2-4.

3.1.3.4 Land Clearing

Land clearing activities associated with the Minjar Gold Project are considered below against the ten clearing principles outlined in Schedule 5 of the *Environmental Protection Amendment Act*, which address issues associated with biodiversity, land degradation and ground and surface water quality.

(1)Native vegetation should not be cleared if it comprises a high level of biological diversity.

Minjar Gold Project tenements relevant to this application are situated along a north-south corridor approximately 50 km in length. Tenements are linked by an existing haul road. Biologically diverse ecosystems with high levels of endemism occur 50 and 75 km

to the south-east of the southernmost tenements at Mount Singleton and Mount Gibson respectively; approximately 25 km to the west of the southern end of the tenements in the Karara Station Blue Hills district; approximately 30 km east of the southern end of the tenements in the Gnows Nest Minjar Hills locality. The area lies within the south-west centre of diversity for Acacias and the Central Yalgoo centre of endemism for Acacia species is located adjacent to the tenements to the east (Gonzales-Orzoco *et al*. 2011).

Proposed vegetation clearing refers to expansion of existing pits and development of new pits, however many transport corridors and infrastructure are already existing and permits have historically been issued to clear areas adjacent to the current proposed sites. The biologically significant areas of Mount Singleton, Mount Gibson and Karara Blue Hills are adequately distant and separated by landscape barriers not to be impacted by proposed clearing.

The south-west centre of diversity for Acacia species runs from west of Esperance on the south coast to south of Shark Bay in the north, and is the largest of Australia's three centers for Acacia diversity. The proposed clearing is small enough to have a negligible impact on the diversity of this vast area. The area is however, immediately adjacent to the Central Yalgoo centre for endemism of Acacia species, where, out of 45 species of Acacia in the area, ten are classified as regionally endemic and another ten are locally endemic. Three species with the most limited range in this centre are *Acacia diallaga* (P2), *A. sulcaticaulis* (P1) and *A. woodmaniorum* (T). The ranges of these species are centred around the Mount Gibson and Mount Singleton localities. *Acacia woodmaniorum* (T) was not identified in the flora searches conducted at Minjar Gold tenements by APM in 2011 or 1012, or in any of the other numerous flora searches conducted at the tenements historically. More than 1100 individuals of *Acacia sulcaticaulis* (P1) from 157 records were found adjacent to the Trench/Camp prospect, with less than one percent expected to be cleared as a result of this proposal. Over 1300 individuals of *Acacia diallaga* (P2) were found in the Trench/Camp and Highland Chief/Bobby McGee and Mugs Luck prospects from over 320 records. It is expected that approximately 44 percent of the *Acacia diallaga* population will be cleared under this proposal; however, it is known from 13 FloraBase records in the neighbouring Karara Station and on the Warriedar Pastoral Lease and so it is not expected to be a significant impact to the regional population.

Potential impacts to Priority Flora are contained in Section 2.1.4 and Tables 2-5 and 2-6 above. It shows that where Priority Flora are found from isolated areas, most often small numbers are being cleared. Where Priority Flora have a broad distribution across the Project area, they will often be cleared in (relatively) greater numbers, as they can occur as dominant taxa within their stratum (i.e. *Micromyrtus trudgenii* (P3) and *Drummondita fulva* (P3). There is unlikely to be a significant regional impact to the

populations of any of the 11 Priority Species identified in development areas and any impact is unlikely to affect their conservation status.

There is a small section of banded ironstone outcropping in the far north-east corner of the Windinne Well survey area. Although none of the declared rare or Priority Flora endemic to BIF of the region were present at the time of survey in November 2011, this outcropping can be seen as potential habitat for these species. This outcropping will not be disturbed and a 50 m buffer of intact vegetation will be preserved around it.

The proposed developments are not likely to be at variance with Principle 1.

(2) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The results of an extensive desktop review of the Naturemap, EPBC Protected Matters and Atlas of Living Australia databases, and from Bamford (2003), show that two conservation significant species, the Western Spiny-tailed Skink and the Malleefowl could potentially inhabit the proposed Minjar Gold Project area. If present, the impact to these species is considered to be low as the habitat within the area is well represented in the local region and therefore would not be considered necessary for the maintenance of these species.

Searches of the all the prospects have revealed some potential habitat for both species however the most likely habitat for *Egernia* was intensively trapped and no primary or secondary evidence of *Egernia* was found.

Grid searches undertaken in November 2011 and August-October 2012 and a desktop review of Malleefowl mound records found two active Malleefowl mounds, 22 old or inactive Malleefowl mounds and 38 historic Malleefowl mound sites that had lost their structural integrity (APM 2011b; 2012b). The Malleefowl habitat was widespread throughout the Minjar tenements. Active and old/inactive mounds will be buffered from development wherever possible to reduce impacts.

No evidence of *Idiosoma nigrum* was found in the proposed clearing areas and a risk assessment of the known habitat of the proposed development indicated that there was a low risk of clearing habitat that would support *Idiosoma nigrum*.

Clearing for the proposed developments is not expected to be at variance with Principle 2.

(3) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

No Threatened flora species listed under the EPBC Act were detected in any of the proposed disturbance footprint.

The DRF, *Stylidium scintillans*, has been identified as occurring at Minjar Gold tenements, however, none of the recorded locations occur within the disturbance footprint of the Project area and are of sufficient distance that secondary impacts to the species are unlikely. There was no *Stylidium scintillans* habitat identified in flora and vegetation surveys undertaken at the prospects under consideration. There is no vegetation to be cleared under this referral that is likely to support DRF.

Desktop and field studies have identified 52 species of Threatened and Priority Flora that may occur within the Project area. Of the 52 species, it is predicted that the disturbance footprint may cause impacts to 11 Priority Flora species. Of the 11 Priority species expected to be impacted, all except the *Acacia subsessilis* (P3), G*revilla subtiliflora* (P3) and *Gunniopsis propinqua* (P3) are found in multiple areas of the Minjar Gold tenements.

The proposed clearing of *Acacia subsessilis* (P3), G*revilla subtiliflora* (P3) *Gunniopsis propinqua* (P3), *Acacia diallaga* (P2), *Acacia karina* (P2) and *Chamelaucium sp. Yalgoo* (P1) will have a localised impact within their immediate populations. It is, however, unlikely to have a significant impact on the regional populations or to change the conservation status of these species

Local impacts on *Drummondita fulva* (P3), *Grevillea globosa* (P3), *Grevillea scabrida* (P3) *Micromyrtus trudgenii* (P3) and *Persoonia pentasticha* (P3) are expected to be minor and will not comprise a significant regional impact on these species and is unlikely to change the conservation status of these species.

Thereby the proposed developments are unlikely to be at variance with Principle 3.

(4) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

No TECs are present in the tenements proposed for clearing as part of this proposal. PEC's found in the district are groundwater faunal assemblages and BIF associated vegetation assemblies. There is a small amount of BIF outcropping in the north east corner of Windinne Well tenement and, as it is stated in (1) above, this will be retained intact with a 50 m buffer. No BIF outcropping was recorded at any of the other prospects under consideration.

Therefore the proposed developments will not be at variance with Principle 4.

(5) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

The areas applicable to this application for vegetation clearing are situated in the central part of the Yalgoo Bioregion. The Avon Wheatbelt Bioregion boundary, 50 – 80 km to the west, marks the boundary of extensive agricultural clearing, with the Yalgoo Bioregion host to the less intensive industry of rangeland grazing and more recently, mining. At 2006, 61 % of Yalgoo's 50,575 km2 was under pastoral lease, and as of 2008 22.8 % was in the conservation estate. The major cause of vegetation clearing in the region is from mining, and from a regional perspective, these areas are very small. No area proposed to be cleared in this application could be considered significant remnant vegetation.

The proposed development will not be at variance with Principle 5.

(6) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

The closest wetlands to the Minjar Gold Project tenements are Lake Moore 50 km south west, Mongers Lake 50 km to the south east and Weelhamby Lake 50 km to the west. These were not identified as Wetlands of National Significance and clearing at Minjar Gold Project will have negligible effects on these wetlands.

Watercourses in this area are scarce and surface water flow following precipitation predominantly occurs as sheet flow. However, two vegetation communities were recognised as being in association with a water course within the Riley disturbance footprint. These communities formed riparian woodland and forest and include Mulga Low Forest, classified and described as - aaMLF1 – *Acacia ayersiana* low forest, over *Acacia ramulosa* (*Acacia burkittii*), *Dodonaea inaequifolia*, *Scaevola spinescens* scrub over open tussock grassland (0 ha expected to be cleared); and vegetation community elsOW, *Eucalyptus loxophleba* subsp. *supralaevis* open woodland over *Ptilotus obovatus* and *Solanum lasiophyllum* shrubland over mixed *Chenopodae* low shrubland over scattered seasonal herbs (1.11 ha expected to be cleared from a total of 32.22 ha).

Vegetation communities W6 and T6 identified by Woodman (2003) were described as being surface water dependent. Approximately 2.86 ha of vegetation community T6 out of 7.8 ha is proposed to be cleared at the Mugs Luck prospect, however no W6 vegetation community is expected to be cleared. Vegetation community T6 appears in other areas of Minjar tenements, outside of the Project area.

Given appropriate design and management, the proposed developments should not be at variance with Principle 6.

(7) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

All vegetation clearing will be carried out in a manner that enhances restorative capacity of the land, and minimises unnecessary land degradation.

The minimum possible clearing is undertaken to achieve the necessary mining outcomes. Good planning and site management reduced the risk of excessive clearing. In particular:

- Woody vegetation cleared and stored in wind rows for use in restoration.
- Topsoil cleared to a maximum of 10 cm and stored in stockpiles no greater than 1.8m high, and not combined with materials from greater depths. Topsoil to be stored for the minimum possible time period.
- Subsoil from 10cm-80cm will be stockpiled separately from the topsoil for use in rehabilitation activities.
- Engineering solutions will be used where necessary to prevent wind and water erosion of post clearing surfaces.
- Bund walls will be used to inhibit surface water flows moving in and out of cleared areas, and to protect patches of remnant vegetation within the clearing envelope.
- Weed management actions to prevent infestation, identify infestations quickly should they occur and respond rapidly to contain an infestation once identified.

The soils of the Minjar prospects are classified as a medium sandy soil. Based on geochemical analyses the soil is mineral and carbon enriched and as such is classified as a Class 7 soil, suitable for vegetation regrowth when reseeded. Particle size distribution and Emmerson aggregate tests show no evidence for fines dispersion with the classification of the topsoil ranked as Category 2 (non-dispersive) with minimal sand grains of silica or gypsum developed less than 1 mm. The soil contains no hazardous chemical components and is therefore not likely to contribute to appreciable land degradation.

The development proposal will not be at variance to Principle 7.

(8) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Almost 23 percent of the Yalgoo Bioregion (approximately 11,500km2) is in the conservation estate, and includes areas immediately adjacent to the Minjar project tenements in the Warriedar and Lochada Pastoral Leases. Provided appropriate management and due care is taken, the clearing proposed (374.02 ha) will not

constitute a significant risk to the environmental values of these or any other conservation areas.

This development is not at variance with Principle 8.

(9) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Appropriate surface water and land management will occur as outlined in (7), prohibiting the movement of turbid or erosive surface flows. At the local scale, vegetation removal is likely to increase deep drainage of water into below ground storage, as removal of stored soil water by plants is ceased. This is unlikely to have a negative impact on below ground water sources.

The proposed development is unlikely to be at variance with Principle 9.

(10) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

No such consequences are anticipated from the clearing proposed in this application as clearing is not within or adjacent to significant surface water catchments or drainage lines.

The proposed development is not expected to be at variance with Principle 10.

3.1.3.5 Management strategies

To ensure the impacts on the biological environment are minimised, management measures will be incorporated into the Minjar Operational Environmental Management Plans (OEMPs). Table 3-3 identifies specific management strategies that will be implemented.

Table 3-3: Specific management strategies in relation to biological impacts to be adopted at Minjar

Phase of Project	Management Strategy
Planning and Design	• Minimise clearing requirements . • Pre-existing haul roads and access tracks will be used or upgraded where possible to minimise clearing and thus interference with existing drainage patterns. • Ensure all required licences and permits have been obtained prior to clearing activities commencing. • Incorporate clearing management into the Minjar OEMP. Include prevention of unauthorised clearing. • Ensure clearing only occurs once the site has been surveyed for Aboriginal heritage significance. • The supervisor of the works shall notify all personnel involved in clearing activities of protected areas and the conditions that apply to each. • Machinery operators will discuss clearing requirements with Supervisors prior to commencing the work.

Site Preparation	• All native vegetation within the project area that may potentially be disturbed must be surveyed prior to any disturbance. This includes intense localised disturbance that occurs when exploration targets move into the drilling for resource definition and production phases. • Prior to clearing being conducted an internal Environmental Clearing Permit (ECP) will be completed. • Areas to be cleared will be adequately marked to ensure only the required clearing is undertaken. Pre and post clearing inspections will be undertaken by the site environmental representative. During the pre-clearing inspection the area will be searched for Malleefowl mounds. • In the event that new populations of Priority Flora are identified within planned areas of disturbance, liaison with the DEC will be undertaken. • Only clear areas necessary for efficient and safe operations. Clearing operations are to be staged where possible. • To avoid weed issues, machinery and vehicles used to conduct clearing will be inspected for weeds and cleaned where appropriate prior to commencement of works. • No burning of vegetation spoil is to occur. • Vegetation that is to be removed shall be either directly placed on disturbed areas to reduce erosion or stockpiled in one centralised location for later use in rehabilitation. • Cleared vegetation shall be stockpiled at a safe distance from streams/creeks. • The topsoil stockpile area will have an appropriate drainage system in place to ensure minimum loss of topsoil during storm/rain events. • Topsoil and vegetation storage stockpiles will be signed when formed, with access prohibited via bunding, until rehabilitation works are required. • Topsoil stockpiles will not be used for any purpose other than rehabilitation. • Conduct clearing in a manner that facilitates the re-use of surface soils and vegetation debris for rehabilitation activities. • Planning for soil management should see that surface soil is utilised between 1 and 5 years after removal, wherever possible. • Stockpiles of surface soil and vegetation debris will be located to avoid impeding on critical surface drainage lines.
Post Clearing	• Following disturbance, cleared areas and stockpiles will be surveyed, documented on the Site Plan and reported in the Annual Environmental Report (AER). • All tracks shall be rehabilitated if not required for ongoing operations. • Bare, compacted soils and previously disturbed areas that are not needed shall be ripped and re-contoured in order to promote seed germination.
Construction	• All temporary construction infrastructure and facilities will be removed for rehabilitation • Incorporate weed management and feral animal control into the Minjar OEMP to maintain and enhance the condition of fauna habitat on the site and reduce predation impacts. • Include fire management into the Minjar OEMP to ensure wildfire impacts to threatened species are minimised. • Include retention of microhabitats into Minjar OEMP.
Operations	• Where exposed areas are presenting signs of wind or water erosion, measures such as surface water management and dust suppression techniques will be implemented to reduce impacts. These measures are discussed further in the following sections. • Collect inherited localised topsoil dumps and store the soil in the newly formed central storage area. • Topsoil movement will be managed so as to minimise distance moved outside the proposed cleared areas. This will minimise degradation of the growth medium and therefore assist in achieving the final rehabilitation commitments. • Vehicle traffic will be limited to the use of designated roads only. • Weeds to be monitored and a wash-down bay maintained to wash down vehicles to prevent weed spread. • Incorporate weed management and feral animal control into the Minjar OEMP to maintain and enhance the condition of fauna habitat on the site and reduce predation impacts. • Include fire management into the Minjar OEMP to ensure wildfire impacts to threatened species are minimised. • Integrate retention of microhabitats into Minjar OEMP.

	• Ensure appropriate management of exploration activities are integrated into the Minjar OEMP so topsoil is segregated for drill pad rehabilitation, drill holes are capped immediately following drilling, sumps are ramped to allow fauna egress, drill bags and rubbish are removed from the site and rehabilitation is undertaken within 6 months of exploration programmes being completed. • An electronic database documenting all areas of ground disturbance (historic and current) across the Minjar tenements is to be compiled and regularly updated. A site overlay map displaying all disturbed areas may then be produced. - An audit of all areas of disturbance to be conducted to determine rehabilitation status. - Areas in need of rehabilitation to be included in Rehabilitation Annual Planner.
Habitats of Conservation Significance	• Manage and monitor impacts on Priority Flora species within the Minjar Operations area. • The location of populations of Priority species and significant vegetation communities occurring on the Minjar tenements will be recorded using GPS (by contract botanists) and added to a site-wide GIS. • Annual observations will also be recorded on the general vigour or health of the vegetation and vigour of specific individuals, signs of dust impact, and any potential impacts from saline water. • Prior to clearing a specific area, a fauna specialist will be required to inspect the area for Malleefowl mounds. Clearing in relation to a Malleefowl mound will be in adherence with conditions in the relevant VCP. • Areas of native vegetation not directly disturbed by operations within the Minjar tenements will be protected as much as practicable. Key strategies will include: a) Reducing vehicle access, except the minimum required for effective management, including fire control. b) Making new staff aware of the policy of protection of native vegetation, and the associated conditions of access, through site inductions. Staff with responsibilities for activities that have potential to directly impact on native vegetation, will be given a tour of the site to ensure a more thorough and detailed understanding of the vegetation's conservation significance. c) Acquiring appropriate clearing permits prior to any removal of vegetation. d) The Mine Manager will be responsible for ensuring that management actions are carried out, and controls on access are enforced.
Dust Generation	• Integrate dust management into the Minjar OEMP, including inspection and notification requirements and suppression techniques to be employed (primarily water spray). • Develop a dust monitoring program, including establishment of photographic vegetation monitoring points.
Staff Management/ Training/Awareness	• Ensure all staff are appropriately inducted and trained in the environmental aspects applicable to their positions. • Ensure clearing and habitat preservation are included in training and induction programs. • Ensure employees and contractors are informed of the conservation values of the flora and vegetation of the area and relay the intent and key strategies of the management plans. • Establish a system to monitor compliance with environmental requirements. • An Environmental Incident Form must be completed for any incident which disturbs vegetation. Management plans will be reviewed to minimise the re-occurrence of environmental incidents. An Incident Reporting protocol is included in the site Environmental Management System (EMS).
Closure	• All temporary infrastructure and facilities will be removed for rehabilitation following construction activities. • Conduct progressive rehabilitation and develop revegetation strategies and appropriate completion criteria throughout the life of the project. • Investigate regeneration and seed ecology of species if completion criteria are not being achieved in rehabilitation.

3.1.4 Water Management

Water management will be an important component of the Minjar Gold recommencement and expansion project.

The Project will abstract groundwater in order to supply water for potable usage, for process water, to dewater pits and for dust suppression. Minjar Gold will seek to amend their current groundwater abstraction licence GWL169526(3) and subsequently amend the Groundwater Licence Operating Strategy (GLOS) as required. Compliance with the groundwater abstraction licence will require monitoring, including recording static water levels (SWL), volumes abstracted both annually and monthly, water quality monitoring and reporting to the Department of Water and in the Annual Environment Report (AER).

Where production bores are required their construction will be licenced under Section 26D of the *Rights in Water and Irrigation Act* 1914.

Mine dewatering will be managed with regard to Mining and Mineral Processing Water Quality Protection Guideline No. 11 – Mine Dewatering (Water and Rivers Commission and Department of Minerals and Energy, 2000). Water will be used for processing ore and dust suppression. Any remaining water will be directed to disused pits if available or alternatively to a sump adjacent to the pit from which water will both evaporate and seep back into groundwater. Saline water will be managed to ensure that if used for dust suppression it has minimal impact on surrounding environment including vegetation and soils.

Surface water runoff from the surrounding area will be diverted away from mining development areas to ensure water does not become sediment laden or contaminated. Surface water runoff from within mining development areas will be directed to sumps/sediment ponds designed to contain water from a 1:100 year 72 hour rainfall event for an appropriate duration before discharging to the environment.

Surface water monitoring will take place in accordance with the draft program presented in the Minjar Gold Surface Water Assessment (SWC, 2012) (Appendix 35). This requires opportunistic monitoring during rainfall events that result in surface water flows in undeveloped and developed areas including discharge points from mining infrastructure areas.

A range of measures will be undertaken to minimise potential contamination of ground or surface waters at the Minjar Gold Project. These include suitable bunding of hydrocarbons, dangerous goods and hazardous substances, diversion of water away from tipping areas at the landfill and water that comes into contact with waste at the landfill will be retained on-site.

A range of management strategies are outlined in Table 3-4 to ensure that impacts from water abstraction, discharges to the surrounding environment, runoff and contamination are minimised.

Table 3-4: Water management strategies to be adopted at Minjar Gold Project

Aspect	Management Strategy
Abstraction	• Ensure appropriate licences are obtained for water abstraction on the site. • No extraction of groundwater beyond that permitted under the water licence. • Carry out regular monitoring of water supply sources as required under Department of Water licencing and in accordance with the Groundwater Licence Operating Strategy (GLOS), to minimise impact on the environment. • Continue a monthly monitoring programme to assess water levels associated with the production bores and report in AER. • Incorporate minimisation techniques for water use into the Minjar OEMP. • Report annual water use to the appropriate Regulatory Authorities. • Incorporate management of the production bores into the Minjar OEMP. Include conducting regular inspections of the bores and associated pipelines to ensure any leaks are detected and repaired promptly. • Recycling of process waters to offset demands.
Discharge	• If water is required to be pumped from the pit during mining operations, the water will be pumped into a disused pit if available. A sump will be constructed if an old pit is not available. • If a stand pipe is required an appropriately sized lined dam will be constructed that will have animal escape walkways installed. • The use of saline water for dust suppression will be strictly controlled to minimise damage to any native vegetation. Measures to achieve this will include: - Appropriate design of future roads and drainage systems to safely contain saline run-off. - Run-off from mine roads will be contained and directed away from any priority flora to a location which minimises potential seepage impacts on native vegetation. - A clear emergency response procedure for spills. - Excavation and appropriate disposal of affected soils. • Training procedures for water truck operators which reinforce the importance of minimising salt water impacts on vegetation. • Pit dewatering pipe lines will be bunded due to salinity of the water. • Pit dewatering lines that require release valves to drain the line, will be designed so that the water is captured in a sump and not discharged into the native vegetation. • Establish photographic monitoring sites at water discharge points. • Monitor water quality prior to discharge into the environment. Report in AER and review adequacy of monitoring program annually.
Run Off	• Water runoff from the surrounding environment will be diverted away from the mine infrastructure areas to ensure this water does not become sediment laden or contaminated. • Stockpiles of surface soils and vegetation debris will be located to avoid impeding on critical surface drainage lines and diversion bunding will be installed around stockpiles to direct sheet flows as necessary. • Vegetation debris will be incorporated into the post-mine land surface to facilitate infiltration of rainfall and minimise overland flow and potential sediment loss. • Drainage of the working areas, ROM pad, haulage roads, access roads, and waste dumps during flooding events will be managed via contouring of the ground together with channelling into appropriately located silt traps to ensure silt is not transported into native vegetation.
Contamination	• Continue the quarterly monitoring programme to assess groundwater quality around critical infrastructure areas at the site, utilising existing monitoring bores. Report in AER and review adequacy of monitoring program annually. • Establish a surface water monitoring program. Report in AER and review adequacy of monitoring program annually. • Incorporate storage and handling requirements for dangerous goods and hazardous materials into the Minjar OEMP. Include bunding requirements and spill response procedures. • Ensure appropriate licences are obtained for storage and handling of dangerous goods and hazardous materials. • Ensure all hydrocarbons are stored on site in suitably bunded areas and fixed areas where hydrocarbons

are to be handled, such as refuelling bays, are also bunded.

- Stormwater will be diverted away from the tipping area at the landfill site.
- Water that comes in contact with waste material at the landfill site will be retained on site.

3.1.5 Soils

The soils of the Minjar prospects are classified as a medium sandy soil. Based on geochemical analyses the soil is mineral and carbon enriched and as such is classified as a Class 7 soil, suitable for vegetation regrowth when reseeded. Particle size distribution and Emmerson aggregate tests indicate no evidence for fines dispersion with the classification of the topsoil ranked as Category 2 (non-dispersive) with minimal sand grains of silica or gypsum developed less than 1 mm. The soil contains no hazardous chemical components and is therefore not likely to contribute to appreciable land degradation. Topsoils generally go to a depth of 10 cm with subsoils extending to a depth of 80 cm.

To ensure that the rehabilitated land surface following closure does not lead to appreciable erosion and subsequent land degradation, careful design and construction will be undertaken so that sediment loss and erosion is kept to a minimum.

Soil disturbance will occur as a result of constructing haul and access roads, pits ROM pads and waste rock dumps. After clearing, the topsoil and growth medium will be segregated and stockpiled separately to minimise mixing with deeper soil materials. Soil stockpiles will be signposted, inventoried and captured on a GIS site plan.

Stockpiles will be positioned to avoid impeding on critical surface water drainage lines and surface water will be diverted away from stockpiles where necessary with drainage bunding.

Disturbance areas are expected to yield topsoil and growth medium volumes appearing in Table 3-5 below.

Table 3-5: Combined topsoil and subsoil volumes

Deposit	Volume (m^3)
Austin	210,400
Windinne Well	437,600
Silverstone/ Eastern Creek	1,370,400
Monaco	282,320

Deposit	Volume (m^3)
Riley	284,000
Bugeye	438,000
Mugs Luck	407,200
Blackdog	192,800
Highland Chief/Bobby McGee	202,400
Trench	180,000
Camp	170,400

Topsoil and subsoil will be strategically used to cover and stabilise the post-closure land surface. Minimal handling and compaction of topsoil materials will ensure that a vegetation composition and structure is restored that resembles the pre-mine environment.

Where possible landforms will be shaped as low-slope concave surfaces that facilitate sediment deposition. Ripping of landforms along contours will minimise erosion. Vegetation will be placed over the rehabilitated landforms to assist with infiltration of rainfall and minimise the erosive potential of overland flows.

Rehabilitation will be undertaken progressively to ensure that topsoils are reused as quickly as possible after initial disturbance.

Table 3-6 (below) shows the soil management strategies to be adopted at the Minjar Gold Project.

Table 3-6: Soil management strategies to be adopted at Minjar Gold Project

Aspect	Management Strategy
Clearing	• Adhere to clearing principles as outlined above in Section 3.1.3.4 Land Clearing
Storage/Stockpile	• Topsoil will be removed from development areas and placed into the topsoil stockpile. Selective excavation will take place to ensure the topsoil is suitable for rehabilitation. The surface 80cm of soil is segregated as a growth media. • Drainage will be developed to ensure minimum loss of topsoil during storm/rain events. • The topsoil will be placed in dumps not exceeding 1.8m in height to minimise risk of erosion. • Wherever practical topsoil will be placed as near as possible to where it will be ultimately placed. • Ensure an inventory of stockpile volumes is undertaken. • Incorporate monitoring of stockpiles for water and wind erosion into the Minjar OEMP and implement immediate mitigation measures as required. • Diversion drainage will be constructed around soil stockpiles to minimise potential for erosion by surface waters.
Rehabilitation	• All disturbed areas, excluding the open pits, will be rehabilitated by the spreading of topsoil followed by contour ripping and micro-relief ripping then finished with the spreading of stockpiled native vegetation. A re-seeding program of native flora will occur where natural germination rates are not sufficient. • Where possible low-slope concave surfaces will be used which facilitate sediment deposition. • Contour ripping along slopes will minimise erosion. • Vegetation debris will facilitate infiltration of rainfall and minimise overland flow and potential sediment loss. • Rehabilitation will be undertaken progressively with an emphasis placed on the establishment of final forms as soon as practical so as to facilitate the placement of topsoil. • Topsoiled surfaces will incorporate water harvesting structures and be designed to minimise erosion and control water runoff.

3.1.6 Domestic and Industrial Waste Products

Various forms of waste will be produced at the Minjar Gold Project including:

- Putrescibles, plastics, glass and aluminium;
- Paper and cardboard;
- Sewage; and
- Workshop wastes including hydrocarbon waste (oils, oily rags), coolant.

General wastes, such as putrescibles which cannot be recycled, will be deposited in a landfill facility at M1 that has been constructed in accordance appropriate approvals. The landfill will be operated in accordance with the strategies as outlined below and with regard to any DEC Licence conditions. Options for recycling paper, cardboard, plastics, aluminium cans and steel will be investigated and implemented where cost effective and practical.

Sewage is treated through the existing local government approved facultative lagoon system at the camp facility.

Hydrocarbon wastes will be stored in a bunded area until they can be removed by an approved contractor for recycling or disposal.

An inventory of wastes produced at the project will be collated and reported annually to regulatory authorities as required.

Table 3-7: Waste management strategies to be adopted at Minjar Gold Project

Aspect	Management Strategy
Education and Awareness	• Develop a "Reduce, Reuse, Recycle" awareness campaign. • Incorporate waste management into the Minjar OEMP, including staff awareness programs, inspection requirements, storage requirements and waste reduction techniques. • Provide a suitable level of training to staff and contractors specific to their work areas to ensure they are aware of Minjar's requirements for waste collection, segregation, recycling and disposal.
Handling and Storage of Waste Material	• Establish a waste segregation and recycling program wherever possible. • Landfill Facility to be registered/ licenced in accordance with the DEC Environmental Protection Licence conditions. • Waste storage areas will be appropriately signposted, regularly inspected and kept clean. • Adhere to MSDS requirements. • Domestic non-toxic waste will be stored at the project's central landfill location at the ore treatment facility, with no smaller landfills formed at the particular mining centres. • Sewage from the processing plant and office toilet facilities will be stored in buried septic tanks in accordance with regulatory guidelines, with all piping bunded to ensure non-contamination of native vegetation.
Management of Landfill Facility	• The landfill facility will be managed in accordance with requirements of the DEC Licence for Prescribed Premises. • Only approved wastes will be disposed into the landfill facility. Wastes such medical wastes, hydrocarbons and other chemicals will not be disposed of at the facility. • The facility will be fenced to prevent stock access. • Wastes will not be disposed within 35m of the boundary fence. • A 3m wide firebreak will be created within the boundary fence of the facility. • Fire management at the landfill facility will be included in the Site Emergency Response Plan, or equivalent. • The tipping area will not be greater than 30m in length or 2m above ground level in height. It will also be at least 100m from a surface water body, at least 3m above the highest groundwater level and not within a 100year, 72hr event flood plain. • Stormwater will be diverted away from the tipping area. • Water that comes in contact with waste material will be retained on site. • Dust suppression techniques, such as the use of a water cart, will be implemented as required. • The waste material will be covered in accordance with the Licence conditions. This is to reduce food supply to feral animals (e.g. cats and wild dogs), breeding of insects and minimise the generation of odour. For the Minjar Mine Site it is anticipated that waste pits will be covered at least monthly.
Monitoring	• Waste storage areas will be regularly inspected and kept clean.
Reporting	• An inventory of waste products and quantities will be maintained and reported to the appropriate authority, as required.

3.1.7 Waste Rock Management

Waste rock dumps will be developed adjacent to the proposed open pits. Waste rock dumps will be designed in accordance with materials characterisation and will follow the previous approved designs which have been reviewed by Peter O'Bryan and Associates (2012b). The proposed dumps will be restricted to 30m above natural surface.

The waste rock dumps will have a concave top surface with appropriate drainage channelling to ensure water does not cause erosion of the outer surface of the dump. A one metre high berm wall will be constructed around the perimeter edge of the top surface. During development of the waste dump the area will be bunded to reduce erosion and runoff impact on adjacent areas. Batter slopes will be contour ripped at two (2) metre intervals.

Waste characterisation is currently underway and although the majority of deposits are anticipated to be comprised of material that is non-acid forming, if any waste rock containing potentially acid forming (PAF) sulphides is identified, a containment cell will be constructed within the waste rock dumps with a low permeability layer to encapsulate PAF waste, to minimise percolation of water and reduce the potential for oxidation of sulphidic material.

During rehabilitation of the dump, rain-runoff will be directed into "armoured" drop structures to stop gully erosion. The directed water will flow through silt traps at the base of the dump, before being allowed to flow out into the undisturbed shrubland. The top surface will be cone graded to ensure no pooling of rainwater, but that it will be directed to the drop structures. Contouring, ripping and seeding with vegetation top-dress will occur to minimise erosion.

Table 3-8 contains strategies to manage the waste rock dumps at the Minjar Gold Project.

Table 3-8: Waste Rock management strategies to be adopted at Minjar Gold Project

Aspect	Management Strategy
Waste Rock Dump Design	• The waste rock dumps will have a concave top surface with appropriate drainage channelling to ensure flood waters do not cause erosion of the outer surface of the dump. • A one metre high berm wall will be constructed around the perimeter edge of the top surface. • Batter slopes will be contour ripped at two (2) metre intervals. • If required a containment cell will be constructed of low permeability materials to encapsulate any sulphidic material to minimise percolation of water and reduce the potential for oxidation of sulphidic material that would lead to Acid Mine Drainage. • The waste dump will follow designs endorsed by Peter O'Bryan and Associates (2012b). • The final design of the waste dumps will be in accordance with DMP guidelines to blend in with the natural surroundings and topography.
Rehabilitation	• The dumps will be constructed with the outer walls being established initially to allow the correct batter slopes to be instituted and topsoil placement and rehabilitation to occur, as soon as practicable. • The waste dumps will be dozed down to a shallow angle, with the berms removed. • Rain-runoff will be directed into "armoured" drop structures to stop gulley erosion. The directed water will flow through silt traps at the base of the dump, before being allowed to flow out into the undisturbed shrubland. The top surface will be cone graded to ensure no pooling of rainwater, but that it will be directed to the drop structures. • Contouring, ripping and seeding with vegetation top-dress will occur as per flat areas.

3.1.8 Tailings Management

The existing TSF located at M1 has a current Works Approval (W4576/2009/1) and an approved Mining Proposal (Reg ID: 24073) for increasing the capacity of the facility by raising the height of the embankment walls. The TSF design and construction proposed in the Works Approval and Mining Proposals will be undertaken prior to recommencement of tailings deposition.

The TSF operations will be conducted in accordance with existing approvals and the TSF Operations Manual (Appendix 36). As a result, no variations to the TSF design or operation are required as part of this referral. The existing approvals and management strategies will ensure groundwater is monitored, freeboard is maintained to prevent overtopping and that inspections are undertaken at the frequency required for safe operation of the TSF.

A report will be lodged with the Processing Manager for any breach of the TSF or embankment failure immediately should it occur. The appropriate regulatory authority will be notified of any vegetation distress or groundwater contamination or for any other reportable incidents. Reports or notifications will be made with regard to the criteria provided by the relevant regulatory authority.

A decommissioning plan has been developed for the TSF as a part of the Mine Closure Plan (Appendix 37). This includes strategies to cap the tailings with mine waste to prevent weathering, to ensure the geotechnical stability of the landform and to enable rehabilitation of landform.

3.1.9 Hydrocarbon Management

The hydrocarbons stored on site will include diesel fuel, oil and lubricants. Diesel fuel will be used for power generation for dewatering bore pumps, back-up power, machinery operation and oils used for equipment maintenance.

Diesel will be stored in existing fuel farm in self-bunded fuel tanks within a lined, bunded enclosure. This facility was approved under previous NOI 3543 and subsequent MP's. The fuel tanks are expected to be refilled approximately once every week by a diesel fuel delivery from Yalgoo. Appropriately registered and qualified fuel transport companies will be used for diesel deliveries with procedures in place. The hydrocarbon storage areas have been designed in accordance with AS/NZS 1940:2004 – The Storage and Handling of Flammable and Combustible Liquids and have Material Safety Data Sheets (MSDSs) located at storage sites. Hydrocarbon management procedures, including incident prevention and management, will also be outlined in the site induction and any personnel involved in the activities will be adequately trained. Refuelling of vehicles from the diesel fuel farm will take place on a concrete bund area with sump. The overflow from the sump will be filtered through triple interceptors fitted with environ filters, or equivalent technology, to ensure no hydrocarbons escape to the environment. The waste oily water will be disposed of by utilising a Specialist Contractor that collects and recycles waste oil and oily water.

Minjar will have a mobile equipment refuelling procedure that will include spill response requirements and will also have spill response kits at designated refuelling areas. Training in spill response will be undertaken for applicable staff. The refuelling area for mobile equipment will be bunded with a catchment sump in one corner.

Oils and lubricants will be located and stored appropriately at the site workshop on bunded pallets. A spill kit will also be available in the workshop area and spill response procedures will be implemented if necessary.

To ensure the impacts from hydrocarbon use are minimized, management measures will be incorporated into the Minjar OEMP. Table 3-9 identifies specific management strategies that will be implemented.

Table 3-9: Hydrocarbon management strategies to be adopted at the Minjar Gold Project

Aspect	Management Strategy
Procedures and Training	• Incorporate hydrocarbon use procedure into the Minjar OEMP as required. • Provide a suitable level of training to staff and contractors identified to be involved in hydrocarbon management to ensure they are aware of Minjar's requirements for use, storage and disposal. • Ensure spill response equipment is available and procedures are communicated effectively to staff involved with hydrocarbon use in their work areas. • Development of an incident management system, with corrective action processes, to facilitate continuous improvement of hydrocarbon storage, handling and disposal.
Refuelling & Washing	• Ensure diesel generators are self bunded to capture incidental diesel/oil spillage. • Maintain bund and collection sump at the vehicle refuelling area. • Develop procedures for refuelling of mobile equipment. • All vehicles will be washed in a bunded and contained area, with run-off being contained in a lined and bunded sump.
Storage	• Storage of hydrocarbons to be in accordance with AS/NZS 1940:2004 • Utilise existing self bunded fuel storage tanks at the fuel farm. • Oils and lubricants to be located undercover in workshop area on self bunded pallets. • Any requirements to store oils or fuels in drums at the mining areas will be stored in a lined and bunded storage facility. • Any industrial spills, i.e. hydrocarbons, will be collected, together with the contaminated soils and stored in a bunded area for further processing. • An inventory of hydrocarbons and quantities will be maintained and reported to the appropriate authority, as required. • Regular inspections of storage areas will be conducted to identify any leaks or issues with hydrocarbon storage areas and maintenance as required. • MSDSs will be located at storage areas and will be regularly maintained.
Disposal	• Recycle waste oil and oily rags wherever possible. • Develop a bioremediation facility to treat contaminated soil in situ.

3.1.10 Dangerous Goods and Hazardous Substances Management

The activities at the Minjar Gold Project require a range of dangerous and hazardous substances to be used at site, mainly associated with the workshop, processing plant and small scale explosives use. Appropriate licences and requirements of the *Dangerous Goods Safety Act* 2004 will be implemented wherever necessary.

Dangerous goods and hazardous substances management as proposed in the original NOI 3543 will be followed as approved.

There is an existing small explosive magazine on site, which will be operated in accordance within the requirements of the *Dangerous Goods Safety (Explosives) Regulations* 2007 and used with regard to the *Mines Safety and Inspection Act* 1994 and *Regulations* 1995.

A fireproof dangerous goods cabinet is installed in the workshop and at the camp facility. These are clearly signposted and are noted on site emergency plans. There is an inventory system in place to record stocks of hazardous material and up-to-date MSDSs kept for all hazardous substances that will possibly be used on the site.

Two hazardous substances used in processing, sodium cyanide and sodium hydroxide, have Safe Operating Procedures (SOP) which include consideration of environmental impacts from any accidental spillage/ leakage. Transport, storage, handling and use of these hazardous substances will be stringently controlled and in accordance with the SOP.

Gas cylinders will be stored in an appropriate dedicated area and procedures in place for the handling and storage of gas cylinders.

All personnel who will handle dangerous goods, hazardous substances, gas cylinders or explosives will all be adequately trained. Specific measures to reduce the impacts dangerous goods on site are included in Table 3-10 below.

Table 3-10: Dangerous goods and hazardous substances management strategies to be adopted at Minjar Gold Project

Aspect	Management Strategy
Use	• Develop procedures on the handling and storage of dangerous goods on site, incorporating spill response requirements. • Provide a suitable level of training to staff and contractors identified to be involved in dangerous goods use, storage and disposal to ensure they are aware of Minjar's requirements and procedures. • Use of hazardous substances (sodium cyanide, sodium hydroxide) restricted to those trained in their use and handling. • Ensure that Safe Operating Procedures are in place for any hazardous substances used at site.
Storage	• Specifically designed, labelled storage areas will be identified and installed, with consideration to segregation requirements. • All dangerous goods will be stored in these storage areas at the process facility. • Explosives will be stored in accordance with appropriate regulations governing these materials. • A stock inventory will be maintained. • Appropriate fire response equipment will be located near storage areas. • Regular inspections of storage areas will be conducted. • Fuel will be stored in the existing bunded fuel farm. • Any inherited used oil drums and any other material contaminated by hydrocarbons (filters, rags etc) will be

	relocated and stored in a bunded storage area. • Filters, rags and other contaminated items will be placed in lined, self bunded containers. • All waste hydrocarbons, batteries and coolants will be temporarily stored at the waste disposal site before being removed from site.
Transport	• Diesel will be transported to the individual mining area via a service truck. • If a leak is detected, emergency maintenance will be carried out in the mining area to allow the safe transportation of equipment back to the maintenance workshops located next to the process facility. • Explosives will be transported in accordance with appropriate regulations governing these materials. • Other dangerous goods or hazardous substances to be transported by accredited transport operator.
Disposal	• Disposal of dangerous goods and hazardous materials will be in accordance with MSDSs and any requirements from DEC.

3.1.11 Atmospheric Pollution and Noise

The nearest pastoral homestead to the Minjar Gold Project is Badja homestead, approximately 25 km to the north-west. Other mining operations in the vicinity of the Project are the MMG Golden Grove Mine 1.3 km to the east of the Austin pit and the Gindalbie Shine Project two km to the west of the M1 tenement. Dust and noise impacts are expected to be low. Atmospheric pollutants such as odours and gas emissions will be negligible. Light sources at the operations, such as pit and processing plant lighting, will not be visible from the Yalgoo – Paynes Find Road and will most likely only result in a "glow" rather than direct light, therefore no light emission impacts are expected.

Mining is to be predominantly carried out by excavators, with minimal drill and blasting as required. Mining of the ore body will be carried out 24 hours per day including the haulage of ore to the ROM pad, crushing and all other mine site activities will be carried out around the clock.

Dust generation will predominantly be associated with crushing, haulage, stockpiling and mining activities. Management measures will however significantly reduce any potential impacts to the surrounding environment. Dust suppression will be carried out on site utilising a water truck. Any areas that have mobile equipment operating and have the potential to create dust will be adequately watered to minimise dust generation. The water truck will also spray water on the ROM and crushed stockpiles if required. Dust suppression systems will exist on the crusher and processing plant to minimise dust at each ore entry, transfer and discharge point. Visual monitoring of dust will be regularly conducted and activities will be halted if adverse conditions lead to excessive dust generation.

To minimise generation of other atmospheric pollutants, plant and equipment will be regularly maintained to ensure they operate at maximum achievable efficiency. The rural landfill site will also be regularly covered in accordance with requirements of the DEC Licencing or registration to ensure excessive odours are not produced.

Specific measures to reduce the impacts from atmospheric pollution and noise on site are included in Table 3-11 below.

Table 3-11: Atmospheric pollution and noise management strategies to be adopted at Minjar Gold Project

Aspect	Management Strategy
Noise	• In accordance with *Mining Safety and Inspection Regulations* 1995, noise levels above 85dB (A) or 140 dB (lin) will be considered as potentially hazardous and appropriate measures will be implement to protect employees in situations where noise of this level is predicted. • The *Environmental Protection (Noise) Regulations* 1997 will be observed in the mining operations with regard to blasting, mining operations, haulage and processing. • Ensure vehicles, plant and equipment are serviced and maintained to system requirements to avoid unnecessary noise. • Implement noise mitigation measures where appropriate; this may include providing hearing protection (mufflers) around areas subject to noise such as machinery. • Where hearing protection is required, signs displaying the symbol for the wearing of hearing protectors as shown in the Australian Standards will be displayed at appropriate locations. • Where practicable, sound-proof areas where personnel spend the majority of the time (e.g. vehicle cabs). • Ensure generators are serviced and maintained to system requirements.
Dust	• Incorporate dust management into the Minjar OEMP, including inspection and notification requirements and suppression techniques to be employed (primarily water spray). • Dust generating activities (such as blasting) will not be undertaken during unfavourable weather conditions. • Dust on haul roads, access roads, dump areas and in the pit will be managed via use of a water cart using suitably installed "dribble bars". • Dust suppression will be managed for percussion drilling through water injection and vacuum dust collectors. • All clearing activities will be kept to a minimum wherever practicable to limit the extent of exposed soil surfaces. • . The use of water carts will reduce the generation of dust from the mining operation. • Carry out progressive rehabilitation of waste dumps, disused tracks and other work areas established for the project to reduce dust emissions. • Establish a system of regular visual monitoring for dust, halt activities if dust exceeds acceptable levels until conditions alter. • Personal dust monitoring of staff members in higher risk work areas to be undertaken as part of the Health Surveillance Program. • Establish photographic monitoring points of vegetation adjacent to high dust generating sources.
Odour	• Waste material will be covered in accordance with licence conditions. For the Project it is anticipated that waste pits will be covered at least monthly.
GHG Emissions	• Minimising the extent of vegetation clearing as far as practically needed. • Progressive rehabilitation of Project areas as these become available. • Allowing cleared vegetation to decompose on rehabilitated sites to slow the release of carbon dioxide rather than burning the vegetation. • Ensuring that all mining equipment, process plant and mobile equipment is regularly maintained and operating efficiently. • Training of staff and contractors in methods to minimise the Project's greenhouse footprint, and to encourage identification of opportunities to increase the efficiency of operations. • Diesel consumption will be monitored during use and reported on through the NPI and NGER where required.
Consultation	• Continue stakeholder consultation throughout the life of the project. • All complaints regarding excessive noise generation will be investigated and mitigating measures implemented where required.

3.2 CONSULTATION

❑ Has public consultation taken place (such as with other government agencies, community groups or neighbours), or is it intended that consultation shall take place?

✓ Yes ☐ No **If yes**, please list those consulted and attach comments or summarise response on a separate sheet.

Table 3-12: Minjar Gold Project Stakeholder Consultation Record

Date	Federal / State / Local Government Department or Company	Person/s	Comms. Method	Topics Covered	Issues Raised	Minjar Response
Standing Weekly Meeting 2012 and 2013	Gindalbie Metals Pty Ltd	Dale Ferguson Various Gindalbie representatives	Meeting	Access, cooperation, feral animal management		On a case by case basis
January 2012	Department of Mines and Petroleum – Environment Assessment	Mitchell Ladyman Sharon Arena Tony Smith Tyler Sudjovic Adam Ashby	Meeting	Mining Proposals and Mine Closure Plans for Minjar Gold Project	Projects requiring new Mining Proposals, Mining Proposal variations and alterations to Mine Closure Plans.	Develop schedule for approvals documents according to advice from DMP
Throughout 2012 and 2013	Hazelwood Resources	Dale Ferguson	Meeting	Discussions with Joint Venture Partners	Joint Venture arrangements with Hazelwood Resources	
April 2012-November 2012	Native Title Claimants	Dale Ferguson Patricia Edwards Widi and Badimia Elders	In person, phone, email	Consultation with the Widi Mob and Badimia People	Areas of Cultural Significance	Survey proposed disturbance areas for areas of cultural heritage significance utilising archaeological and ethnographic consultant in conjunction with members of the Widi and Badimia people selected by Elders.
Throughout 2012 and 2013	Falcon Minerals	Dale Ferguson Falcon Minerals representatives	Meeting	Discussion with Joint Venture Partners	Joint Venture arrangements with Falcon Minerals	
9 July 2012	Department of Environment and Conservation - Geraldton	Dale Ferguson Mitchell Ladyman Melissa Cundy Chris Phoebe Murray Baker	Meeting	Notification of any applications to DMP that involve Warriedar former pastoral lease CPL46 to be provided to DEC Geraldton	DEC Geraldton receiving notifications from DMP regarding Programme of Work applications. To ensure there is no delay in providing advice on applications they need to be provided to DEC at the same time as lodged with DMP.	Noted. Will provide any applications to DEC at or before lodging with DMP
19 July 2012	Department of Environment and Conservation – Environmental Management Branch	Dale Ferguson Mitchell Ladyman Tony Smith Murray Baker	Meeting	DEC requirements for fauna and flora survey	Ensure that fauna and flora survey effort covers known species of conservation significance in the project location and that any areas that are subject to EPA referral have advice on effort from EPA before proceeding.	Contact EPA regarding survey effort required.
3-4 September 2012	Department of Water	Katherine Tutt Tony Smith	Telephone/ Email	Requirements for amendment to 5C licence to extract groundwater for pit dewatering and camp water supply	An amendment submission should be made detailing sites, how much water is to be dewatered, uses of the dewatering water, likely monthly levels of extraction.	Minjar to develop licence amendment submission.
6 September 2012	WA Environmental Protection Authority	Tony Smith Kelly Freeman	Meeting	Delivery of background document on Minjar Gold Project Biological Assessment	To review prior to further meeting to determine level of fauna assessment required.	

Date	Federal / State / Local Government Department or Company	Person/s	Comms. Method	Topics Covered	Issues Raised	Minjar Response
7 September 2012	Department of Mines and Petroleum – Native Vegetation Assessment Branch	Tony Smith Ryan Mincham Lauren Daebritz	Meeting	DMP assessment of Vegetation Clearing Permit applications	DRF, Priority Flora, *Egernia* habitat and Malleefowl mounds are serious factors in assessment of the VCP applications	Ensure that all applications provide adequate detail on the factors raised to enable quick assessment.
September 2012	WA Environmental Protection Authority	Mitchell Ladyman Tony Smith Kelly Freeman John Dell	Meeting	EPA requirements regarding fauna and flora survey effort	Must be a very clear and concise report demonstrating potential and actual habitat and matching habitat types to known fauna species of conservation significance in the area.	Survey to be conducted to standard expected by EPA.
November 28 2012	WA Environmental Protection Authority	Sharon Arena Dale Ferguson Tony Smith Chris Stanley Danielle Griffiths	Meeting	Potential for EPA referral of the Minjar Gold Project	EPA advised that consultation with DMP and DEC were crucial before determining whether EPA referral should take place. EPA displayed preference for DMP assessment process to be followed should DMP and DEC believe that issues associated with the project could be resolved and integrated into Mining Proposal documents.	To seek meeting with DEC to discuss any issues and whether they believed approvals could be handled through DMP assessment processes.
30 November 2012	WA Department of Environment and Conservation	Nicholas Woolfrey	Telephone/ Email	DEC advice on issues related to the Minjar Gold Project and potential for referral.	Minjar want to consult with DEC to ensure that issues raised are addressed in submissions for approval	Set up meeting with DEC
7 December 2012	Department of Environment and Conservation	Sharon Arena Nicholas Woolfrey Dale Ferguson Mitch Ladyman	Meeting	DEC advice on issues related to the Minjar Gold Project and potential for referral.	Minjar want to consult with DEC to ensure that issues raised are addressed in submissions for approval	Minjar left meeting with impression that EPA referral would not be required after discussing the issue with DEC. Minjar to consult on documents through the Mining Proposal development stage of the project.
Late December 2012	Department of Mines and Petroleum – Native Vegetation Assessment	James Best Tony Smith Sharon Arena	Telephone	VCP Applications.	James is tentative about conducting assessment on VCPs when part of the project is being considered for EPA referral. James considered that the whole project should be referred to the EPA not just the Warriedar Pastoral leases as was Minjar's preference.	Minjar want to proceed with assessment of VCP as it has not been referred at this stage.
8 January 2013	Commonwealth – Department of Sustainability Environment Water Population and Communities	Dionne Cassanell	Telephone/ Email	Further information request on Malleefowl mound numbers and locations, Weed management, feral animal control, fire management.	Please provide further information to enable EPBC referral assessment to be finalised.	Minjar to develop mapping and response ASAP.
6 February 2013	Department of Mines and Petroleum – Environment Section	Tyler Sujdovic Dale Ferguson	Telephone	Potential for EPA referral of project.	DMP suggests that the project is likely to be referred to the EPA if it triggers any of the items in the Memorandum of Understanding (MOU)between DMP and EPA. Minjar can always self-refer.	
6 February 2013	Department of Environment and Conservation	Sharon Arena Nicholas Woolfrey	Telephone	Potential for EPA referral of project	DEC believe that the whole of the Minjar Project should be referred to EPA for 3 reasons. 1. Cumulative impacts on the conservation estate from mining in the region. 2. Legacy issues from post-mining affecting the conservation estate. 3. Public interest relating to the expenditure of public funds by the Commonwealth and State on the pastoral lease (Warriedar) to bring it in to the conservation estate.	Minjar to refer whole of project

Date	Federal / State / Local Government Department or Company	Person/s	Comms. Method	Topics Covered	Issues Raised	Minjar Response
8 March 2013	Department of Environment and Conservation		Email/ Report	Annual Environmental Report	Annual report submitted	
8 March 2013	Department of Water		Email/ Report	Annual Water Abstraction Report	Annual Water Abstraction Report submitted	
11 March 2013	Department of Mines and Petroleum – Environment Section		Email/ Report	Mine Closure Plan update	Submitted updates to Mine Closure Plan	
19 March 2013	Department of Sustainability Environment Water Population and Communities	Dionne Cassanell	Phone/Email	Particular manners	Negotiating on particular manners to be considered when undertaking development so as to not significantly impact EPBC Act listed Malleefowl	To continue negotiation to achieve high standard of protection for Malleefowl
20 March 2013	Shire of Yalgoo	Chief Executive Officer	Email	Minjar undertaking approvals to recommence	Minjar seeking a meeting to provide an overview of the Project	
20 March 2013	Shire of Perenjori	Chief Executive Officer	Email	Minjar undertaking approvals to recommence	Minjar seeking a meeting to provide an overview of the Project	

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5 CHECKLIST AND DECLARATION

Before you submit this form, have you:	YES	NO
Completed all the questions on this form?	☒	☐
Have you attached any extra information, such as:		
Site plans?	☒	☐
Detailed explanations?	☒	☐
Comments obtained during consultation?	☒	☐
Have you included any electronic information, such as:		
A CD of the referral and documentation, in PDF format, excluding any confidential information?	☒	☐
A CD of the spatial data?	☒	☐
Any other relevant information?	☒	☐

Following a review of the information presented in this form, please consider the following question. (Your response is Optional)

❑ DO YOU CONSIDER THE PROPOSAL REQUIRES FORMAL ENVIRONMENTAL IMPACT ASSESSMENT?

(Information on the levels of environmental impact assessment is available on the EPA website at www.epa.wa.gov.au)

☐ YES ☒ NO ☐ NOT SURE

IF YES, WHAT LEVEL OF ASSESSMENT?

☐ ASSESSMENT ON REFERRAL INFORMATION

☐ ENVIRONMENTAL PROTECTION STATEMENT

☐ PUBLIC ENVIRONMENTAL REVIEW

☐ ENVIRONMENTAL REVIEW AND MANAGEMENT PROGRAMME

☐ STRATEGIC ENVIRONMENTAL ASSESSMENT

I, Xing Min Ji *(full name)* declare that I have completed all of the questions in this form and attached the requested information and declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature	
Name	Xing Min Ji
Position	CEO
Date	21/03/2013

Environmental Protection Authority

Level 8, The Atrium

168 St Georges Tce

PERTH WA 6000

Office of the EPA

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CLOISTERS SQUARE WA 6850

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Telephone: (08) 6467 5000

Facsimile :(08) 6467 5562

Website: www.epa.wa.gov.au

Contact details for the head offices of the primary agencies involved in development proposals follow. You may need to contact your relevant district or regional office (details of all State Government agencies are available on the website of the Department of the Premier and Cabinet, www.dpc.wa.gov.au). You will also need to contact your Local Government Authority in the first instance. For some proposals, consultation with or referral to Commonwealth agencies may be required.

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For Licensing and Clearing Permits under Part V -

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