



Australian Government

Department of Sustainability, Environment, Water, Population and Communities

## Referral of proposed action

### What is a referral?

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides for the protection of the environment, especially matters of national environmental significance (NES). Under the EPBC Act, a person must not take an action that has, will have, or is likely to have a significant impact on any of the matters of NES without approval from the Australian Government Environment Minister or the Minister's delegate. (Further references to 'the Minister' in this form include references to the Minister's delegate.) To obtain approval from the Environment Minister, a proposed action should be referred. The purpose of a referral is to obtain a decision on whether your proposed action will need formal assessment and approval under the EPBC Act.

Your referral will be the principal basis for the Minister's decision as to whether approval is necessary and, if so, the type of assessment that will be undertaken. These decisions are made within 20 business days, provided that sufficient information is provided in the referral.

### Who can make a referral?

Referrals may be made by or on behalf of a person proposing to take an action, the Commonwealth or a Commonwealth agency, a state or territory government, or agency, provided that the relevant government or agency has administrative responsibilities relating to the action.

### When do I need to make a referral?

A referral must be made for actions that are likely to have a significant impact on the following matters protected by Part 3 of the EPBC Act:

- World Heritage properties (sections 12 and 15A)
- National Heritage places (sections 15B and 15C)
- Wetlands of international importance (sections 16 and 17B)
- Listed threatened species and communities (sections 18 and 18A)
- Listed migratory species (sections 20 and 20A)
- Protection of the environment from nuclear actions (sections 21 and 22A)
- Commonwealth marine environment (sections 23 and 24A)
- Great Barrier Reef Marine Park (sections 24B and 24C)
- The environment, if the action involves Commonwealth land (sections 26 and 27A), including:
  - actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land);
  - actions taken on Commonwealth land that may have a significant impact on the environment generally;
- The environment, if the action is taken by the Commonwealth (section 28)
- Commonwealth Heritage places outside the Australian jurisdiction (sections 27B and 27C)

You may still make a referral if you believe your action is not going to have a significant impact, or if you are unsure. This will provide a greater level of certainty that Commonwealth assessment requirements have been met.

To help you decide whether or not your proposed action requires approval (and therefore, if you should make a referral), the following guidance is available from:

- the Policy Statement titled Significant Impact Guidelines 1.1 – Matters of National Environmental Significance. Additional sectoral guidelines are also available.
- the Policy Statement titled Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies.

- the interactive map tool (enter a location to obtain a report on what matters of NES may occur in that location).

### **Can I refer part of a larger action?**

In certain circumstances, the Minister may not accept a referral for an action that is a component of a larger action and may request the person proposing to take the action to refer the larger action for consideration under the EPBC Act (Section 74A, EPBC Act). If you wish to make a referral for a staged or component referral, read 'Fact Sheet 6 Staged Developments/Split Referrals' and contact the Referral Business Entry Point (1800 803 772).

### **Do I need a permit?**

Some activities may also require a permit under other sections of the EPBC Act or another law of the Commonwealth. Information is available on the Department's web site.

### **Is your action in the Great Barrier Reef Marine Park?**

If your action is in the Great Barrier Reef Marine Park it may require permission under the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). If a permission is required, referral of the action under the EPBC Act is deemed to be an application under the GBRMP Act (see section 37AB, GBRMP Act). This referral will be forwarded to the Great Barrier Reef Marine Park Authority (the Authority) for the Authority to commence its permit processes as required under the Great Barrier Reef Marine Park Regulations 1983. If a permission is not required under the GBRMP Act, no approval under the EPBC Act is required (see section 43, EPBC Act). The Authority can provide advice on relevant permission requirements applying to activities in the Marine Park.

The Authority is responsible for assessing applications for permissions under the GBRMP Act, GBRMP Regulations and Zoning Plan. Where assessment and approval is also required under the EPBC Act, a single integrated assessment for the purposes of both Acts will apply in most cases. Further information on environmental approval requirements applying to actions in the Great Barrier Reef Marine Park is available from <http://www.gbrmpa.gov.au/> or by contacting GBRMPA's Environmental Assessment and Management Section on (07) 4750 0700.

The Authority may require a permit application assessment fee to be paid in relation to the assessment of applications for permissions required under the GBRMP Act, even if the permission is made as a referral under the EPBC Act. Further information on this is available from the Authority:

Great Barrier Reef Marine Park Authority

2-68 Flinders Street PO Box 1379  
Townsville QLD 4810  
AUSTRALIA

Phone: + 61 7 4750 0700

Fax: + 61 7 4772 6093

[www.gbrmpa.gov.au](http://www.gbrmpa.gov.au)

### **What information do I need to provide?**

Completing all parts of this form will ensure that you submit the required information and will also assist the Department to process your referral efficiently.

You can complete your referral by entering your information into this Word file.

### **Instructions**

Instructions are provided in green text throughout the form.

### **Attachments/supporting information**

The referral form should contain sufficient information to provide an adequate basis for a decision on the likely impacts of the proposed action. You should also provide supporting documentation, such as environmental reports or surveys, as attachments.

Coloured maps, figures or photographs to help explain the project and its location should also be submitted with your referral. Aerial photographs, in particular, can provide a useful perspective and context. Figures should be good quality as they may be scanned and viewed electronically as black and white documents.

Maps should be of a scale that clearly shows the location of the proposed action and any environmental aspects of interest.

**Please ensure any attachments are below two megabytes (2mb) as they will be published on the Department's website for public comment. To minimise file size, enclose maps and figures as separate files if necessary. If unsure, contact the Referral Business Entry Point for advice. Attachments larger than two megabytes (2mb) may delay processing of your referral.**

**Note: the Minister may decide not to publish information that the Minister is satisfied is commercial-in-confidence.**

## How do I submit a referral?

Referrals may be submitted by mail, fax or email.

### Mail to:

Referral Business Entry Point  
Environment Assessment Branch  
Department of Sustainability, Environment, Water, Population and Communities  
GPO Box 787  
CANBERRA ACT 2601

- If submitting via mail, electronic copies of documentation (on CD/DVD or by email) are appreciated.

### Fax to: 02 6274 1789

- Faxed documents must be of sufficiently clear quality to be scanned into electronic format.
- Address the fax to the mailing address, and clearly mark it as a 'Referral under the EPBC Act'.
- Follow up with a mailed hardcopy including copies of any attachments or supporting reports.

### Email to: [epbc.referrals@environment.gov.au](mailto:epbc.referrals@environment.gov.au)

- Clearly mark the email as a 'Referral under the EPBC Act'.
- Attach the referral as a Microsoft Word file and, if possible, a PDF file.
- Follow up with a mailed hardcopy including copies of any attachments or supporting reports.

## What happens next?

Following receipt of a valid referral (containing all required information) you will be advised of the next steps in the process, and the referral and attachments will be published on the Department's web site for public comment.

The Department will write to you within 20 business days to advise you of the outcome of your referral and whether or not formal assessment and approval under the EPBC Act is required. There are a number of possible decisions regarding your referral:

### **The proposed action is NOT LIKELY to have a significant impact and does NOT NEED approval**

No further consideration is required under the environmental assessment provisions of the EPBC Act and the action can proceed (subject to any other Commonwealth, state or local government requirements).

### **The proposed action is NOT LIKELY to have a significant impact IF undertaken in a particular manner**

The action can proceed if undertaken in a particular manner (subject to any other Commonwealth, state or local government requirements). The particular manner in which you must carry out the action will be identified as part of the final decision. You must report your compliance with the particular manner to the Department.

### **The proposed action is LIKELY to have a significant impact and does NEED approval**

If the action is likely to have a significant impact a decision will be made that it is a *controlled action*. The particular matters upon which the action may have a significant impact (such as World Heritage values or threatened species) are known as the *controlling provisions*.

The controlled action is subject to a public assessment process before a final decision can be made about whether to approve it. The assessment approach will usually be decided at the same time as the controlled action decision. (Further information about the levels of assessment and basis for deciding the approach are available on the Department's web site.)

**The proposed action would have UNACCEPTABLE impacts and CANNOT proceed**

The Minister may decide, on the basis of the information in the referral, that a referred action would have clearly unacceptable impacts on a protected matter and cannot proceed.

**Compliance audits**

If a decision is made to approve a project, the Department may audit it at any time to ensure that it is completed in accordance with the approval decision or the information provided in the referral. If the project changes, such that the likelihood of significant impacts could vary, you should write to the Department to advise of the changes. If your project is in the Great Barrier Reef Marine Park and a decision is made to approve it, the Authority may also audit it. (See "*Is your action in the Great Barrier Reef Marine Park*," p.2, for more details).

**For more information**

- call the Department of Sustainability, Environment, Water, Populations and Communities Community Information Unit on 1800 803 772 or
- visit the web site [www.environment.gov.au/epbc](http://www.environment.gov.au/epbc)

All the information you need to make a referral, including documents referenced in this form, can be accessed from the above web site.

# Referral of proposed action

**Project title:** Ularring Hematite Project

## 1 Summary of proposed action

NOTE: You must also attach a map/plan(s) showing the location and approximate boundaries of the area in which the project is to occur. Maps in A4 size are preferred. You must also attach a map(s)/plan(s) showing the location and boundaries of the project area in respect to any features identified in 3.1 & 3.2, as well as the extent of any freehold, leasehold or other tenure identified in 3.3(i).

### 1.1 Short description

Use 2 or 3 sentences to uniquely identify the proposed action and its location.

Macarthur Iron Ore Pty Ltd (ABN: 86 081 705 651) operates the Ularring Hematite Project (the Project) located in the Goldfields region of Western Australia, being approximately 450 kilometres (km) east-north-east of Perth. The Project is proposed to produce 2 million tonnes per annum (Mtpa) of beneficiated ore with an estimated operating life of ten years. The ore is proposed to be mined, crushed and beneficiated onsite and subsequently transported by road and rail to Esperance port for overseas export.

Macarthur Iron Ore Pty Ltd is a 100% owned subsidiary of Macarthur Minerals Limited (MMS) (ABN: 93 103 011 436), which is a publically listed Canadian company on the Toronto Stock Exchange.

### 1.2 Latitude and longitude

Latitude and longitude details are used to accurately map the boundary of the proposed action. If these coordinates are inaccurate or insufficient it may delay the processing of your referral.

location point	Latitude			Longitude		
	degrees	minutes	seconds	degrees	minutes	seconds
MSA* 1	-29	47	46.32	119	53	48.48
MSA* 2	-29	47	51.20	119	59	52.78
MSA* 3	-30	02	59.37	120	02	31.75
MSA* 4	-30	03	02.96	119	59	16.84
RSA* 1	-29	45	49.32	121	03	33.68
RSA* 2	-29	45	42.91	121	03	53.20
RSA* 3	-29	45	52.04	121	03	57.01
RSA* 4	-29	45	48.98	121	04	06.62
RSA* 5	-29	46	25.73	121	04	20.95
RSA* 6	-29	46	34.51	121	03	50.92

The Interactive Mapping Tool may provide assistance in determining the coordinates for your project area.

If area less than 5 hectares, provide the location as a single pair of latitude and longitude references. If area greater than 5 hectares, provide bounding location points.

If the proposed action is linear (eg. a road or pipeline), provide coordinates for each turning point.

Do not use AMG coordinates.

\*Mine Site Area (MSA) refers to the portion of the Project area that includes open cut pits, production plant/s and other related mining infrastructure and support services. The Rail Siding Area is hereafter referred to as the RSA.

The coordinates provided above are for overall boundary locations of the Project areas, as shown in Figures 1 and 2. The proposed Project layout and actual areas of proposed disturbance for the Mine Site Area (MSA) and the Rail Siding Area (RSA) are shown as Figures 3a and 3b, respectively. Shapefiles of the Project areas can be provided upon request.

---

1.3 **Locality and property description**

Provide a brief physical description of the property on which the proposed action will take place and the project location (eg. proximity to major towns, or for off-shore projects, shortest distance to mainland).

The Project is located in the Goldfields region of Western Australia, approximately 450 km east-north-east of Perth. The closest township to the Project area is Menzies, located approximately 130 km east of the proposed MSA and 8 km north of the proposed RSA. A site locality map and project locality map are provided as Figures 1 and 2 (respectively) showing the regional location of the Project areas.

The Project lies wholly within the Shire of Menzies. The MSA is located predominantly within Unallocated Crown Land (UCL) with a small portion (<250 hectares (ha)) of the MSA located within a Crown Mining Reserve (50929) vested under the Western Australian Department of Mines and Petroleum (DMP) for mining purposes. The MSA is located adjacent to the Mount Manning Nature Reserve (36208), which is vested under the Western Australian Department of Environment and Conservation (DEC) for conservation of flora and fauna purposes. All proposed areas of disturbance for the Project are located more than 1-2 km to the north and east of the Mount Manning Nature Reserve, as shown in Figure 3a. Both the Mining Reserve and the Mount Manning Nature Reserve are part of an Environmentally Sensitive Area (ESA) under the *Environmental Protection Act 1976*.

The RSA is located wholly within a Crown Pastoral Lease. A railway reserve extends along the length of the western boundary of the tenement in a north-south direction for the purposes of the existing Leonora Railway. A transport corridor also intersects the centre of the tenement, parallel to the railway for the purpose of the existing Goldfields Highway. The proposed rail siding for the Project will be located between the existing railway and the highway as shown in Figure 3b.

---

- 1.4 **Size of the development footprint or work area (hectares)** The locations of proposed disturbance areas are shown in Figures 3a and 3b. It should be noted that the areas depicted in these figures include a 250 metre (m) buffer around all proposed infrastructure to allow for slight variations to actual locations during final design and construction stages.

The proposed area of disturbance for the Project is approximately 646 ha.

<b>Infrastructure</b>	<b>Proposed disturbance (ha)</b>
<b>Deposits</b>	
Mine Pits	135.8
Pit Haul Roads	44.9
Waste Dumps	135
Topsoil Dump	15
Tailings dam	10
<b>Mining Infrastructure</b>	
General Site Haul Roads (outside of MOC/Magazine area)	141.3
MOC	108.5
Magazine	5.4
Magazine Access Road	3
<b>Accommodation Infrastructure</b>	
Camp Access Road	2.6
Camp	11.5
Landfill Facility	2
Sewage Ponds	0.8
<b>Rail siding</b>	32
<b>Total</b>	<b>645.9</b>

- 1.5 **Street address of the site** Not applicable

- 1.6 **Lot description**  
Describe the lot numbers and title description, if known.

The MSA is located across 14 tenements held under the Macarthur Iron Ore Pty Ltd entity. The tenements are listed below in Table 1.

**Table 1: Tenement IDs for the MSA**

Tenement ID	Status
M30/206	Live
M30/213	Live
M30/214	Live
M30/215	Live
M30/216	Live
M30/217	Live
M30/219	Live
P30/1083	Live
M30/227	Live
M30/228	Live
M30/229	Live
M30/248	Live
M30/249	Live
M30/251	Pending

The RSA is located within tenement P29/1895 and is leased by Treppo Grande Iron Pty Ltd (Treppo Grande). MMS have entered into an agreement with Treppo Grande to gain access to the tenement for the purposes of the Rail Siding for the Project.

Figures 3a and 3b show the location of the tenements and proposed Project disturbance areas for the MSA and RSA, respectively.

- 1.7 **Local Government Area and Council contact (if known)**  
If the project is subject to local government planning approval, provide the name of the relevant council contact officer.  
The Project is located within the Shire of Menzies.

**Contact:**

Greg Dwyer  
President  
Shire of Menzies  
(08) 08 9031 3031  
[riflepoint@bigpond.com](mailto:riflepoint@bigpond.com)

- 1.8 **Time frame**  
Specify the time frame in which the action will be taken including the estimated start date of construction/operation.  
Construction activities for the Project are proposed to commence in quarter one 2013, with mining operation commencing in 2014. These timeframes are dependent on regulatory approval for the Project and port expansion developments. Operation phase is expected to extend over ten years.

- 1.9 **Alternatives to proposed action**

X	No
---	----



		Yes, you must also complete section 2.2
1.10	<b>Alternative time frames etc</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	<b>State assessment</b>	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, you must also complete Section 2.5
1.12	<b>Component of larger action</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, you must also complete Section 2.7
1.13	<b>Related actions/proposals</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, provide details:
1.14	<b>Australian Government funding</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, provide details:
1.15	<b>Great Barrier Reef Marine Park</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, you must also complete Section 3.1 (h), 3.2 (e)

## 2 Detailed description of proposed action

NOTE: It is important that the description is complete and includes all components and activities associated with the action. If certain related components are not intended to be included within the scope of the referral, this should be clearly explained in section 2.7.

### 2.1 Description of proposed action

This should be a detailed description outlining all activities and aspects of the proposed action and should reference figures and/or attachments, as appropriate.

The Project is a proposed 2 Mtpa beneficiated iron ore operation targeting hematite deposits located within Banded Iron Formations (BIF) of the Yilgarn Craton in the Ularring Mineral District. The Project comprises three deposits stretching over a 25 km distance in a north-south orientation; all of which share similar geological characteristics. The deposits are referred to as Snark, Central and Banjo (north to south, as shown on Figure 3a).

Mining will be conducted by either: 1) conventional drill, blast, load and haul methods or 2) blasting the cap rock followed by mining using surface miners. All ore product will be transported from the MSA via an existing shire road to the RSA and then along existing rail networks to the Port of Esperance for overseas export.

The Project has an expected mine life of 10 years.

### Mining, Processing and Transport Methodology

The ore is proposed to be mined from numerous small, shallow open pits located across the three deposits with a maximum depth anticipated at approximately 70 metres (m) below ground level (BGL) (ground level excludes the ironstone hills and refers to the natural surrounding levels). The ore will be extracted using standard drill and blast methods followed by excavation. Minimal pre-stripping is expected to be required to target the ore body in areas where surface outcropping is not present.

The Project will generate approximately 40 Mt of waste rock during mining operations. All waste rock will be stockpiled within designated waste rock dumps (WRD) located across the MSA or backfilled into previously mined pits where economically and environmentally feasible. The locations of the WRDs are dependent on the outcomes of soil characterisation and landform design studies and more detailed min pit design. Results of waste characterisation studies performed on the waste rock types will also impact on the design of the dumps and management of the waste types during operation. A Waste Rock Management Plan will be developed on completion of these studies. A conceptual closure plan will be submitted alongside the Mining Proposal for approval by the DMP.

Following excavation from the open pit, the ore will be hauled to the Mining Operations Centre (MOC) where it will undergo initial crushing and screening within an onsite mobile processing plant. Some ore may require blending depending on the ore grade and temporary stockpiles may be required. Due to the size of the MSA, the mobile processing plant will be relocated during the mine life to reduce the onsite haulage required between the open pits and the MOC areas. Both proposed MOC areas are shown in Figure 3a.

In order to maximise iron ore grade; improve productivity and efficiency; and reduce the volume of material sent to waste, low grade ore (>40% iron (Fe)) will be subject to a beneficiation process. The beneficiation process generates a concentrated liquid slurry by-product (tailings) that will be discharged to designated tailings storage facilities (TSFs). Dry tailings will be incorporated into the waste dump. The management and location of TSF will be chosen in accordance with the DMP guidelines on safe design and operating standards for tailings storage. Waste characterisation of tailings material is ongoing. Results of these studies will be used to develop a Tailings Management Plan for the Project.

Following processing of mineral ore, the product will be loaded into road trains and hauled along the existing Evanston-Menzies Road to the Menzies township; by-pass the town via the Intermin Resources haul road to the Goldfields Highway where it will be deposited 8 km south at the RSA. These are all existing roads and may require upgrade works to be suitable to haul up to 120 tonne road trains. However, it should be noted that these upgrade works do not form part of this Referral and will be completed by the Shire of Menzies (if required). Negotiations have commenced to gain access to roads and to develop a funding arrangement for the upgrade works.

All ore hauled from the MSA will be temporarily stockpiled at the rail siding before being loaded into trains for transport along approximately 510 km of existing rail network to the Port of Esperance. MMS has entered into a Multi User Facility Access Deed with the Esperance Port Authority which secures a commitment to a 2 Mtpa allocation of the proposed expansion of the iron ore export facilities.

Current hydrogeological work indicates that the groundwater table is predominantly located below the ore body and as such, no dewatering is expected to be required for the Project. This will be confirmed once the pit designs have been defined. In the event that minimal dewatering from the pit may be required from either significant rainfall or potential groundwater ingress, all water will be recycled in either onsite processing or used for dust suppression within the MSA.

The Project is anticipated to operate on 24 hours per day, 365 days per year.

### **Infrastructure and Support Facilities**

An accommodation camp will be constructed more than 1 km from mining operation areas. In addition to general accommodation facilities, the camp will comprise of sewage, waste water, raw water and/or potable water treatment and storage facilities, internal road access and light and heavy vehicle parking. Non-recyclable camp waste will be managed within a designated landfill area. It is anticipated that the existing MMS Exploration Camp will be utilised to accommodate initial construction workers.

The MOC will comprise all other support facilities for the mine, including administration areas, processing plants, workshops, fuel farm, wash bays, water and waste water treatment and storage, internal access roads and light and heavy vehicle parking.

An explosives magazine area (for the storage of detonators and boosters) will be constructed more than 2 km from the MOC and accommodation facilities, internal haul roads and accommodation facilities. Ammonium nitrate and fuel oil (ANFO) will be stored elsewhere.

Electricity to the entire MSA area will be supplied by onsite diesel powered generators and distributed around site via an underground cabling network.

Water will be required for the camp, dust suppression and processing purposes. It is anticipated that approximately 3.6 mega litres (ML) of water will be required per day. Water will be sourced from local groundwater aquifers where possible. Groundwater exploration is still being undertaken to determine a viable source.

Internal haul roads will be required throughout the MSA to provide safe access to the mining, MOC and accommodation areas. It is estimated that approximately 60 km of haul road is required to be developed as part of the Project. Where possible, existing exploration tracks will be utilised and upgraded to minimise additional land disturbance.

Fill material for unsealed, internal haul roads and some infrastructure pads will utilise material from borrow pits located throughout the Project area. Geotechnical studies will be completed to identify suitable material sources.

The locations of the infrastructure and support facilities within the MSA are shown in Figure 3a.

The RSA will comprise of internal haul roads, office and amenities buildings, equipment shed, fuel farm, ore stockpiles and a turkeys nest (water storage area). Power for the site will either be from the Shire of Menzies supply network or an onsite generator. Water will be required for office amenities and dust suppression purposes. It is anticipated that approximately 400 kilolitres (kL) will be required per day. Water will be sourced from a local groundwater aquifer or existing unused shire bores.

The locations of the infrastructure and support facilities within the RSA are shown on Figure 3b.

## 2.2 Alternatives to taking the proposed action

This should be a detailed description outlining any feasible alternatives to taking the proposed action (including not taking the action) that were considered but are not proposed (note, this is distinct from any *proposed* alternatives relating to location, time frames, or activities – see section 2.3).

There are no alternatives to the Project.

## 2.3 Alternative locations, time frames or activities that form part of the referred action

If you have identified that the proposed action includes alternative time frames, locations or activities (in section 1.10) you must complete this section. Describe any alternatives related to the physical location of the action, time frames within which the action is to be taken and alternative methods or activities for undertaking the action. For each alternative location, time frame or activity identified, you must also complete (where relevant) the details in sections 1.2-1.9, 2.4-2.7, 3.3 and 4. Please note, if the action that you propose to take is determined to be a controlled action, any alternative locations, time frames or activities that are identified here may be subject to environmental assessment and a decision on whether to approve the alternative.

There are no alternative locations, timeframes or activities for the Project.

## 2.4 Context, planning framework and state/local government requirements

Explain the context in which the action is proposed, including any relevant planning framework at the state and/or local government level (e.g. within scope of a management plan, planning initiative or policy framework). Describe any Commonwealth or state legislation or policies under which approvals are required or will be considered against.

MMS proposes to develop and produce iron ore product for sale to the international market where it is typically used in the manufacturing of steel products. Based on current global demands, it is anticipated that MMS ore product will be aimed at the Chinese market.

Mineral activities in Western Australia are subject to Commonwealth and State legislation, policies and guidelines and potentially Local Government regulations or by-laws. These are described below.

### Commonwealth requirements

The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Governments primary piece of environmental legislation and provides a legal framework to protect and manage matters of National Environmental Significance (NES) as defined by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPAC).

This Referral has been submitted to SEWPAC for assessment under the EPBC Act and to determine whether the Project is classified as a controlled action.

### State requirements

The main pieces of Western Australian legislation that governs mineral activity relevant to the Project are:

- *Mining Act 1978* (Mining Act)
- *Environmental Protection Act 1986* (EP Act)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)
- *Aboriginal Heritage Act 1972* (AH Act)

All mineral activities in Western Australia are governed primarily by the Mining Act which is regulated by the DMP. A Mining Proposal will be submitted to the DMP for assessment and approval prior to commencement of any mining activities. The Mining Proposal includes information on the proposed activity, land ownership, potential environmental impacts, mitigation measures and management. A mine closure plan is also required to be submitted in conjunction with the Mining Proposal.

The EP Act governs the prevention, control and abatement of pollution to the environment in WA and is primarily regulated by the DEC and the Office of the Environmental Protection Authority (OEPA). Under Part IV of the EP Act, proposed mining activities that have the potential to cause significant environmental impact must be referred to the OEPA for assessment and approval prior to commencement of any mining activities. Proponents are encouraged to refer their projects which are considered to have potentially significant impacts to the environment; but any person can formally refer the project at any time. A Memorandum of Understanding (MOU) has been established between the DMP and the OEPA which requires the DMP to automatically refer projects of a prescribed nature for assessment under the EP Act. Although the criteria for this MOU have not been triggered, MMS intends to refer this Project to the OEPA later this year.

In the event that the Project is not assessed under the EP Act, a native vegetation clearing permit will be required. This application will be assessed by the DMP under Part V of the EP Act.

Prior to the commencement of mining operations onsite, Works Approvals and Operating Licences will be required for all Prescribed Premises as defined under Schedule 1 and 2 of the EP Act to manage and regulate all discharges and emissions. Activities which require these approvals include crushing and screening plants, waste water treatment plants, tailings storage facilities and landfills. These applications will be assessed and regulated by the DEC.

The RIWA Act is administered by the Department of Water (DoW) and regulates the extraction, use and discharge of all terrestrial water within the State. MMS will be required to obtain appropriate Licences to Construct Wells (26D) and Licences to Abstract Water (5C) for the proposed bore fields intended for use in the Project.

The AH Act which is administered by the Department of Indigenous Affairs (DIA) governs the protection of objects and places of cultural significance to the Traditional Owners of Australia and their descendants. Disturbance to a known heritage site is an offence under the AH Act and approval must be sought through a Section 18 application.

Other Acts that may be relevant to the Project include:

- *Bush Fires Act 1954*
- *Conservation and Land Management Act 1984*
- *Contaminated Sites Act 2006*
- *Health Act 1911*
- *Land Administration Act 1997*
- *Wildlife Act 1950.*

## **Policies and Guidelines**

A range of policies and guidelines have been developed by various regulatory authorities providing advice to Proponents on the assessment and management of environmental impact assessments. These include, but are not limited to:

- Draft Policy Statement: Use of environmental offsets under the *Environmental Protection and Biodiversity Conservation Act 1999* (Department of Environment and Water Resources (DEWR), 2007)
- Guidance Statement No. 19 – Environmental Offsets – Biodiversity (EPA 2008)
- Guidance Statement No. 41 – Assessment of Aboriginal Heritage (EPA 2004a)
- Guidance Statement No. 51 – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA 2004c)
- Guidance Statement No. 55 – Implementing Best Practice in proposals submitted to the Environmental Impact Assessment process (EPA 2003b)
- Guidance Statement No. 56 – Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia (EPA 2004b)
- Guidelines for Mining Proposals in Western Australia (Department of Industry and Resources (DOIR) 2006)
- Guidelines for Preparing Mine Closure Plans (DMP & EPA 2011)
- Guidelines for the Development of an Operating Manual for Tailings Storage (Department of Minerals and Energy (DME) 1998)
- Guidelines for the Safe Design and Operating Standards for Tailings Storage (DMP 1999)
- Policy Statement No. 9 – Conservation of Threatened Flora in the Wild (DEC 1992)
- Policy Statement No. 33 – Conservation of Threatened and Specially Protected Fauna in the Wild (DEC 1991)
- Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (Department of Environment, Water, Heritage and the Arts (DEWHA) 2009)
- Survey guidelines for Australia's threatened birds – Guidelines for detecting birds listed as threatened under the *Environmental Protection and Biodiversity Conservation Act 1999* (DEWHA 2010).

## **2.5 Environmental impact assessments under Commonwealth, state or territory legislation**

If you have identified that the proposed action will be or has been subject to a state or territory environmental impact statement (in section 1.11) you must complete this section. Describe any environmental assessment of the relevant impacts of the project that has been, is being, or will be carried out under state or territory legislation. Specify the type and nature of the assessment, the relevant legislation and the current status of any assessments or approvals. Where possible, provide contact details for the state/territory assessment contact officer.

Describe or summarise any public consultation undertaken, or to be undertaken, during the assessment. Attach copies of relevant assessment documentation and outcomes of public consultations (if available).

The Project will be subject to assessment under the Commonwealth EPBC Act and as such, this Referral has been prepared and submitted to SEWPAC.

The Project is subject to approval under the Mining Act by the means of a Mining Proposal which requires assessment by the DMP's Environment Branch. The Mining Proposal must include details regarding land ownership, proposed mining activities, potential environmental impacts and mitigation measures, and a mine closure plan.

The Project may also be required to be assessed by the OEPA under the EP Act. Under Section 38 of the EP Act, MMS referred the Project to the EPA on 1 June 2012. The OEPA will provide a decision on whether to assess the Project by 2 July 2012. The contact for this assessment is:

### **Anthony Sutton**

Director – Assessment and Compliance

Office of the OEPA

(08) 6467 5600

[anthony.sutton@epa.wa.gov.au](mailto:anthony.sutton@epa.wa.gov.au)

In the event that the Project is not required to be assessed under the EP Act, a native vegetation clearing permit will be required to be obtained. Under the 2011 Administrative Agreement between

the DEC and the DMP, all clearing applications for mineral activities are assessed by the DMP's Native Vegetation Branch.

Public consultation is discussed in the Section 2.6.

### **2.6 Public consultation (including with Indigenous stakeholders)**

Your referral must include a description of any public consultation that has been, or is being, undertaken. Where Indigenous stakeholders are likely to be affected by your proposed action, your referral should describe any consultations undertaken with Indigenous stakeholders. Identify the relevant stakeholders and the status of consultations at the time of the referral. Where appropriate include copies of documents recording the outcomes of any consultations.

At the time of this Referral, MMS has actively engaged the following stakeholders in regards to the Project:

- SEWPAC
- DMP
- DEC
- OEPA
- WA Museum
- Kalamaia Kapu(d)n Traditional Owner Group
- Wati Traditional Owner Group
- Sambo Family
- Nudding-Strickland Traditional Owner Group
- Main Roads WA
- Brookfield Rail
- Esperance Port
- DIA
- Shire of Menzies
- Malleefowl Preservation Group

MMS has consulted widely with both State and Federal environmental regulatory bodies regarding the significant environmental aspects of the Project area and wider region, and requirements for specific flora and fauna surveys for environmental impact assessment purposes. Where possible, MMS has also discussed initial results of completed surveys and studies, potential implications of results on the proposed Project and the requirements for further studies with various decision making authorities.

No Native Title exists over the Project site. Three Traditional Owner Groups (TOG) for the MSA (Kalamaia Kapu(d)n, Wati and Sambo Family) have been consulted and provided the opportunity to participate in archaeological and ethnographic surveys of the proposed disturbance areas. In regards to the RSA, MMS are currently in consultation with the Nudding-Strickland TOG regarding potential archaeological and ethnographic surveys of that area.

MMS are committed to ongoing consultation with all the key stakeholders listed above.

A copy of MMS Stakeholder Engagement Register is provided as Appendix A.

### **2.7 A staged development or component of a larger project**

If you have identified that the proposed action is a component of a larger action (in section 1.12) you must complete this section. Provide information about the larger action and details of any interdependency between the stages/components and the larger action. You may also provide justification as to why you believe it is reasonable for the referred action to be considered separately from the larger proposal (eg. the referred action is 'stand-alone' and viable in its own right, there are separate responsibilities for component actions or approvals have been split in a similar way at the state or local government levels).

Not applicable – the Project is not part of a larger project.

## 3 Description of environment & likely impacts

### 3.1 Matters of national environmental significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest.

Your assessment of likely impacts should refer to the following resources (available from the Department's web site):

- specific values of individual World Heritage properties and National Heritage places and the ecological character of Ramsar wetlands;
- profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*; and
- associated sectoral and species policy statements available on the web site, as relevant.

**Note that even if your proposal will not be taken in a World Heritage area, Ramsar wetland, Commonwealth marine area, the Great Barrier Reef Marine Park or on Commonwealth land, it could still impact upon these areas (for example, through downstream impacts). Consideration of likely impacts should include both direct and indirect impacts.**

A search of the Protect Matters Search Tool was conducted on 2 April 2012 for the coordinates listed in Section 1.2. The following sections are based on the results of that search and were correct at the time of this referral. A copy of the searches completed for the MSA and RSA are provided as Appendix B.

#### 3.1 (a) World Heritage Properties

##### Description

No World Heritage Properties are located within the Project area, or within at least 100 km of the Project area.

##### Nature and extent of likely impact

Address any impacts on the World Heritage values of any World Heritage property.

Due to the distance of the Project to any known World Heritage Properties (>100 km), the Project will not directly or indirectly impact these Matters of NES.

---

#### 3.1 (b) National Heritage Places

##### Description

No National Heritage Places are located within the Project area, or within at least 100 km of the Project area.

##### Nature and extent of likely impact

Address any impacts on the National Heritage values of any National Heritage place.

Due to the distance of the Project to any known National Heritage Place (>100 km), the Project will not directly or indirectly impact these Matters of NES.

---

#### 3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)



## Description

No Wetlands of International Importance / Ramsar wetlands are located within the Project area.

The closest Wetlands of International Importance to the Project area are Lake Barlee located (at the closest point) approximately 25 km to the north-west of the MSA and Lake Ballard, being approximately 70 km to the north-east of the MSA and 20 km north of the RSA. No other Wetlands of International Importance are located within 100 km of the Project.

## Nature and extent of likely impact

Address any impacts on the ecological character of any Ramsar wetlands.

Due to the distance of the Project to Lake Barlee and Lake Ballard (>20 km), the Project will not directly or indirectly impact these Matters of NES.

---

### 3.1 (d) Listed threatened species and ecological communities

#### Description

#### Flora and Vegetation

A desktop search of the EPBC Protected Matters Database reported that no Threatened Ecological Communities were recorded within the Project area, however, a total of four endangered plant species were identified to potentially occur within the MSA and/or RSA. These species are listed below in Table 1.

MMS commissioned Mattiske Consulting Pty Ltd (Mattiske) to conduct flora and vegetation surveys of both the MSA and RSA during 2011 (Mattiske 2012a; 2012b; 2012c; 2012d). The survey completed at the MSA was a multi-seasonal Level 2 Detailed Survey in accordance with the WA EPA Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004c). A single season (spring) Level 2 Detailed Survey was completed at the RSA in accordance with the aforementioned EPA Guidance Statement No. 51. Both surveys included a desktop component as well as targeted quadrat surveys.

These detailed Level 2 surveys follow several previous flora and vegetation surveys within the MSA and wider tenement area over the past six years and include:

- Flora and Fauna Survey for Lake Giles Project of Tenement M30/215 (EcoSafe Environmental Consultants 2006)
- Vegetation Survey and Rare Flora Search of the Clark Hill North Prospect Mining Project (Paul Armstrong and Associates 2007)
- Lake Giles Project Flora and Vegetation Desktop Study (Outback Ecology Services 2010a).
- Revised Level 1 Flora and Vegetation Survey: Lake Giles New Exploration Areas (Outback Ecology Services 2010c)
- Flora Assessment of Drill Holes in Banjo/Lost World and moonshine Deposits, Lake Giles Survey Area (Mattiske 2011)
- Flora and Vegetation Survey Lake Giles Central (Goldfields Landcare Services 2011)
- Targeted Survey of Priority Flora – Ularring Hematite Project (MMS 2012).

No surveys completed with the Project areas have identified any Threatened Ecological Communities or Threatened flora species listed under the EPBC Act within the proposed disturbance areas of the Project area.

Table 1 below summarises the results of the flora species identified within the EPBC Protected Matters

Database searches (Appendix B) and their occurrence within the Project areas, as confirmed by during the various flora and vegetation surveys completed.

**Table 2: Threatened Flora Species listed under the EPBC Act and their presence within the Project area**

Scientific Name	Common Name	Status	Presence within MSA		Presence within RSA	
			EPBC Search*	Flora Surveys	EPBC Search*	Flora Survey^
PLANTS						
<i>Gastrolobium graniticum</i>	Granite Poison	Endangered	-	No	Likely	No
<i>Myriophyllum lapidicola</i>	Chiddarcooping myriophyllum	Endangered	Known	No	-	No
<i>Ricinocarpos brevis</i>	-	Endangered	Likely	No	Possible	No
<i>Tetradlea paynterae</i>	Paynter's Tetradlea	Endangered	Possible	No	-	No

- denotes species not listed for that Project area

\* based on Protected Matters Search Results (Appendix B)

^ refers to the Flora and Vegetation Mapping of the Proposed Rail Siding (Mattiske, 2012d).

Although not identified by any flora and vegetation surveys completed within the Project area, the EPBC Protected Matters Database identified the potential for Chiddarcooping myriophyllum (*Myriophyllum lapidicola*), *Ricinocarpos brevis* and Paynter's Tetradlea (*Tetradlea paynterae*) to be present within the MSA. In addition, Granite Poison (*Gastrolobium graniticum*) and *Ricinocarpos brevis* was identified to potentially be present within the RSA.

#### Chiddarcooping myriophyllum

Chiddarcooping myriophyllum is described as an aquatic herb that grows in ephemeral pools on granite outcrops and is commonly associated with *Kunzea pulchella* and *Melaleuca radula*. One of the biggest threats to this species is reported to be changes in hydrology caused by drought and diversions to natural surface water drainage patterns (Pattern and Brown 2004). No granite outcrops or these associated species have been recorded within the Project area and therefore it is unlikely that this species will be present. Further, there are no granite outcrops within the immediate vicinity of the proposed disturbance areas which are likely to experience alterations in surface water drainage resulting from the implementation of the proposal.

#### *Ricinocarpos brevis*

*Ricinocarpos brevis* is a dense, twiggy shrub that is considered endemic to Western Australia. Current populations are only known from within 100 km of the Windarling Range, located 60 km west-south-west of the MSA. This species is confined to shallow sandy soils on rock banded ironstone outcrops and occurs in mixed shrublands with *Acacia* spp., *Grevillea* spp. and/or *Eremophila* spp (SEWPAC 2012c). Whilst this habitat type is present within the MSA, the species has not been identified by any flora and vegetation survey that has been completed to date, including surveys conducted during the known flowering and fruiting months (June through to November). This species was also not recorded in the Project area during the 2007 survey of BIF ridges conducted by the DEC. Therefore, given the number of surveys conducted at the MSA, it is considered unlikely the species distribution extends east to the MSA. In addition, no banded ironstone outcrops are present within the RSA and therefore it is considered very unlikely that this species will be present in the area.

#### Paynter's Tetradlea

Paynter's Tetradlea is described as a small shrub with slender stems and a woody base. It is known only from a very restricted habitat within the Windarling Range, located approximately 60 km west-south-west of the MSA growing on lateral cracks on banded ironstone outcropping. It typically flowers all year round following intermittent seasonal rainfall (Cockerton et al 2006). Similar to the *Ricinocarpos brevis*, whilst banded ironstone outcropping is present within the MSA, the species has not been identified by any flora and vegetation survey that has been completed to date, even those conducted

following seasonal rainfall periods. Therefore, given the number of surveys conducted at the MSA, it is considered unlikely the species distribution extends east to the MSA. This species has been the subject of considerable interest to the WA DEC and was also not located within the Project area that was surveyed by the DEC in 2007.

### Granite Poison

Conservation advice for Granite Poison reported that this species is typically associated with granite outcrops, especially on drainage lines, on sandy soils in open woodlands associated with *Allocasuarina huegeliana*, *Acacia loriocalys* and *Eucalyptus eremophila* (SEWPAC 2008). Some low-lying natural drainage areas were identified within the RSA, however, no granite outcrops or the associated species have been recorded. As such, it is considered unlikely that this species is present within the RSA.

### **Fauna**

A desktop search of the EPBC Protected Matters Database reported two Threatened fauna species; the Slender-billed Thornbill (*Acanthisa iredalei iredalei*) and the Malleefowl (*Leipoa ocellata*). Both species are listed under the EPBC Act as Vulnerable and have the potential to occur within the Project area. Copies of the EPBC Protected Matters Search reports are provided in Appendix B.

In 2011, MMS commissioned specialist fauna consultants to complete a multi-seasonal Level 2 Detailed Vertebrate Fauna Survey for the Snark Deposit within the MSA. The autumn survey was completed by Keith Lindbeck & Associates (KLA) (KLA 2011) and the spring survey was completed by Ninox Wildlife Consulting (Ninox) (Ninox 2012a). These surveys included a desktop component, an intensive trapping program, bat call analysis and bird observations throughout the various habitats and vegetation communities across the deposit. In addition, a grid-based Targeted Malleefowl Survey was also completed by Terrestrial Ecosystems (TES) across portions of the MSA (TES 2011). A Level 1 Vertebrate Fauna Assessment was completed by Ninox (2012b) at the RSA in spring 2011 which involved a desktop component, as well as a Reconnaissance Survey. All surveys were completed in accordance with the WA EPA Guidance Statement No. 56 *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004b). Copies of these reports are provided as Appendices C, D and E respectively.

It should be noted that portions of the MSA were not included in some of the fauna surveys completed. However, based on observed similarity of habitats across the three deposits within the MSA, it is unlikely that the fauna assemblages across the area will significantly differ. MMS propose to complete habitat mapping across the remaining Project disturbance areas to confirm these observations.

Table 2 below summarises the results of the fauna species identified within the EPBC Protected Matters Database searches (Appendix B) and their occurrence within the Project areas as confirmed by the various fauna surveys (KLA 2011; Ninox 2012a; 2012b).

**Table 3: Threatened Fauna Species listed under the EPBC Act and their presence within the Project area**

Scientific Name	Common Name	Status	Presence within MSA		Presence within RSA	
			EPBC Search *	Fauna Survey	EPBC Search *	Fauna Survey
BIRDS						
<i>Acanthiza iredalei iredalei</i>	Slender-billed Thornbill (western)	Vulnerable	Likely	Low possibility <sup>1,2</sup>	Likely	Low to moderate possibility <sup>3</sup>
<i>Leipoa ocellata</i>	Malleefowl	Vulnerable	Likely	Confirmed <sup>1,2,3</sup>	Possible	Unlikely <sup>3</sup>

\* based on Protected Matters Search Results

1 refers to results of the Level 2 Vertebrate Fauna Survey completed in autumn by KLA (2011)

2 refers to results of the Level 2 Vertebrate Fauna Survey completed in spring by Ninox (2012a)

3 refers to results of the Level 1 Vertebrate Fauna Assessment completed in spring by Ninox (2012b)

4 refers to results of the Targeted Malleefowl Surveys completed by TES (2011)

Slender-billed Thornbill (western)

The Slender-billed Thornbill (western) (*Acanthisa iredalei iredalei*) is a small, sedentary bird occupying arid and semi-arid regions of south Western Australia and South Australia (SEWPAC, 2012a). The thornbill is reported to almost exclusively inhabit saltbush communities, including bluebush and samphire flats associated with salt lake systems (Outback Ecology Services 2010b; Ninox 2012a; 2012b). This habitat is not present within either the MSA or RSA and therefore the possibility of this species occurring within the Project area is considered low (Ninox 2012a; 2012b).

## Malleefowl

The Malleefowl (*Leipoa ocellata*) is a ground-dwelling bird known to build large, distinctive mounds with soil and leaf litter to incubate their eggs (TES 2011). The Malleefowl occupies semi-arid rangelands of the eastern Wheatbelt of south-western Australia, often in shrublands dominated by mallee (Garnett & Crowley 2000; TES 2011). Their distribution is fragmented and scattered and they have been known to show avoidance to areas which have experienced recent bush fires (Outback Ecology Services 2010b). Although their habitat requirements are not well understood, they are often found in eucalypt or native pine (*Callistris*) woodlands, *Acacia* shrublands, broombush or coastal heathlands (TES 2011).

The Malleefowl is a terrestrial species that rarely flies and is typically observed escaping rapidly by foot through vegetation when disturbed. They are considered sedentary animals with breeding pairs often remaining in the same general area for many years. Adult home ranges are estimated between 0.5 – 4.6 km<sup>2</sup> but can also depend on the time of year, as males typically remain close to their nest during the breeding season (SEWPAC 2012a). Malleefowl chicks do not seem to respond to habitat boundaries, which may potentially leave them more vulnerable to prey in open, cleared areas (TES 2011).

Malleefowl are known to occur within the MSA. Individual birds, footprints, scats and mounds have been observed by KLA (2011), TES (2011) and Ninox (2012a) during their respective fauna surveys. Other unconfirmed sightings have also been reported by exploration staff.

During the Targeted Malleefowl Survey in 2011, a total of 2,809 ha was grid searched by foot to identify the presence of Malleefowl within the area. Of the 2,809 ha, approximately 44% of the search area was located within the proposed disturbance of the MSA. A total of 57 Malleefowl mounds were identified within the total survey area, with 32 of the mounds located within proposed disturbance areas, four of which were identified by TES to have the potential to become re-active within the next breeding season (referred to as 'potentially active'). The remaining mounds were considered 'inactive' and were defined as mounds highly unlikely to be used by Malleefowl again due to their lack of structure or shape, and often had plants grown out of them (TES 2011). As the TES field survey was completed during autumn (outside breeding season), Ninox investigated each of the 'potentially active' mounds during their spring fauna survey and reported that each of the four mounds located within the proposed disturbance areas were not active at the time of the inspection. Two mounds were reported to have been abandoned and two appeared to have been used in recent breeding seasons (Ninox 2012a). In addition to the mound sightings, TES identified three scratching's and one individual bird within the areas of proposed disturbance that was surveyed. All other sightings of birds, scratching's and scats were recorded outside the Project's proposed disturbance area. Figure 4 shows the locations of all mounds, scratching's, birds and scats identified by TES during 2011.

TES identified considerable suitable habitat for Malleefowl within the wider area. TES suggested that evidence of Malleefowl activity was not common within open eucalypt woodland areas, but were mainly found within vegetation thickets and on clay and sand plains. The majority of mounds and other Malleefowl indicators identified by TES were observed within shrubland communities dominated by *Acacia* and *Allocasuarina* species (TES 2011).

During 2012, MMS propose to undertake further habitat mapping of the larger Project area (both disturbance and non-disturbance areas). In addition, MMS propose to utilise LiDAR technology (high resolution surface topography data) flown across the entire MSA and wider area to identify locations of Malleefowl mounds. This further work will enable MMS to demonstrate the presence of suitable Malleefowl habitats outside of the proposed Project disturbance areas and aid in the identification of areas to target during future mound surveys. Approximately 2,600 ha of potential habitat within the MSA will be surveyed using LiDAR data. Of this area, approximately 200 Ha fall within the potential disturbance area. The additional area will remain undisturbed and will provide a more thorough understanding of the impacts of the project on the local Malleefowl population.

Evidence of a local Malleefowl population within the RSA was not observed during the fauna survey by Ninox (2012b). Given the proximity of the RSA to the Goldfields Highway and the existing rail network, Ninox considered it unlikely that the Malleefowl would inhabit this area (Ninox 2012b).

### **Nature and extent of likely impact**

Address any impacts on the members of any listed threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat.

### **Flora and Vegetation**

No Threatened Ecological Communities were identified within the EPBC Protected Matters Database Search as having the potential to occur within the Project area. However, four species with the potential to occur were listed. These are the Chiddarcooping myriophyllum (*Myriophyllum lapidicola*), *Ricinocarpos brevis*, Paynter's Tetratheca (*Tetratheca paynterae*) and Granite Poison (*Gastrolobium graniticum*). No threatened ecological communities or threatened flora species listed under the EPBC Act were identified during the flora and vegetation surveys completed within the Project areas.

As previously discussed, suitable habitat for Chiddarcooping myriophyllum and Granite Poison was not identified within any of the Project areas and is therefore considered unlikely to be present. In addition, suitable habitat for *Ricinocarpos brevis* and Paynter's Tetratheca was also absent from the RSA. As such, the Project will not impact on either of these species in the respective Project areas.

Suitable habitat for *Ricinocarpos brevis* and Paynter's Tetratheca has been identified within the MSA, with both species being typically restricted to banded ironstone outcropping. Potential impacts to these species by the Project would involve the removal of critical habitat for mine pits and haul roads (all other infrastructure is located off banded ironstone regions). It is estimated that approximately 181 ha of banded ironstone habitat would be removed by the Project, although not all of these areas exhibit surface outcropping and therefore the total habitat removed would be much less. It should be noted that numerous surveys have been conducted of the MSA over the past six years throughout various seasons and these species have not been identified to date. The closest known location of these species to the Project is the Windarling Range, located approximately 60 km west-south-west. As such, it is not considered that this species are present within the MSA and therefore will not be impacted by the implementation of the Project.

### **Fauna**

#### Slender-billed Thornbill (western)

Habitat degradation is considered the main threat to this Vulnerable species. However, their preferred habitat is not present within the Project area, nor was the bird observed during onsite fauna surveys. Consequently, the species is not considered to be present within the proposal area and will not be impacted by the implementation of the Project.

#### Malleefowl

Habitat degradation is one of the largest threats to the Malleefowl. Historically in Western Australia, extensive clearing of mallee vegetation for agricultural purposes has resulted in a 30% reduction in their overall range. Fragmentation of habitats also leads to isolation of populations and can lead to increased predation on Malleefowl as it may force them to forage over greater distances in open or cleared areas, increasing their exposure to prey (SEWPAC 2012a).

The MSA is located within an area surrounded by native vegetation that has experienced minimal disturbance (i.e. exploration activities, fire breaks, recreational camping). The Mount Manning Nature Reserve (36208) located to the west and south of the MSA, is a Class C Reserve protected for the

purposes of conservation of flora and fauna. In addition, TES reported that extensive areas of suitable Malleefowl habitat are present within and adjacent to the MSA. As previously mentioned, MMS will also utilise LIDAR data to demonstrate the presence of habitats and populations (by the identification of mounds) within the wider region and outside of proposed disturbance areas.

The disturbance required for the Project is considered minimal, but will likely result in the relocation of some local individuals caused by the removal of potential habitat. A total of 614 ha is proposed to be cleared as part of the Project within the MSA, however, not all of this area is considered suitable habitat (i.e. BIF areas and rocky hills) and therefore the overall loss of suitable Malleefowl habitat would be less. This loss of habitat is considered minimal given the scale of suitable habitat surrounding the Project area and therefore is not anticipated to have a significant impact on the population, and subsequently is unlikely to impact on the conservation status of the species (TES 2011).

Although the Project will remove some local habitat for Malleefowl, the area is surrounded by suitable, relatively undisturbed habitat, including protected areas within the adjacent Nature Reserve. As the mine footprint will not lead to isolation of existing habitats, the impact from fragmentation is likely to be negligible.

Where the results of LIDAR identify significant Malleefowl habitat within the wider Project area (and outside of proposed disturbance areas), MMS will develop a long-term monitoring program to evaluate the changes in populations over time in order to identify whether the Project is having a negative impact on local populations. This strategy has been employed at other mine sites on BIF ranges with similar habitat and vegetation structure (e.g. Mt Gibson, Karara). At Mount Gibson Mine (MGM) for example, it has been shown that with the exception of habitat clearing, mining activities have very little impact on the behaviour of Malleefowl with newly active mounds recorded adjacent to high traffic areas (MGM 2011).

Fires are also a serious threat to Malleefowl and can lead to deaths of individual birds, as well as significant loss of mounds and habitat across large areas. MMS proposes to develop a Fire Management Plan for the Project to minimise the potential for large fires.

Another significant threat to the Malleefowl is predation, most commonly by introduced species. Foxes are one of their most detrimental predators as they are known to prey on them during all stages in the Malleefowl lifecycle, from unhatched eggs, chicks and adults. Raptors and feral cats are also known to prey upon Malleefowl (SEWPAC 2012a).

Introduced species such as foxes, feral cats, dogs and rabbits are all common throughout the Goldfields region and have been observed by MMS staff during exploration programs. MMS proposes to link to in any neighbouring predator control program as part of the Project to help minimise the impacts of the introduced species on the local Malleefowl population.

The Project will increase the amount of vehicle traffic experienced within the MSA. This may result in a small increase in mortality to Malleefowl in the immediate vicinity of the Project area. MMS propose to implement traffic speed restrictions and fauna awareness signs in areas of increased Malleefowl activity (i.e. within close proximity to known active mounds) in addition to providing environmental awareness training to all site staff and contractors.

For species listed as Vulnerable under the EPBC Act, SEWPAC has issued criteria for assessing whether a proposed action is likely to have significant impact on the species (DEWHA 2009). The following table addresses the criteria in relation to the Project and proposed impacts on the Malleefowl.



**Table 4: Criteria for significant impacts to the Malleefowl listed as Vulnerable under the EPBC Act in relation to the Project**

Vulnerable species criteria for significant impacts	Project Meets Criteria?	Comments regarding the Project and impacts to Malleefowl
Lead to long-term decrease in the size of an important population of the species	No	<p>The local population of Malleefowl within the Project area and surrounds are not considered to be an 'important population' as defined by SEWPAC (DEWHA 2009). The National Recovery Plan for Malleefowl (Benshemesh 2007) does not specifically identify any important populations within Australia. Further, the local population have not been identified as a key source for breeding or for maintaining genetic diversity, nor is the Project located near the limit of the species range (DEC 2012).</p> <p>The Project is only considered to result in a shift of a few localised individuals into surrounding habitat and therefore it is not considered to result in a decline in overall population.</p>
Reduce the area of occupancy of an important population	No	<p>As discussed above, the local population within the Project area is not considered to be an important population as defined by SEWPAC.</p> <p>Further, the area of occupancy will only be minimally reduced as a result of the Project (&lt;614 ha), with the retention of a significant amount of suitable habitat surrounding the Project area.</p>
Fragment an existing population into two or more populations	No	The Project is surrounded by relatively undisturbed habitat and as such, the proposed disturbance for the Project will not isolate populations or habitats suitable for Malleefowl.
Adversely affect habitat critical to the survival of the species	No	<p>The EPBC Protected Matters Database search (Appendix B) reported that no critical habitats are located within the Project area.</p> <p>The habitat suitable for Malleefowl within the proposed disturbance area is well represented outside the Project area and therefore, the habitat within the proposed area of disturbance is not considered critical to the survival of the species.</p>
Disrupt the breeding cycle of an important population	No	Malleefowl attempting to build mounds in close proximity to active Project areas may be temporarily displaced into surrounding areas. However, given the amount of suitable surrounding habitat, this is not expected to significantly impact on breeding activities.
Modify, destroy, remove, isolate or decrease the availability of quality of habitat to the extent that the species is likely to decline	No	Some suitable habitat will be removed as part of the Project (<614 ha). However, given the available habitat within the surrounding area, including the Mount Manning Nature Reserve, it is not expected to result in the decline of the species population.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	No	Introduced species, such as foxes, camels, cats, dog and rabbits, are already established throughout the Goldfields region and have been observed within the Project area. MMS propose to implement an introduced species management programme during the Project to help minimise the impact these introduced species are having on native flora and fauna of the Project area, including Malleefowl.
Introduce disease that may cause the species to decline	No	It is unlikely that the proposed action will introduce disease to the Project area, particularly those that may impact on the survival of Malleefowl.
Interfere with the recovery of a species	No	The Project is not expected to impact on the mortality of the local population of Malleefowl and it is considered unlikely that the Project will interfere with the recovery of the species.

It is considered unlikely that the proposed activities within the MSA will significantly impact on the Malleefowl and its conservation status based on the following:

- The Project allows for retention of significant available Malleefowl habitat outside and surrounding the Project area, including within the adjacent Mount Manning Nature Reserve
- The Project will not isolate suitable Malleefowl habitat or populations



- Management mitigation measures (described in Section 4) are proposed to be implemented aim to reduce the risk of adverse impacts and to monitor local populations.

Given that Malleefowl are considered unlikely to be found within the RSA, it is considered that the activities proposed within this area will not directly or indirectly impact on Malleefowl or its conservation status.

### 3.1 (e) Listed migratory species

#### Description

A total of five species were listed as Migratory species under the EPBC and considered likely to occur within the Project area. These are presented below in Table 4.

**Table 5: Migratory species listed under the EPBC Act and their presence within the Project area**

Scientific Name	Common Name	Status	Presence within MSA		Presence within RSA	
			EPBC Search*	Fauna Survey	EPBC Search*	Fauna Survey
BIRDS						
<i>Apus pacificus</i>	Fork-tailed Swift	None	May occur	Low possibility <sup>1,2</sup>	May occur	Low possibility <sup>3</sup>
<i>Ardea alba</i>	Great Egret, White Egret	None	May occur	Extremely unlikely <sup>1,2</sup>	May occur	Extremely unlikely <sup>3</sup>
<i>Ardea ibis</i>	Cattle Egret	None	May occur	Unlikely <sup>1</sup>	May occur	-
<i>Leipoa ocellata</i>	Malleefowl	Vulnerable	Likely	Confirmed <sup>1,2,3</sup>	May occur	Unlikely <sup>3</sup>
<i>Merops ornatus</i>	Rainbow Bee-eater	None	May occur	Confirmed <sup>2</sup>	May occur	Likely <sup>3</sup>

- denotes species not listed for that Project area

\* based on Protected Matters Search Results

1 refers to results of the Level 2 Vertebrate Fauna Survey completed in autumn by KLA (2011)

2 refers to results of the Level 2 Vertebrate Fauna Survey completed in spring by Ninox (2012a)

3 refers to results of the Level 1 Vertebrate Fauna Assessment completed in spring by Ninox (2012b)

4 refers to results of the Targeted Malleefowl Surveys completed by TES (2011)

#### Fork-tailed Swift

The EPBC Protected Matters Database search reported the potential for the Fork-tailed Swift (*Apus pacificus*) to occur within both MSA and RSA (Appendix B). The Fork-tailed Swift is a nomadic species that migrates between Asia and Australia (KLA, 2011), typically spending summer and autumn months in Australia (Ninox 2012a; 2012b). It is almost an exclusively aerial bird and has occasionally been observed on land. Little is known about its feeding habits, but it is thought to be insectivorous (KLA 2011) and may be observed flying over the Project area ahead of storm fronts due to increased insect activity (Ninox 2012a; 2012b). However, the species has not been recorded in the area and the likelihood of it occurring within the Project area is considered low (KLA 2011; Ninox 2012a; 2012b).

#### Great Egret

The Great Egret (*Ardea alba*) was identified in the EPBC Protected Matters Database search as potentially occurring in the Project area (Appendix B). The Great Egret is typically found in northern parts of Australia but is increasingly recorded in the south-west of Western Australia (Ninox 2012a; 2012b). However, the Great Egret usually occurs in areas supporting shallow surface water bodies. As no surface water bodies are present within the Project area, it is considered unlikely that the species will occur (KLA 2011; Ninox 2012a; 2012b).

#### Cattle Egret

The Cattle Egret was identified in the EPBC Protected Matters Database search as potentially occurring in the Project area (Appendix B). The Cattle Egret typically inhabits areas comprising short grass, especially damp pastures and wetlands and in the company of cattle and other livestock. Although cattle were

seen in the RSA (Ninox 2012b), this habitat is not present within the Project area and therefore it is unlikely that the Cattle Egret will occur.

#### Rainbow Bee-eater

The EPBC Protected Matters Database search reported the potential for the Rainbow Bee-eater (*Merops ornatus*) to occur within both the MSA and RSA (Appendix B). The Rainbow Bee-eater occurs across most of Australia during summer months where they breed between November and January (KLA 2011). They require open areas, preferably near water, with soft loamy soils that are firm enough to support tunnels in which they lay their eggs (Ninox 2012a; 2012b).

The Rainbow Bee-eater was observed by Ninox (2012a) during their spring fauna survey conducted in portions of the MSA. Although the survey was not conducted during their breeding period, Ninox did identify some areas within the MSA that may provide suitable breeding habitat for the Rainbow Bee-eater (Ninox 2012a).

This species was not observed within the RSA at the time of the spring fauna survey, although it has been previously identified within surrounding areas, including the Goongarrie National Park located approximately 35 km east-south-east from the RSA. Therefore, it is considered likely that this species may occur in the area (Ninox 2012b).

#### Malleefowl

The Malleefowl is also listed as a Vulnerable species under the EPBC Act. All information regarding the Malleefowl is discussed in Section 3.1(d).

#### **Nature and extent of likely impact**

Address any impacts on the members of any listed migratory species, or their habitat.

#### Fork-tailed Swift, Great Egret and Cattle Egret

The likelihood of the Fork-tailed Swift, Great Egret and Cattle Egret occurring within the Project area is considered low to extremely unlikely. There is a lack of suitable habitat for these species within the Project area and any potential occurrences are likely to be limited to aerial flyovers. As such, the Project is not considered to directly or indirectly impact on these migratory species.

#### Rainbow Bee-eater

The Rainbow Bee-eater and potential suitable breeding habitat were identified within the MSA during the spring fauna survey in 2011 (Ninox 2012a). Although the species is known to occur in the area, they are migrants known to travel vast distances, particularly to breed (Ninox 2012a; 2012b) and have been recorded throughout the Goldfields area (DEC 2012). Therefore, it is unlikely that the Project provides critical habitat for the species and any temporary displacement caused by the Project is unlikely to impact on breeding patterns and overall populations.

#### Malleefowl

The Malleefowl is also listed as a Vulnerable species under the EPBC Act and therefore all information regarding the Malleefowl and the nature and extent of likely impacts is discussed in Section 3.1(d).

---

### **3.1 (f) Commonwealth marine area**

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

## Description

The Project is not located within any Commonwealth marine areas and is located more than 400 km from the Western Australian coastline.

## Nature and extent of likely impact

Address any impacts on any part of the environment in the Commonwealth marine area.

Due to the distance of the Project to any Commonwealth marine areas (>400 km), the proposed action will not have any direct or indirect impacts to marine areas.

---

### 3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

#### Description

If the action will affect Commonwealth land also describe the more general environment. The Policy Statement titled *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* provides further details on the type of information needed. If applicable, identify any potential impacts from actions taken outside the Australian jurisdiction on the environment in a Commonwealth Heritage Place overseas.

The MSA is not located within or near any Commonwealth Land.

The EPBC Protected Matters Database search reported that the RSA is located within Commonwealth Lands. Further information is provided in Section 3.2(d).

## Nature and extent of likely impact

Address any impacts on any part of the environment in the Commonwealth land. Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

The MSA is not located within or near any Commonwealth Land and therefore proposed activities within the MSA are unlikely to impact directly or indirectly any Commonwealth lands.

The RSA is located partially within Commonwealth Land. The nature and extent of any potential impacts resulting from the proposed action is discussed further in Section 3.2 (d).

---

### 3.1 (h) The Great Barrier Reef Marine Park

## Description

The Great Barrier Reef Marine Park is not located within or near the Project area.

## Nature and extent of likely impact

Address any impacts on any part of the environment of the Great Barrier Reef Marine Park.

Note: If your action occurs in the Great Barrier Reef Marine Park you may also require permission under the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). If so, section 37AB of the GBRMP Act provides that your referral under the EPBC Act is deemed to be an application under the GBRMP Act and Regulations for necessary permissions and a single integrated process will generally apply. Further information is available at [www.gbrmpa.gov.au](http://www.gbrmpa.gov.au)

The Project will not directly or indirectly impact on the Great Barrier Reef Marine Park.

## 3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

You must describe the nature and extent of likely impacts (both direct & indirect) on the whole environment if your project:

- is a nuclear action;
- will be taken by the Commonwealth or a Commonwealth agency;
- will be taken in a Commonwealth marine area;
- will be taken on Commonwealth land; or
- will be taken in the Great Barrier Reef marine Park.

Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

3.2 (a)	Is the proposed action a nuclear action?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

<b>3.2 (d)</b>	<b>Is the proposed action to be taken on Commonwealth land?</b>	X	No
			Yes (provide details below)

**If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))**

The MSA is not located within any Commonwealth Land.

A search of the EPBC Protected Matters Database shows that the RSA on tenement P30/1895 is located within Commonwealth Lands. As discussed in Section 1.3, a Railway Reserve (Commonwealth Land) is present along the western boundary of the tenement for the purpose of the existing Leonora Railway line. A transport corridor for the existing Goldfields Highway also intersects through the centre of the tenement in a north-south orientation however, this road reserve is considered State land. The rail siding is proposed to be constructed in the vacant land between these two transport corridors. The proposed rail siding will comprise an internal haul road, turkeys nest, fuel farm, equipment shed, ore stockpiles and office amenities.

No Threatened species or Threatened Ecological Communities listed under the EPBC Act were identified within the RSA (including the portion of Commonwealth Land) during flora and fauna surveys conducted in 2011 (Ninox 2012b; Mattiske 2012d). Threatened species identified as potentially occurring from the EPBC Protected Matters Database search (Appendix B), are considered unlikely to inhabit the area and/or unlikely to be adversely impacted by the proposed action (Ninox 2012b; Mattiske 2012d).

Mattiske (2012d) reported that the vegetation communities identified within the RSA are typical of the greater area and comprise taxa that are generally widespread throughout the region. With respect to fauna, Ninox (2012b) stated that there are no outstanding features within the RSA that are of conservation significance and the fauna habitats present are considered widespread in the region, including being represented within the Goongarrie National Park, located approximately 35 km east-south-east of the RSA. Further information on the flora and fauna values of the area are discussed in Section 3.3.

In regards to the portion of Commonwealth Land, the Reserve has already been subjected to moderate levels of disturbance due to the construction and operation of the existing Leonora Railway line.

Based on the information regarding the existing environmental values and current levels of disturbance, the addition of a link to the existing rail network proposed as part of this Project is considered unlikely to adversely impact on the environmental values of the Commonwealth Land.

<b>3.2 (e)</b>	<b>Is the proposed action to be taken in the Great Barrier Reef Marine Park?</b>	X	No
			Yes (provide details below)

**If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))**

### 3.3 Other important features of the environment

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed above). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, you must complete each of the details below (where relevant) for each alternative identified.

### 3.3 (a) Flora and fauna

#### Flora and Fauna of the MSA

Flora surveys completed for the MSA by Mattiske identified a total of 205 flora taxa and 30 vegetation communities. No Threatened flora species or Threatened Ecological Communities listed under the EPBC Act or under the WC Act were identified within the area.

One Priority Ecological Community (PEC), the Lake Giles vegetation complexes (banded ironstone formations) Priority 1 PEC has been identified by the DEC as being located within the MSA. No information regarding the description of this community is available and therefore it is not possible to determine the overall disturbance to this community as part of the proposed Project.

A total of six species listed by the WA DEC as Priority species were identified, all of which have low Priority (P) rankings of Three and Four. These species are:

- *Banksia arborea* (P4)
- *Grevillea georgeana* (P3)
- *Grevillea erectiloba* (P4)
- *Hibbertia lepidocalyx* subsp. *tuberculata* (P3)
- *Mirbelia* sp. Helena & Aurora (P3)
- *Spartothamnella* sp. Helena & Aurora Range (P3).

Based on data provided by the DEC and other proponents within the surrounding area, it is considered that these Priority species are well represented throughout the region and are not restricted to the MSA. As such, the removal of some individuals from the proposed disturbance areas for the Project is unlikely to impact on their conservation status.

The EPBC Protect Matters Database Search (Appendix B) identified two invasive plant species that may potentially occur in the area. However, no introduced or invasive plant species were observed by Mattiske during their survey (Mattiske 2012a; 2012b; 2012c).

Vegetation mapping across the proposed disturbance areas within the MSA by Mattiske identified a total of 15 shrubland and 15 woodland communities. It was reported that all survey areas comprised communities which were typical of the greater area and contain taxa of which the majority are widespread throughout the region (Mattiske 2012a; 2012b; 2012c). It is not anticipated that the Project will significantly impact on any communities within the area. Figure 5 shows the distribution of shrublands and woodland communities within the surveyed areas of the MSA.

Multi-seasonal vertebrate fauna surveys were conducted in portions of the MSA during 2011. A combined total of 113 species were recorded, including 16 native and three introduced mammals, 37 reptiles and 69 bird species.

Three species of conservation significance were recorded during the surveys. The Malleefowl (*Leipoa ocellata*) is listed as a Threatened, Migratory species under the EPBC Act and as a Schedule 1 species (being rare or likely to become extinct) under the WC Act. The Rainbow Bee-eater (*Merops ornatus*) is listed as a Migratory species under the EPBC Act and listed as a Schedule 3 species (being subject to international agreements) under the WC Act. Potential impacts on the Malleefowl and the Rainbow Bee-eater are discussed in Sections 3.1(d) and 3.1(e) respectively.

The Crested Bellbird (Southern) (*Oreoica gutturalis gutturalis*) is listed as a Priority Four species by the DEC (taxa in need of monitoring), but is not formerly listed under any legislation. The Crested Bellbird was identified in the MSA but is considered relatively common in the area and its preferred habitat is widespread throughout the wider region (Ninox 2012a).

A total of eight other species were identified as having the potential to occur within the MSA. The Slender-billed Thornbill (*Acanthiza iredalei iredalei*) listed as Threatened and the Great Egret (*Ardea alba*) and Fork-tailed Swift (*Apus pacificus*), both listed as Migratory under the EPBC Act were identified as having potential to occur in the area (Ninox 2012a). Potential impacts to these species are discussed further in Sections 3.1(d) and 3.1(e), respectively.

Other species of conservation significance include the Major Mitchell's Cockatoo (*Cacatua leadbeateri*), the Peregrine Falcon (*Falco peregrinus*) and the Woma (*Aspidities ramsayi*) which are all listed as Schedule Four species (being in need of protection) under the WC Act. The Australian Bustard (*Ardeotis australis*) and the Carpet Python (*Morelia spilota imbricata*) are listed as Priority Four species (taxa in need of monitoring) by the DEC. With the exception of the Peregrine Falcon, the probability of these species occurring within the MSA is considered low (Ninox 2012a) and therefore it is unlikely they will be significantly impacted by the Project. The probability of the Peregrine Falcon occurring within the MSA is considered moderate to high, however, given they have no particular habitat preference (Ninox 2012a) it is unlikely they will be significantly impacted by the Project.

The EPBC Protected Matters Database Search (Appendix B) reported four introduced mammals with the potential to occur in the area, including the goat (*Capra hircus*), house cat (*Felis catus*), rabbit (*Orytolagus cuniculus*) and the fox (*Vulpes vulpes*). Introduced species recorded by Ninox (2012b) within the MSA included the house mouse (*Mus musculus*), the one-humped camel (*Camelus dromedaries*). MMS exploration personnel have also sighted the camel, fox and cat and dog (unknown species) within the area.

A short-range endemic (SRE) invertebrate fauna baseline survey was conducted in 2011 by Bennelongia Environmental Consultants (Bennelongia) in accordance with EPA Guidance Statement No. 56 (EPA 2004b) and Guidance Statement No. 20 *Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia* (EPA 2009). The multi-seasonal survey was conducted across the four deposits of the MSA that comprise three main habitat types (referred to as Habitats A, B and C). Bennelongia reported that no Threatened SRE species or species highly likely to be considered SRE species were identified during the survey. A total of eight species considered to have a moderate likelihood of being an SRE and 11 species considered to have a low likelihood of being an SRE were recorded in the survey. Of the 19 possible SRE species, 13 were recorded only within proposed Project disturbance areas (Bennelongia 2012).

It is considered unlikely that these SRE species will be threatened by mining for two reasons. Firstly, when related species with multiple records were found in the disturbance area, they also occurred outside the area of proposed disturbance. Thus, existing distributional data from related species suggests the possible SRE species are not restricted to the proposed disturbance footprint. Secondly, most species were recorded from 'Habitat A', where the maximum area to be disturbed will be <13% of the local range of this habitat. It is considered unlikely that a species will be restricted to such a small proportion of the habitat (Bennelongia 2012).

Subterranean fauna assessments were undertaken throughout the MSA during 2011 by Rockwater Pty Ltd (Rockwater). Pilot studies and baselines surveys were conducted for both troglofauna and stygofauna in accordance with EPA Guidance Statement No. 56 (EPA 2004b), EPA Guidance Statement No. 54 *Consideration of Subterranean Fauna in Groundwater Caves during Environmental Impact Assessment in Western Australia* (EPA 2003a) and EPA Guidance Statement No. 54a (Technical Appendix to Guidance Statement No. 54) *Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia* (EPA 2007). Subterranean fauna surveys covered the four proposed deposits within the MSA and were conducted over multiple seasons.

Rockwater identified a total of 47 potential troglobitic animals, with seven species identified within proposed Project disturbance areas. Three of these species have also been recorded within Project reference sites or from other areas within the Yilgarn, indicating that these species are not limited to the Project area. Four species identified within the proposed disturbance area have not been identified elsewhere, however, two of these species were recorded in two separate deposits within the MSA located at least 7 km to 18 km apart (Rockwater 2012). These results provide evidence of interconnectivity between the deposits which occur along a discontinuous 30 km BIF outcrop. Given the potential for dispersal and the limited disturbance of the BIF outcrop (maximum 12 %), minimal impact to the troglofauna community or conservation status of any species would be expected. Moreover, as dewatering is not required, impacts to habitat values through groundwater drawdown and changes to below ground humidity would not be expected to occur beyond the immediate disturbance boundary of the proposed pits.

No stygofauna species were recorded during the sampling conducted by Rockwater in 2011. As such, it is considered unlikely that a significant stygofauna community occurs in the aquifers of the Project area. In addition, dewatering of the orebody will not be required as mining will not extend below the water table which will result in minimal impact to any stygofauna community.

### Flora and Fauna of the RSA

A flora survey conducted at the RSA by Mattiske in 2011 identified a total of 69 vascular plant taxa from 38 genera and 20 families. No Threatened Ecological Communities, Threatened Flora or Priority Flora were identified within the RSA (Mattiske 2012d).

The EPBC Protected Matters Database Search (Appendix B) reported two invasive plant species with the potential to occur in the area however, Mattiske did not identify either of these species during their survey. One introduced species, *Erodium ?boytys* was recorded during the survey at two locations. This species is not listed as a Declared Plant under the *Agricultural and Related Resources Protection Act 1976* (Mattiske 2012d). It is likely the species has been introduced from public traffic utilising the existing rail or road networks that bisect the site.

A total of seven vegetation communities were recorded in the RSA, including six shrubland and one woodland community. These communities are considered typical of the greater area, and contain taxa, of which the majority are widespread throughout the region (Mattiske 2012d).

A Level 1 Vertebrate Fauna Assessment was conducted by Ninox in 2011 for the RSA. The survey was conducted during spring and involved a desktop assessment and reconnaissance survey in accordance with EPA Guidance Statement No. 56 (EPA 2004b).

Ninox identified a total of 18 bird species during the survey. All species were considered to be common and widespread with the majority having distributions throughout the arid and South-west regions of the State. No small mammals were observed during the survey however Echidna (*Tachyglossus aculeatus*) diggings were noted. Two reptile species were recorded during the survey; the dragon lizard (*Ctenophorus scutulatus*) and an unidentified monitor lizard. Two species of introduced fauna were observed during the survey (Rabbit and cattle), however, it is likely that other species such as the dog (*Canis lupus familiaris*), feral cat, fox and rabbit are also in the area (Ninox 2012b).

No fauna listed under the EPBC Act were identified during the survey. Potential impacts to species listed under the EPBC Act identified as having the potential to occur in the RSA have been discussed in Sections 3.1(d) and 3.1(e).

One reptile, the Woma (*Aspidites ramsayi*) and two birds, the Major Mitchell's Cockatoo (*Lophochroa leadbeateri*) and the Peregrine Falcon (*Falco peregrinus*) listed as a Schedule 4 species (in need for



special protection) under the WC Act may occur in the area. In addition, two Priority Four bird species, the Bush Stone-curlew (*Burhinus grallarius*) and the Australian Bustard (*Ardeotis australis*) may also occur in the area. The likelihood of these species occurring within the RSA is considered low to moderate (Ninox 2012b) and therefore it is unlikely the proposed action will adversely impact on their overall populations and conservation status.

### **3.3 (b) Hydrology, including water flows**

#### Hydrology

The MSA is located within the internally draining Raeside-Ponton catchment of the Salt Lake Basin within a catchment area in excess of 115,000 km<sup>2</sup>. It lies within the Salinaland Plateau of the Southern Cross provinces of the Yilgarn Craton. This division is typified by sandplains and lateritic breakaways, granitic and alluvial plains, ridges of metamorphic rocks and granite hills and rises, calcretes, large salt lakes and dunes along valleys (GRM 2011a).

The ground elevation of the MSA and surrounds slopes gently from approximately 390 m Australian Height Datum (AHD) on the flat plains, up to 510 m AHD along the north-south ridges that traverse the site, with an average ground slope of 1%. The north-south BIF ridges within the MSA and surrounding area form a local watershed, with runoff to the west of the ridges reporting to Lake Giles and Lake Barlee (part of the Raeside Palaeochannel), located approximately 7 km to the west and 25 km north-west of the MSA, respectively and runoff to the east of the ridges reporting to Lake Ballard (part of the Yindarigooda Palaeochannel), located approximately 70 km north-east of the MSA (GRM 2011b). No major watercourses are present within the MSA, however minor, ephemeral drainage lines may experience some periodic flows during high intensity rainfall periods (i.e. summer months) (GRM 2011b).

No studies of the RSA have been completed for hydrology purposes however climatic aspects will be similar to those described by GRM for the MSA.

Surface water management will be required for all Project areas to reduce the impact of erosion and localised flooding and minimise operational interruptions or potential asset damage and loss.

#### Hydrogeology

The Rebecca paleodrainage divides the MSA in a north-south direction, with the majority of the MSA lying within the western side of the divide. Regional groundwater flow in the portion of the MSA is expected to be in a westerly direction towards Lake Giles, with salinity increasing with proximity to salt lake system. Initial groundwater investigations by GRM (2011b) within the Snark deposit confirmed this assumption, with groundwater flow reported to be in a north-westerly direction. Groundwater east of the divide is anticipated to flow in an easterly direction towards the Lake Ballard salt lake system (GRM 2011b).

The most likely source of groundwater aquifers within the MSA area is considered to be within fresh and weathered fractured rock, however fresh water supplies are rare. Larger supplies of hypersaline groundwater may be found within paleochannel aquifers (GRM 2011b). Initial groundwater data obtained from exploration activities indicates that salinity ranges across the MSA and surrounding deposits between 630 to 33,000 milligrams per litre Total Dissolved Solids (mg/L TDS), being fresh to saline. Groundwater exploration for Project water requirements within the MSA is ongoing.

Current exploration data suggests that groundwater depths within the MSA are in excess of 48 m and subsequently below the proposed viable ore bodies. As such, dewatering of groundwater is not expected to be required for the Project. This will be confirmed once the resource and pit models have been completed.

### **3.3 (c) Soil and Vegetation characteristics**

The Project area is located within the Coolgardie 2 Bioregion (COO2 – Southern Cross subregion) and East Murchison subregion (MUR1) as defined by the Interim Biogeographical Regionalisation for Australia (IBRA) (Cowan et al. 2001; Cowan 2001). This subregion is characterised by high species and ecosystem diversity, as it is a biogeographic interzone between the Coolgardie and Murchison biogeographic regions (Cowan et al. 2001).

The MSA comprises of a mosaic of eucalypt woodlands on low-lying natural drainage areas and compact gravelly clays, interspersed with low natural relief in the form of ironstone hills and ridges dominated by *Acacia* and *Allocasuarina* scrub communities (Mattiske 2012a; 2012b; 2012c). The majority of the RSA is covered by a mixture of *Acacia* and *Casuarina* scrub communities with mixed eucalypt woodland communities dominating the low-lying and natural drainage areas (Mattiske 2012d).

The Project lies across two soil landscape zones, including the Bimbijy Sandplains and the Mount Jackson Plains and Hills Zone. The Bimbijy Sandplains consists of sandplains on granitic rock, with red deep sands with red loamy earths and some red shallow loams, red shallow sands, salt lake soils, yellow loamy earths and yellow deep sands. The Mount Jackson Plains and Hills Zone consists of undulating plains, with some hills and stony plains on greenstone and granitic rocks with red loamy earths with red-brown hardpan shallow loams and some red sandy earths, red shallow loams and loamy gravels.

A Soil Characterisation study is planned for 2012 to develop Landform Design criteria to ensure that subsequent waste landforms and abandoned pits at the completion of mining are safe, stable and non-polluting.

### **3.3 (d) Outstanding natural features**

The Projects MSA comprises of a series of isolated BIF hills stretching over a 30 km north-south orientation. However, the Project is located within the broader Mount Manning area, which comprises other isolated BIF formations including Mount Manning, Windarling Range, Mount Jackson and the Helena and Aurora Range. These ranges are located within a transitional zone between the Goldfields and Wheatbelt regions and as such, are considered to exhibit relatively high biodiversity values (Outback Ecology Services 2010b).

There are no other outstanding natural features within the Project area.

### **3.3 (e) Remnant native vegetation**

The MSA sits within a continuous tract of native vegetation with minimal disturbance and fragmentation and is therefore not considered remnant vegetation.

The remnant vegetation of the RSA ranged from excellent to very good in shrublands and woodlands to the south of the survey area to degraded in small sections to the north. One introduced species *\*Erodium ?botrys* (Mattiske, 2012d). The condition of the vegetation in this area is most likely attributed to the current level of disturbance caused by the existing rail network and highway that intersects the tenement. Further information on the flora and vegetation of the RSA is provided in Sections 3.3(a) and 3.3(c).

### **3.3 (f) Gradient (or depth range if action is to be taken in a marine area)**

The MSA is characterised by isolated low lying hills (<20 m above natural surface levels) extending over a 30 km length that are surrounded by flat to slightly undulating sand plains. The ground

elevation over the wider area slopes gently from approximately 390 mAHD around the Lake Giles salt lakes (approximately 12 km to the west of the MSA), to maximum elevations in the order of 510 mAHD along the MSA's north-south trending BIF hills. For the general area, this gives an average ground slope of 1% (GRM, 2011b).

The RSA is considered relatively flat, sloping gently from the north-east to south-west with an approximate gradient of 0.01 m/m.

### **3.3 (g) Current state of the environment**

Include information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

#### **Mine Site Area**

The MSA and surrounding MMS tenements has been exposed to mineral exploration activities for the past forty years, previously targeting gold and nickel resources, with more recent activities targeting iron ore deposits within the BIF ranges. The area has also been subjected to sandalwood farming. The overall disturbance at the MSA is considered low and is limited to unsealed exploration tracks, small drill pads (<500 m<sup>2</sup>), exploration/farming camps and old historical recreational camp sites. Disturbance caused by MMS exploration activities is also minimised by ongoing, progressive rehabilitation activities. The remaining, undisturbed areas comprise native vegetation and rocky outcrops. Erosion is very minimal due to the limited area of existing disturbance and the use of raise-blade clearing during exploration programs where possible.

The EPBC Protect Matters Database Search (Appendix B) listed two introduced plants with potential to occur within the MSA, including Ward's Weed (*Carrichtera annua*) and Buffel Grass (*Cenchrus ciliaris*). These plants were not identified during flora surveys conducted by Mattiske in 2011. Existing vegetation is considered to be of excellent condition with no invasive species identified within the MSA (Mattiske 2012a; 2012b; 2012c).

The EPBC Protect Matters Database Search (Appendix B) listed four invasive mammal species with the potential to occur in the MSA, including the goat (*Capra hircus*), the cat (*Felis catus*), the rabbit (*Oryctolagus cuniculus*) and the fox (*Vulpes vulpes*). Unconfirmed sightings of the cat, rabbit and fox have been reported by the MMS Exploration Team in recent years. Further, fauna surveys have also identified the presence of the house mouse (*Mus musculus*) (KLA 2011; Ninox 2012a) and the one-humped camel (*Camelus dromedaris*) (Ninox 2012a). These introduced species are common and well established throughout the Goldfields area.

#### **Rail Siding**

The RSA is located within a pastoral lease and is intersected by both the existing Leonora Railway line and the Goldfields Highway, which run parallel to each other in a north-south orientation approximately 350 m apart. The remaining area is covered mainly by remnant vegetation, as described in Section 3.3(e). Erosion at the RSA is considered minimal due to all undisturbed areas covered with remnant vegetation and compacted soils.

The EPBC Protect Matters Database Search (Appendix B) listed the Ward's Weed and Buffel Grass as invasive plants with the potential to occur in the RSA. These plants were not identified during flora surveys conducted by Mattiske in 2011. One invasive species, *Erodium ?botrys* was identified by Mattiske (2012d) within the RSA, however, this species is not listed under the EPBC Act as an invasive species, or as a Declared Plant under the *Agricultural and Related Resources Protect Act 1976*.

The EPBC Protect Matters Database Search (Appendix B) listed four invasive mammal species with the potential to occur in the RSA, including the goat, cat, rabbit and fox. Further desktop searches for the area also identified the potential for the introduced dog (*Canis lupis familiaris*) to be present within the RSA. The rabbit was confirmed to be present during a fauna survey in 2011, as was some

cattle. It was also noted that the area has also experienced soil compaction from historical grazing activities (Ninox 2012b).

### **3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values**

The Project is not located within any Commonwealth Heritage Places.

The closest Commonwealth Heritage Place to the MSA is the Mount Manning Nature Reserve which is listed on the Register of the National Estate and a Class C Nature Reserve (36208) for the purposes of conservation of flora and fauna. The proposed activities within the MSA are located more than 2 km to the north and east of the Reserve. The Project is not considered to have significant direct or indirect impacts on the conservation or heritage values of the Reserve.

The closest Commonwealth Heritage Places to the RSA is the Goongarrie Area, located on the southern shore of Lake Marmion, estimated to be more than 25 km south-east of the RSA. The site is listed on the Register of the National Estate due to its variety of vegetation types and the presence of a grave site of a European speared by an Aborigine in 1896 (SEWPAC 2012b). Due to the distance from the proposed action, the Project is not considered to impact either directly or indirectly on this heritage place.

Indigenous heritage values are discussed below in Section 3.3(i).

### **3.3 (i) Indigenous heritage values**

The Project does not lie within any Registered Aboriginal Heritage Sites listed on the DIA Aboriginal Heritage Inquiry System as of 21 March 2012 (DIA 2012). The MSA and RSA are located more than 5 km and 1.5 km from any Registered Aboriginal Heritage Site, respectively. As such, the proposed action is unlikely to impact directly or indirectly on any of these Registered sites.

During heritage surveys conducted during 2011, four archaeological sites were identified by Warranup Pty Ltd (Warranup) within the MSA, with one site also considered to have mythological significance. These sites included rock shelters and scatterings sites (Warranup 2011a; 2011b; 2011c). Further heritage surveys and consultation with relevant TOGs regarding the proposed action are ongoing. In the event that disturbance to these sites is unavoidable, MMS will apply for approval to disturb these sites through a Section 18 application under the AH Act.

Indigenous heritage surveys of the RSA are planned for 2012.

### **3.3 (j) Other important or unique values of the environment**

*Describe any other key features of the environment affected by, or in proximity to the proposed action (for example, any national parks, conservation reserves, wetlands of national significance etc).*

All important or unique values of the environment present within the Project area or within close proximity have been described in the sections above.

### **3.3 (k) Tenure of the action area (eg freehold, leasehold)**

The MSA currently lies within a combination of exploration, prospecting and mining leases held by subsidiaries of MMS, namely Macarthur Iron Ore Pty Ltd. A list of these tenements and their current status is provided in Section 1.6.

The RSA is located within prospecting tenement P29/1895 which is registered by Treppo Grande.

**3.3 (l) Existing land/marine uses of area**

The existing land use for the MSA is for mineral prospecting and exploration, in addition to low-scale sandalwood farming.

There is existing land use for the RSA is for transport corridors, namely for the Leonora Railway and the Goldfields Highway, in addition to pastoral grazing.

**3.3 (m) Any proposed land/marine uses of area**

MMS is not aware of any other proposed land use for the Project area other than those described within this Referral as part of the proposed action.

## 4 Measures to avoid or reduce impacts

Note: If you have identified alternatives in relation to location, time frames or activities for the proposed action at Section 2.3 you will need to complete this section in relation to each of the alternatives identified.

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

For any measures intended to avoid or mitigate significant impacts on matters protected under the EPBC Act, specify:

- what the measure is,
- how the measure is expected to be effective, and
- the time frame or workplan for the measure.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

Provide information about the level of commitment by the person proposing to take the action to implement the proposed mitigation measures. For example, if the measures are preliminary suggestions only that have not been fully researched, or are dependent on a third party's agreement (e.g. council or landowner), you should state that, that is the case.

Note, the Australian Government Environment Minister may decide that a proposed action is not likely to have significant impacts on a protected matter, as long as the action is taken in a particular manner (section 77A of the EPBC Act). The particular manner of taking the action may avoid or reduce certain impacts, in such a way that those impacts will not be 'significant'. More detail is provided on the Department's web site.

For the Minister to make such a decision (under section 77A), the proposed measures to avoid or reduce impacts must:

- clearly form part of the referred action (eg be identified in the referral and fall within the responsibility of the person proposing to take the action),
- be must be clear, unambiguous, and provide certainty in relation to reducing or avoiding impacts on the matters protected, and
- must be realistic and practical in terms of reporting, auditing and enforcement.

More general commitments (eg preparation of management plans or monitoring) and measures aimed at providing environmental offsets, compensation or off-site benefits CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, if your proposal proceeds to these stages).

One species listed under the EPBC Act, the Threatened and Migratory Malleefowl (*Leipoa ocellata*), was identified as having the potential to be impacted by the Project. However, with the implementation of the following mitigation measures, the overall impact to the species is considered to be low as the Project is unlikely to impact on their overall population, distribution and conservation status. These management measures are summarised in Table 6 below.

All other species listed under the EPBC Act that either potentially occur or are known to occur within the Project area were considered unlikely to be impacted by the Project due to lack of suitable habitat or due to their nomadic lifestyle (see Sections 3.1(d) and 3.1(e) for further information).

**Table 6: Summary of Proposed Mitigation and Management Measures for the Project to Minimise Impacts to the Malleefowl**

Potential Impact	Management Objective	Proposed Management Action
Direct removal of habitat	Minimise reduction in local Malleefowl habitat caused by clearing operations required for the Project	<ul style="list-style-type: none"> <li>• Demonstrate that habitat within the Project area is not critical to the survival of the local population (i.e. complete further studies to assess the extent of available Malleefowl habitat outside the Project area)</li> <li>• Implement exclusion zones around recently active and active breeding mounds, where possible</li> <li>• Utilise existing disturbance areas, where possible</li> <li>• Develop clearing procedures, including managing clearing of, or within close proximity of, potentially active or active breeding mounds</li> <li>• Prohibit unauthorised clearing (i.e. offroad driving, clearing without Environment Team or regulatory approval)</li> <li>• Undertake progressive rehabilitation of disturbed areas as soon as practicable and where logistically possible</li> </ul>
	Minimise reduction in local Malleefowl habitat caused by spread of large fires	<ul style="list-style-type: none"> <li>• Develop a Fire Management Plan to reduce the occurrence and/or impact of fires within the Project area</li> </ul>
Injury / mortality of individuals	Minimise vehicle/machinery collisions with individual Malleefowl	<ul style="list-style-type: none"> <li>• Provide education and training on native flora and fauna conservation values of the Project area, including Malleefowl, to all employees and contractors (i.e. through inductions, educational presentations, posters)</li> <li>• Encourage reporting of Malleefowl locations to Environment Team to monitor recent activity</li> <li>• Enforce speed restrictions in areas known to have frequent Malleefowl activity (i.e. vicinity of active mounds)</li> <li>• Prohibit off road driving to protect impacts to potential Malleefowl habitat and breeding mounds</li> </ul>
	Reduce impact of predation on local Malleefowl (particularly fox)	<ul style="list-style-type: none"> <li>• Encourage reporting of introduced species locations to Environment Team to monitor recent activity</li> <li>• Develop a Predator Control Program for the Project in consultation with the DEC</li> </ul>
Decline in local Malleefowl populations as a direct result of the Project	Secure the long-term survival of the local Malleefowl population	<ul style="list-style-type: none"> <li>• Develop a Malleefowl monitoring program for the Project in consultation with the DEC, with the aim to: <ul style="list-style-type: none"> <li>○ Identify local breeding populations and their preferred habitat</li> <li>○ Identify significant declines in local populations</li> <li>○ Identify requirements for recovery action plans or further studies</li> <li>○ Contribute to industry knowledge and/or research of Malleefowl distributions and populations, where possible</li> </ul> </li> </ul>

## 5 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (ie. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

### 5.1 Do you THINK your proposed action is a controlled action?

<input checked="checked" type="checkbox"/>	No, complete section 5.2
<input type="checkbox"/>	Yes, complete section 5.3

### 5.2 Proposed action IS NOT a controlled action.

Specify the key reasons why you think the proposed action is NOT LIKELY to have significant impacts on a matter protected under the EPBC Act.

MMS consider the proposed action is not a controlled action if managed in a particular manner (as discussed within this Referral document) due to the following reasons:

- Impacts to the Malleefowl are considered to be low as they are unlikely to impact on the overall distribution, populations and conservation status of the species
- The majority of Malleefowl mounds recorded throughout the project area were classified as extinct indicating the Project area does not contain a significant population of Malleefowl.
- The area of disturbance will require only four potentially active mounds to be removed. Note that these mounds were not used in the last breeding season so the impact may be relatively minor.
- The Project area sits within a continuous tract of similar vegetation and habitat including reserved land to the west in Mt Manning Nature Reserve.
- As land clearing will result in minimal fragmentation of the habitat, dispersal patterns and home range sizes are unlikely to be impacted.

### 5.3 Proposed action IS a controlled action

Type 'x' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

#### Matters likely to be impacted

<input type="checkbox"/>	World Heritage values (sections 12 and 15A)
<input type="checkbox"/>	National Heritage places (sections 15B and 15C)
<input type="checkbox"/>	Wetlands of international importance (sections 16 and 17B)
<input type="checkbox"/>	Listed threatened species and communities (sections 18 and 18A)
<input type="checkbox"/>	Listed migratory species (sections 20 and 20A)
<input type="checkbox"/>	Protection of the environment from nuclear actions (sections 21 and 22A)
<input type="checkbox"/>	Commonwealth marine environment (sections 23 and 24A)
<input type="checkbox"/>	Great Barrier Reef Marine Park (sections 24B and 24C)
<input type="checkbox"/>	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
<input type="checkbox"/>	Protection of the environment from Commonwealth actions (section 28)
<input type="checkbox"/>	Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above.



None of the Matters of NES are considered to be significantly impacted as a result of the proposed action, therefore MMS does not consider the Project to be a controlled action.

## 6 Environmental record of the responsible party

NOTE: If a decision is made that a proposal needs approval under the EPBC Act, the Environment Minister will also decide the assessment approach. The EPBC Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach.

	Yes	No
<p><b>6.1 Does the party taking the action have a satisfactory record of responsible environmental management?</b></p> <p><b>Provide details</b></p> <p>The proposed action is the first mining related project for the Company to date. MMS has successfully managed all environment related issues during exploration activities completed to date and has not been subject to any non-compliance or improvement notices by the DMP or DEC.</p>	X	
<p><b>6.2 Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</b></p> <p><b>If yes, provide details</b></p>		X
<p><b>6.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?</b></p>	X	

**If yes, provide details of environmental policy and planning framework**

MMS has a range of corporate commitments in relation to environmental, community, cultural heritage and sustainability values. These can be downloaded at the following address:

<http://macarthurminerals.com/corporate/our-commitment>

MMS's environmental policy is as follows:

*Macarthur Minerals Pty Ltd is committed to creating a long term future at Lake Giles. It is our policy to conduct our business responsibly and in a manner designed to protect our employees, the community's health and the natural environment. In order to consistently achieve this aim it is required that we:*

*Comply with legal requirements as a minimum and go beyond those requirements where necessary to comply with our environmental policy.*

*Assess the potential environmental effects of our activities and integrate environmental consideration into all aspects of our planning, operational decisions and processes.*

*Design, develop and operate our facilities with a view to reducing the impact of our operation, ensuring efficient use of energy, water and other resources; minimizing waste generation and disposal.*

*Progressively rehabilitate areas no longer required for efficient operation using the most practical methods. The rehabilitation will comply, as a minimum, with the licence condition and appropriate regulations. Industry best practices will be sought and where appropriate, applied.*

*Communicate with our employees, the community and other stakeholders in relation to environmental issues.*

*Advise and train our employees and contractors as necessary to meet our environmental undertakings.*

*All personnel will be trained so that the above standards are met.*

*This policy will be reviewed every 12 months in accordance with mining regulations.*

**6.4 Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?**

**Provide name of proposal and EPBC reference number (if known)**

X

## 7 Information sources and attachments

(For the information provided above)

### 7.1 References

- List the references used in preparing the referral.
- Highlight documents that are available to the public, including web references if relevant.
- Bennelongia Environmental Consultants (2012) *Ularring Hematite Project Short Range Endemic Invertebrate Surveys*. Unpublished report prepared for Macarthur Minerals Limited.
- Benshemesh, J. (2007) *National Recovery Plan for Malleefowl*. Department for Environment and Heritage, Government of South Australia, South Australia.
- Cockerton, G., A. Brown, P. Goodman and V. Clarke (2006) *Paynter's Tetratheca* (*Tetratheca paynterae* subsp. *Paynterae* ms) *Interim Recovery Plan 2006-2016*. Interim Recovery Plan No. 237. Portman Iron Ore Pty Ltd, Perth, Western Australia and Species and Communities Branch, Department of Environment and Conservation, Government of Western Australia, Perth, Western Australia.
- Cowan, M., G. Graham & N. McKenzie (2001) Coolgardie 2 (COO2 – Southern Cross subregion). In: Department of Conservation and Land Management (Ed.), *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*, pp. 143-154. Government of Western Australia, Perth, Western Australia. Available at: <http://www.dec.wa.gov.au/content/view/960/180/>.
- Cowan, M (2001) Murchison 1 (MUIR – East Murchison subregion). In: Department of Conservation and Land Management (Ed.), *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*, pp. 446-479. Government of Western Australia, Perth, Western Australia. Available at: <http://www.dec.wa.gov.au/content/view/960/180/>.
- Department of Environment and Conservation (1991) *Policy Statement No. 33 – Conservation of Threatened and Specially Protected Fauna in the Wild*, Government of Western Australia, Perth, Western Australia.
- Department of Environment and Conservation (1992) *Policy Statement No. 9 – Conservation of Threatened Flora in the Wild*, Government of Western Australia, Perth, Western Australia.
- Department of Environment and Conservation (2012) *NatureMap Database*. Government of Western Australia, Perth, Western Australia. Available at: <http://naturemap.dec.wa.gov.au/default.aspx>. Accessed on 23 March 2012.
- Department of Environment and Water Resources (2007) *Draft Policy Statement: Use of environmental offsets under the Environmental Protection and Biodiversity Conservation Act 1999*, Commonwealth of Australia, Canberra, Australian Capital Territory.
- Department of the Environment, Water, Heritage and the Arts (2009) *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*, Commonwealth of Australia, Canberra, Australian Capital Territory.
- Department of the Environment, Water, Heritage and the Arts (2010) *Survey guidelines for Australia's threatened birds – Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*, Commonwealth of Australia, Canberra, Australian Capital Territory.
- Department of Indigenous Affairs (2012) *Aboriginal Heritage Inquiry System*. Government of Western Australia, Perth, Western Australia. Available at: <http://www.dia.wa.gov.au/AHIS/default.aspx>. Accessed on 23 March 2012.
- Department of Industry and Resources (2006) *Guidelines for Mining Proposals in Western Australia*, Government of Western Australia, Perth, Western Australia.
- Department of Minerals and Energy (1998) *Guidelines for the Development of an Operating Manual for Tailings Storage*, Government of Western Australia, Perth, Western Australia.
- Department of Mines and Petroleum (1999) *Guidelines for the Safe Design and Operating Standards for Tailings Storage*, Government of Western Australia, Perth, Western Australia.
- Department of Mines and Petroleum & Environmental Protection Authority (2011) *Guidelines for Preparing Mine Closure Plans*, Government of Western Australia, Perth, Western Australia.

- Department of Sustainability, Environment, Water, Population and Communities (2008) *Approved Conservation Advice for Gastrolobium graniticum (Granite Poison)*. Department of Sustainability, Environment, Water, Populations and Communities, Commonwealth Government of Australia, Canberra, Australian Capital Territory.
- Department of Sustainability, Environment, Water, Population and Communities (2012a) *Leipoa ocellata in Species Profile and Threats Database*. Commonwealth of Australia, Canberra, Australian Capital Territory. Available from: <http://www.environment.gov.au/sprat>. Accessed on 23 March 2012.
- Department of Sustainability, Environment, Water, Population and Communities (2012b) *Australian Heritage Database*. Commonwealth of Australia, Canberra, Australian Capital Territory. Available at: <http://www.environment.gov.au/cgi-bin/ahdb/search.pl>. Accessed on 23 March 2012.
- Department of Sustainability, Environment, Water, Population and Communities (2012c) *Ricinocarpos brevis in Species Profile and Threats Database*. Commonwealth of Australia, Canberra, Australian Capital Territory. Available from: <http://www.environment.gov.au/sprat>. Accessed on 7 June 2012.
- EcoSafe Environmental Consultants (2006) *Flora and Fauna Survey for Lake Giles Project of Tenement M30/215*. Unpublished report prepared for Macarthur Minerals Limited.
- Environmental Protection Authority (2003a) *Consideration of Subterranean Fauna in Groundwater Caves during Environmental Impact Assessment in Western Australia*, Guidance Statement No. 54, Government of Western Australia, Perth, Western Australia
- Environmental Protection Authority (2003b) *Implementing Best Practice in proposals submitted to the Environmental Impact Assessment process*, Guidance Statement No. 55 Government of Western Australia, Perth, Western Australia
- Environmental Protection Authority (2004a) *Assessment of Aboriginal Heritage*, Guidance Statement No. 41, Government of Western Australia, Perth, Western Australia.
- Environmental Protection Authority (2004b) *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia*, Guidance Statement No. 56, Government of Western Australia, Perth, Western Australia.
- Environmental Protection Authority (2004c) *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*, Guidance Statement No. 51, Government of Western Australia, Perth, Western Australia
- Environmental Protection Authority (2007) *Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia*, Guidance Statement No. 54a (Technical Appendix to Guidance Statement No. 54), Government of Western Australia, Perth, Western Australia.
- Environmental Protection Authority (2008) *Environmental Offsets – Biodiversity*, Guidance Statement No. 19, Government of Western Australia, Perth, Western Australia.
- Environmental Protection Authority (2009) *Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia*, Guidance Statement No. 20, Government of Western Australia, Perth, Western Australia.
- Garnett, S.T. & G.M. Crowley (2000) *The Action Plan for Australian Birds 2000*. Environment Australia and Birds Australia, Canberra, Australian Capital Territory. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/action/birds2000/index.html>.
- Goldfields Landcare Services (2011) *Flora and Vegetation Survey Lake Giles Central*. Unpublished report for Macarthur Minerals Limited.
- Groundwater Resource Management (2011a) *Hydrological Baseline Assessment Lake Giles Hematite Project*. Unpublished report prepared for Macarthur Minerals Limited.
- Groundwater Resource Management (2011b) *Lake Giles Project Hydrogeological Investigation*. Unpublished report prepared for Macarthur Minerals Limited.
- Keith Lindbeck and Associates (2011) *Snark Project Fauna Assessment*. Unpublished report prepared for Macarthur Minerals Limited.
- Macarthur Minerals Limited (2012) *Targeted Survey of Priority Flora – Ularring Hematite Project*. Unpublished report.

- Mattiske (2011) *Flora Assessment of Drill Holes in Banjo/Lost World and Moonshine Deposits, Lake Giles Survey Area*. Unpublished report prepared for Macarthur Minerals Limited.
- Mattiske Consulting Pty Ltd (2012a) *Level 2 Flora and Vegetation Survey of the Snark Deposit, New Campsite and Explosives Storage Facility, Ularring Hematite Project Area*. Unpublished report prepared for Macarthur Minerals Limited.
- Mattiske Consulting Pty Ltd (2012b) *Level 2 Flora and Vegetation Survey of the Central Deposit and Proposed Haul Road, Ularring Hematite Project Area*. Unpublished report prepared for Macarthur Minerals Limited.
- Mattiske Consulting Pty Ltd (2012c) *Level 2 Flora and Vegetation Survey of the Banjo Deposit, Ularring Hematite Project Area*. Unpublished report prepared for Macarthur Minerals Limited.
- Mattiske Consulting Pty Ltd (2012d) *Flora and Vegetation Mapping of the Proposed Rail Siding, Menzies Survey Area*. Unpublished report prepared for Macarthur Minerals Limited.
- Mount Gibson Mine (2011) *Annual Environmental Report*. Unpublished report.
- Ninox Wildlife Consulting (2012a) *A Spring Vertebrate Fauna Survey, Ularring Hematite Project, Snark Area, Western Australia*. Unpublished report prepared for Macarthur Minerals Limited.
- Ninox Wildlife Consulting (2012b) *A Level 1 Vertebrate Fauna Assessment of a Proposed Rail Siding Near Menzies, Western Australia*. Unpublished report prepared for Macarthur Minerals Limited.
- Outback Ecology Services (2010a) *Lake Giles Project Flora and Vegetation Desktop Study*. Unpublished report prepared for Macarthur Minerals Limited.
- Outback Ecology Services (2010b) *Lake Giles Project, Terrestrial Fauna (including Short Range Endemics) Desktop Study*. Unpublished report prepared for Macarthur Minerals Limited.
- Outback Ecology (2010c) *Revised Level 1 Flora and Vegetation Survey: Lake Giles New Exploration Areas*. Unpublished report for Macarthur Minerals Limited.
- Patten, J. and A. Brown (2004) *Chiddarcooping Myriophyllum (Myriophyllum lapidicola) Interim Recovery Plan 2004-2009*. Western Australian Threatened Species and Communities Unit, Department of Conservation and Land Management, Government of Western Australia, Perth, Western Australia.
- Paul Armstrong and Associates (2007) *Vegetation Survey and Rare Flora Search of the Clark Hill North Prospect Mining Project*. Unpublished report prepared for Macarthur Minerals Limited.
- Rockwater Proprietary Limited (2012) *Ularring Hematite Project; Results of Phase II Subterranean Fauna Investigation*. Unpublished report prepared for Macarthur Minerals Limited.
- Terrestrial Ecosystems (2011) *Malleefowl (Leipoa ocellata) survey for the Snark Project*. Unpublished report prepared for Macarthur Minerals Limited.
- Warranup Pty Ltd (2011a) *Preliminary Report of an Archaeological Survey of Proposed Drilling Projects at Snark, Lost World, Central, Banjo and Moonshine Project Areas*. Unpublished report prepared for Macarthur Minerals Limited.
- Warranup Pty Ltd (2011b) *Preliminary Report of an Ethnographic Survey with Representatives of the Wati Group of Proposed Exploration Drilling Projects at the Snark, Lost World, Central, Banjo and Moonshine Project Areas*. Unpublished report prepared for Macarthur Minerals Limited.
- Warranup Pty Ltd (2011c) *Preliminary Report of an Ethnographic Survey with Representatives of the Kalamaia Kapu(d)n People of Proposed Exploration Drilling Projects at the Snark, Snark North, Lost World, Central Banjo and moonshine Project Areas*. Unpublished report prepared for Macarthur Minerals Limited.

## 7.2 Reliability and date of information

For information in section 3 specify:

- source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- any uncertainties in the information.

All relevant references and citations used to compile information within this Referral document are provided referenced both in-text and within Section 7.1.

All references used are considered a reflection of current industry and/or scientific knowledge.

All environmental surveys completed within Project areas and referred to within this document have been scoped and prepared in accordance with relevant EPA Guidance Documents, other regulatory guidelines (where applicable) or to industry standards. All the surveys were completed within the last two years and considered to reflect the current state of the environment for the Project area. All environmental consultants used to undertake the surveys are considered to be specialists in their respective fields.

### 7.3 Attachments

Indicate the documents you have attached. All attachments must be less than two megabytes (2mb) so they can be published on the Department's website. Attachments larger than two megabytes (2mb) may delay the processing of your referral.

		✓ attached	Title of attachment(s)
<b>You must attach</b>	figures, maps or aerial photographs showing the project locality (section 1)	✓	Figures 1 and 2
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	Figure 2
<b>If relevant, attach</b>	copies of any state or local government approvals and consent conditions (section 2.5)	X	Not received yet
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	✓	Appendix A
	copies of any flora and fauna investigations and surveys (section 3)	✓	Appendices C-E
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	Appendices C-E
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	X	Heritage Survey reports are in draft form. Final reports can be provided upon request once received.



## 8 Contacts, signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (s 489, EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action<sup>1</sup>.

### Project title:

---

#### 8.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action.

If the proposed action will be taken under a contract or other arrangement, this is:

- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the Great Barrier Reef Marine Park Act<sup>2</sup>, this is the person requiring the grant of a GBRMP permission.

The Minister may also request relevant additional information from this person.

If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

If the Minister decides that further assessment and approval is required, the Minister must designate a person as a proponent of the action. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent will generally be the person proposing to take the action<sup>3</sup>.

Name	Joe Phillips
Title	Chief Operations Officer
Organisation	Macarthur Minerals Limited
ACN / ABN (if applicable)	86 081 705 651
Postal address	PO Box 7031, Brisbane, QLD 4001
Telephone	(07) 3221 1796
Email	<a href="mailto:jphillips@macarthurminerals.com">jphillips@macarthurminerals.com</a>
Declaration	I declare that the information contained in this form is, to my knowledge, true and not misleading. I agree to be the proponent for this action.
Signature	Date

---

<sup>1</sup> If the proposed action is to be taken by a Commonwealth, state or territory government or agency, section 8.1 of this form should be completed. However, if the government or agency is aware of, and has administrative responsibilities relating to, a proposed action that is to be taken by another person which has not otherwise been referred, please contact the Referrals Business Entry Point (1800 803 772) to obtain an alternative contacts, signatures and declarations page.

<sup>2</sup> If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A, EPBC Act). For information about how the GBRMPA may use your information, see [http://www.gbrmpa.gov.au/privacy/privacy\\_notice\\_for\\_permits](http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits).

<sup>3</sup> If a person other than the person proposing to take action is to be nominated as the proponent, please contact the Referrals Business Entry Point (1800 803 772) to obtain an alternative contacts, signatures and declarations page.



**8.2 Person preparing the referral information (if different from 8.1)**

Individual or organisation who has prepared the information contained in this referral form.

Name Brooke Willis & Dean Carter  
Title Environmental Advisor / Environmental Manager  
Organisation Macarthur Minerals Limited  
ACN / ABN (if applicable) 86 081 705 651  
Postal address PO Box 7498 Cloisters Square, Perth, WA 6850  
Telephone (08) 9324 3344  
Email [bwillis@macarthurminerals.com](mailto:bwillis@macarthurminerals.com) / [dcarter@macarthurminerals.com](mailto:dcarter@macarthurminerals.com)  
Declaration I declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature   Date 8 June 2012

---

# FIGURES



**Figure 1: Regional Location Map**



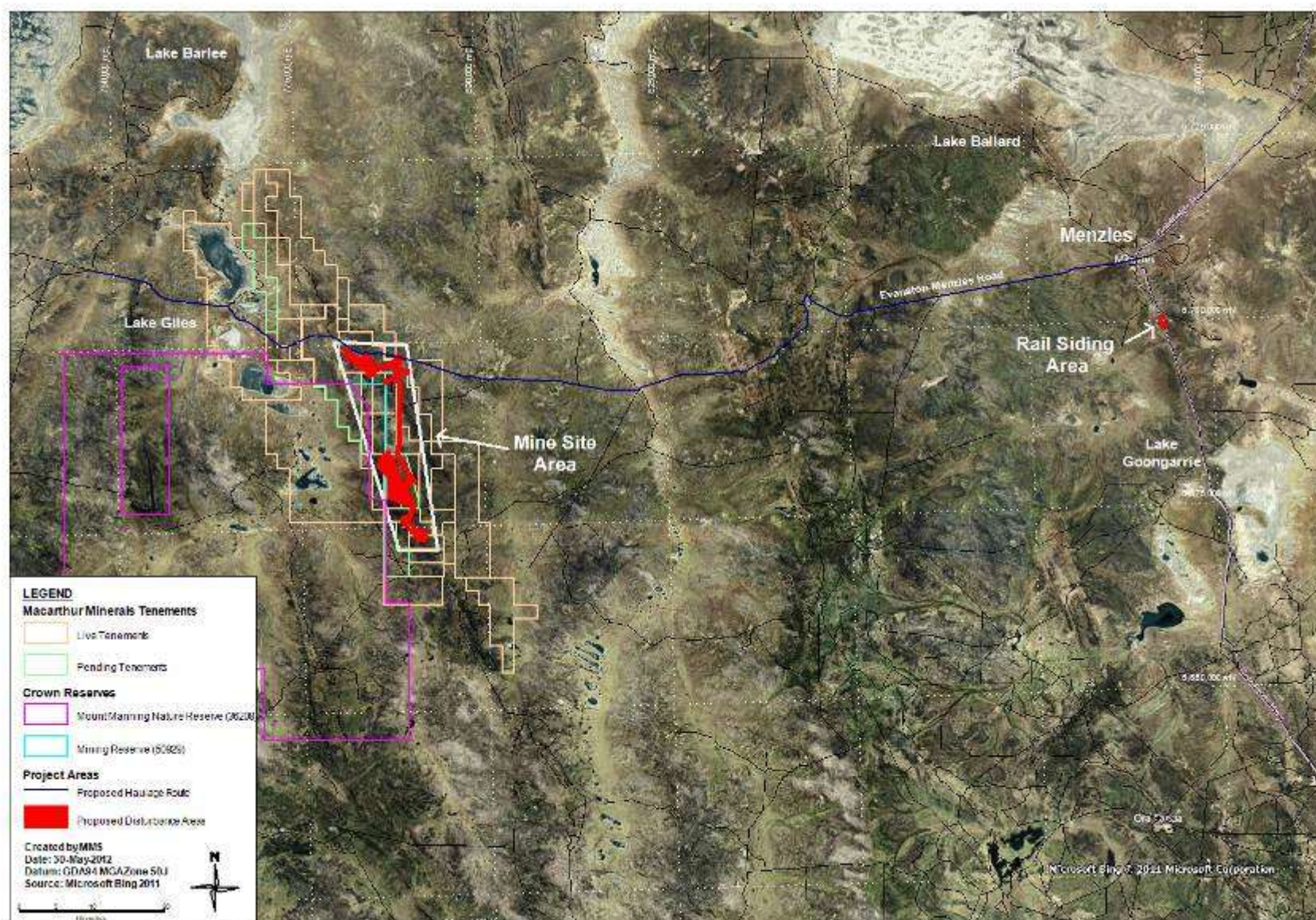


Figure 2: Project Locality Map



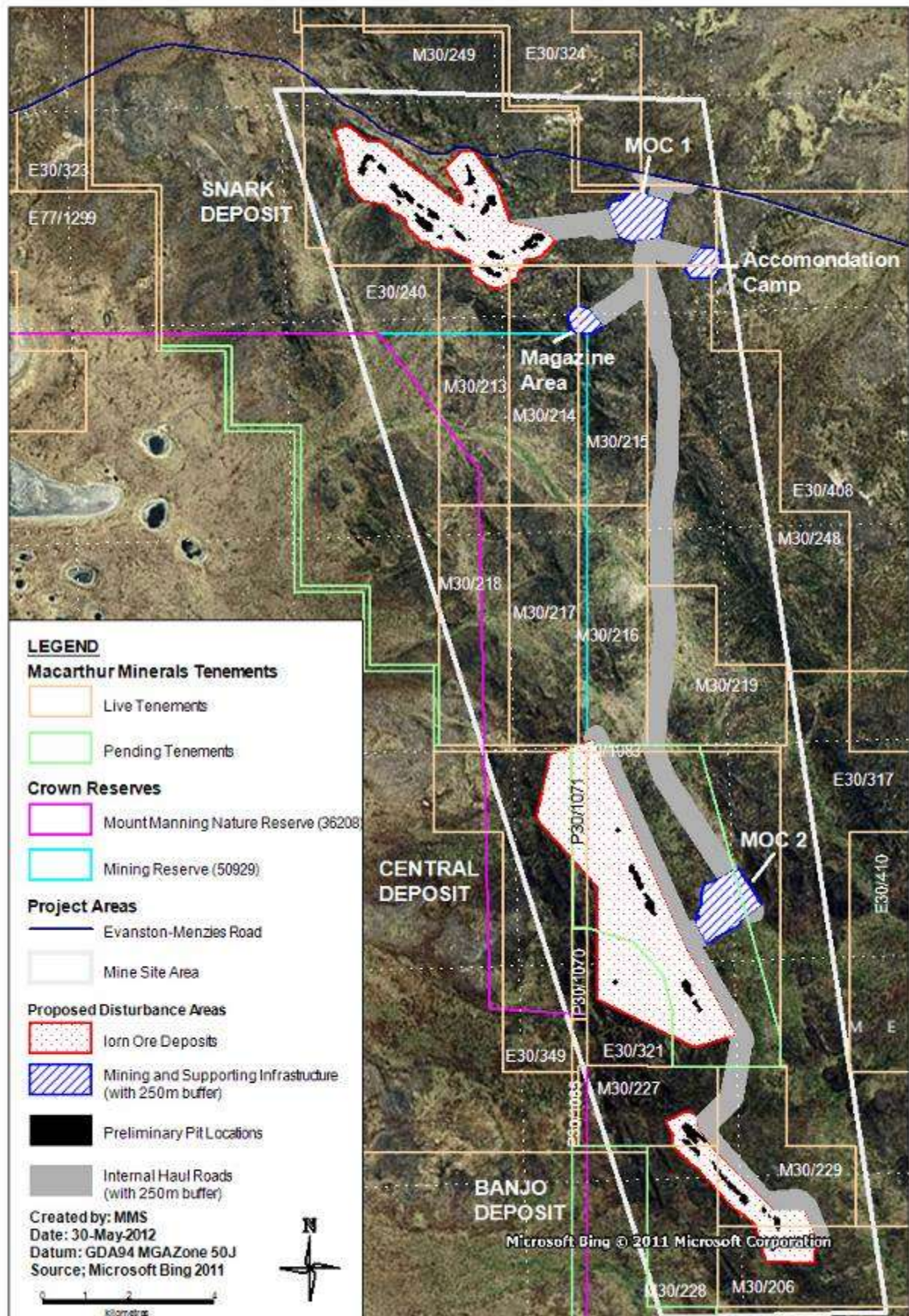


Figure 3a: Mine Site Area Site Layout Plan



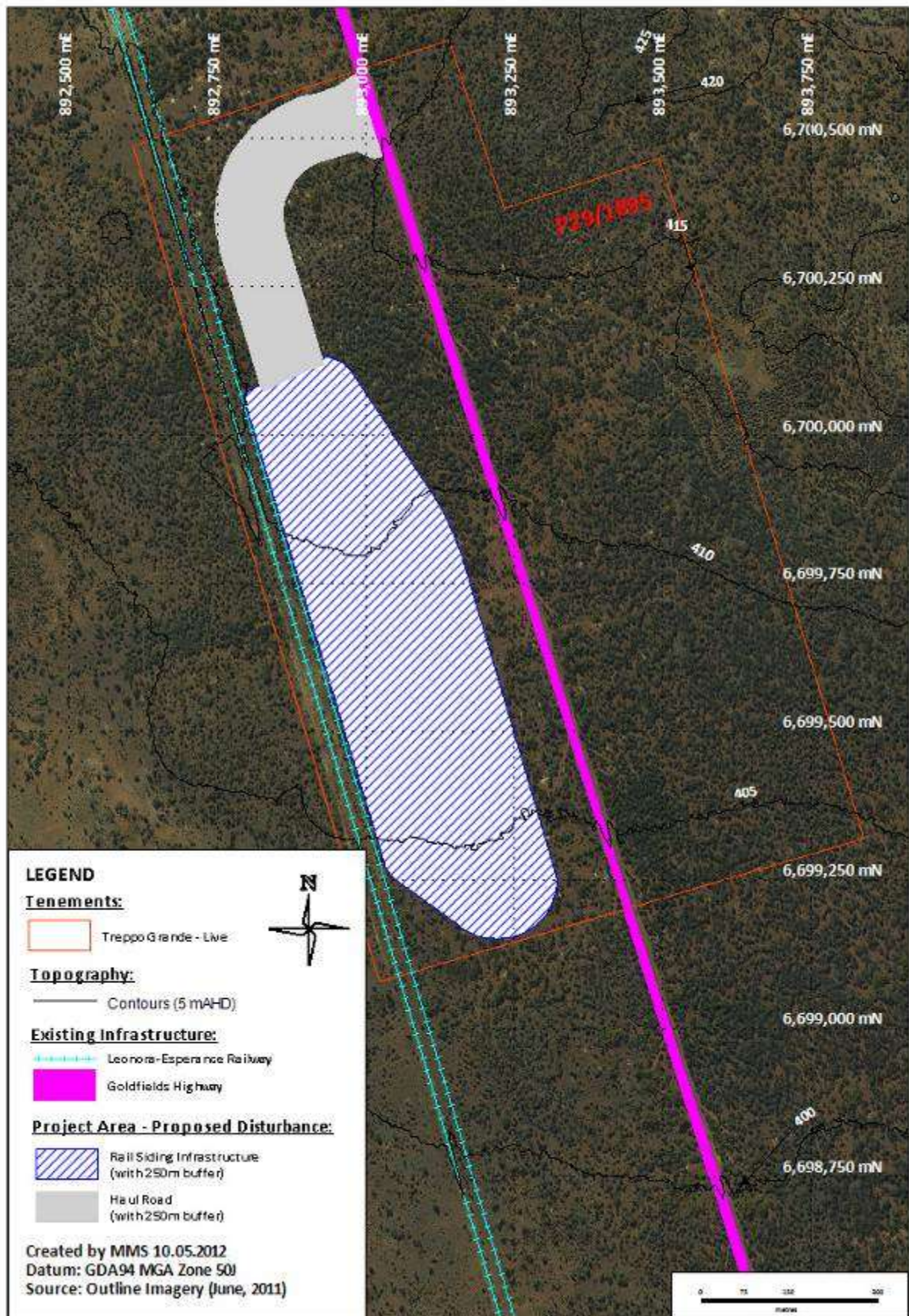


Figure 3b: Rail Siding Area Site Layout Plan



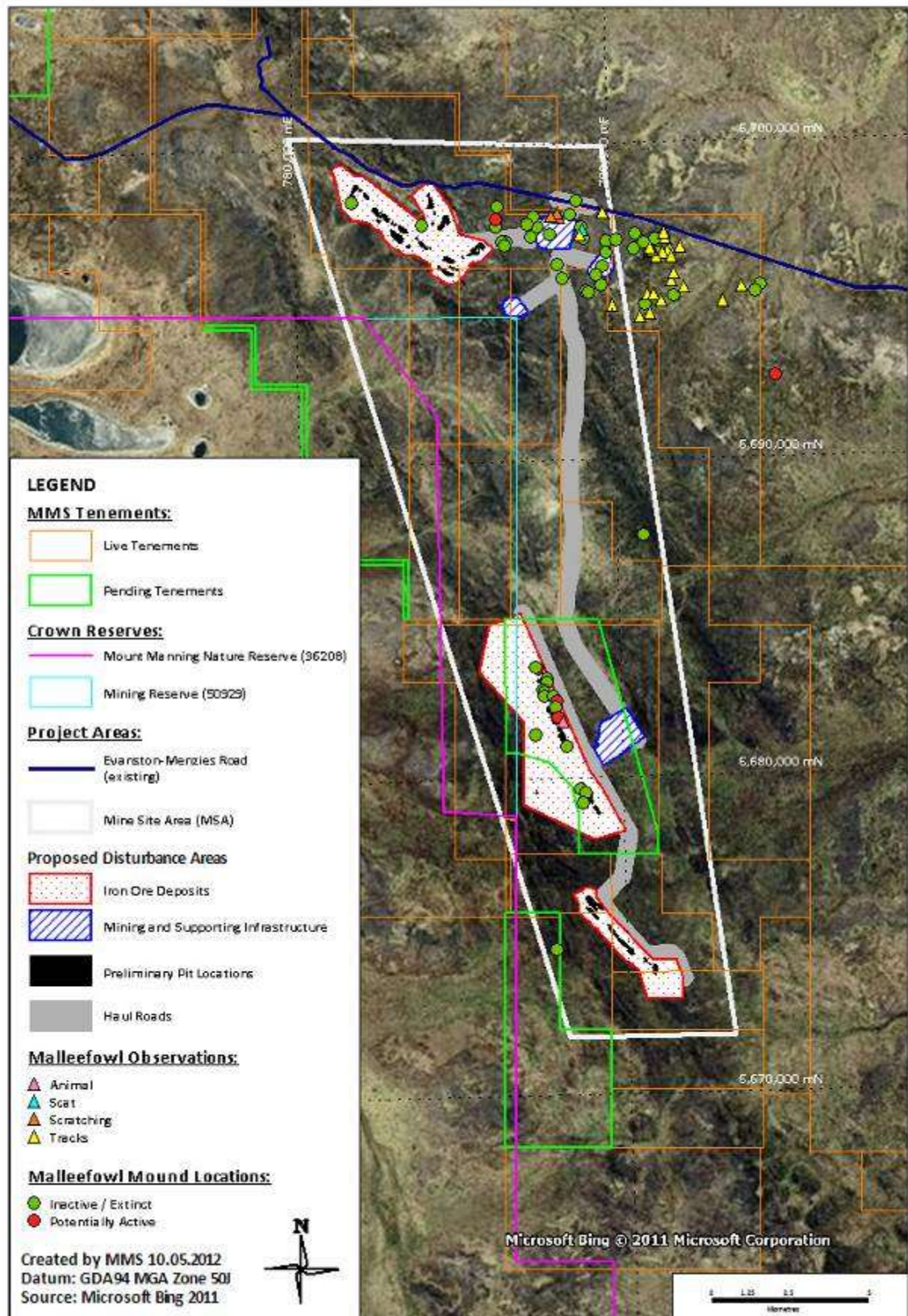


Figure 4: Malleefowl Observations



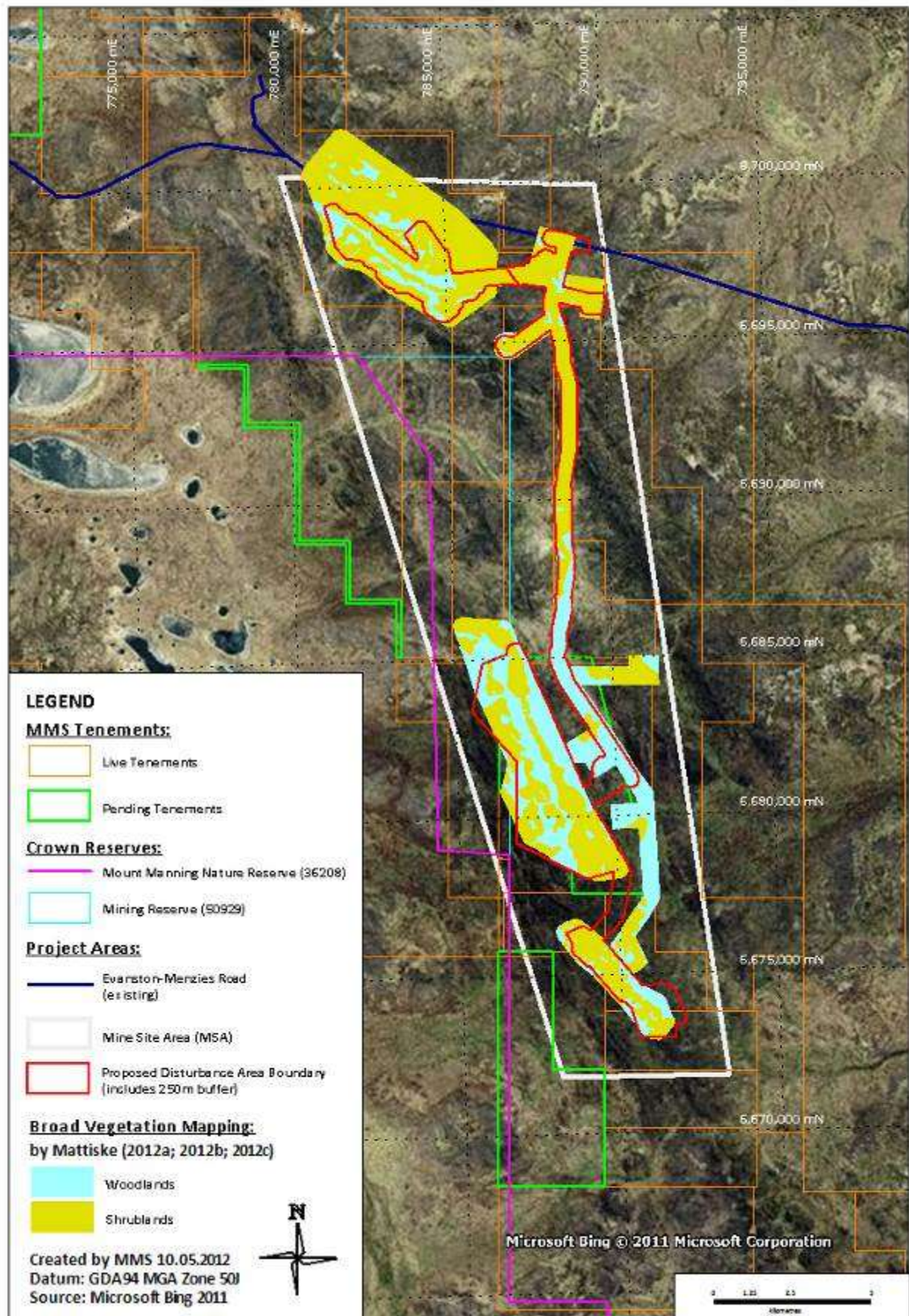


Figure 5: Broad Vegetation Mapping



# **APPENDICIES**

## **Appendix A                      Stakeholder Engagement Register**

## Macarthur Minerals Limited: Stakeholder Engagement Register

Stakeholder	Name	Date	Topic
DMP	Nick Galton-Fenzi	28/2/12	Project briefing
	Mike Freeman	10/11 to 04/12	ESA and Mining Reserve
	Ivor Roberts	3/8/10	Project briefing
	Lee Hassan		
	Ivor Roberts	7/10/11	Project update
	Ivor Roberts	10/11/11	Site visit
DEC	Dan Coffey	26/11/10	Subterranean fauna survey
	Dan Coffey, David Pickles	29/3/11	Vertebrate fauna survey
	Dan Coffey, David Pickles, Sandra Thomas	1/3/12	Project briefing
	Val English		Priority Ecological Communities
	Ken Atkins	28/3/12	Priority flora
EPA	John Dell	30/3/11	Vertebrate and SRE survey
	Mark Jefferies	13/3/12	Project briefing
Malleefowl Preservation Group	Susanne Dennings	20/2/12	Malleefowl surveys
Menzies Shire	Shire President	24/1/11	Project introduction and update meetings
		27/1/11	
		5/4/11	
SEWPaC	Lachlan Wilkinson	4/4/11	Project Briefing
	Lachlan Wilkinson	27/6/10	Malleefowl survey
	Terri-Ann English	21/2/12	EPBC referral
Esperance Port	Various	13 meetings between 8/10 and 12/11.	Access and Port upgrade

## **Appendix B                      EPBC Protected Matters Database Search**

- **Mine Site Area EPBC Protected Matters Database Search**
- **Rail Siding Area EPBC Protected Matters Database Search**



# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>

Report created: 02/04/12 17:26:20

[Summary](#)

[Details](#)

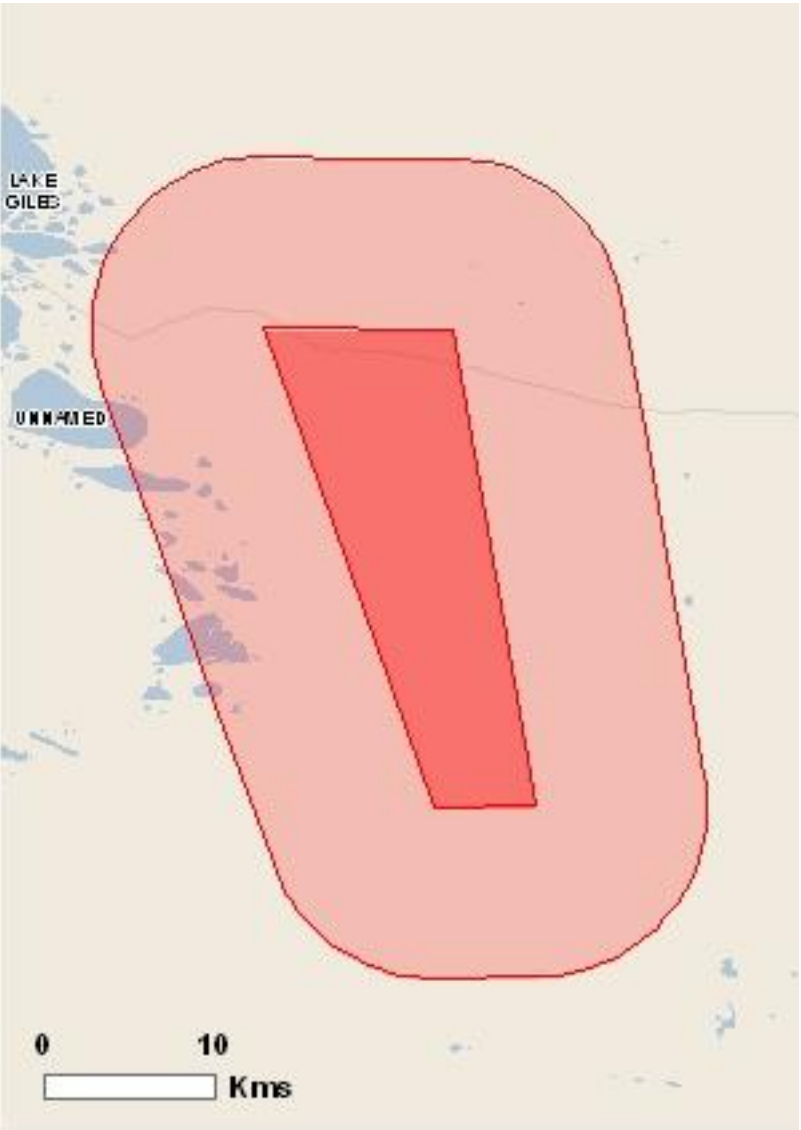
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

[Buffer: 10.0Km](#)



## Summary

### Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Areas:</a>	None
<a href="#">Threatened Ecological Communities:</a>	None
<a href="#">Threatened Species:</a>	5
<a href="#">Migratory Species:</a>	7

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov>.

<a href="#">Commonwealth Lands:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	4
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves:</a>	None

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">Place on the RNE:</a>	1
<a href="#">State and Territory Reserves:</a>	1
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	6
<a href="#">Nationally Important Wetlands:</a>	None

## Details

### Matters of National Environmental Significance

Threatened Species		[ Resource Information ]
Name	Status	Type of Presence
BIRDS		
<a href="#">Acanthiza iredalei iredalei</a>		
Slender-billed Thornbill (western) [25967]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
PLANTS		
<a href="#">Myriophyllum lapidicola</a> Chiddarcooping myriophyllum [55940]	Endangered	Species or species habitat known to occur within area
<a href="#">Ricinocarpos brevis</a> [82879]	Endangered	Species or species habitat likely to occur within area
<a href="#">Tetratheca paynterae</a> Paynter's Tetratheca [66451]	Endangered	Species or species habitat may occur within area

Migratory Species		[ <a href="#">Resource Information</a> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat may occur within area
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Species or species habitat may occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area

Migratory Terrestrial Species		
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
Migratory Wetlands Species		
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Species or species habitat may occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area

## Other Matters Protected by the EPBC Act

Listed Marine Species		[ <a href="#">Resource Information</a> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat may occur within area
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Ardea ibis</a>		
Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Merops ornatus</a>		
Rainbow Bee-eater [670]		Species or species habitat may occur within area

Extra Information

Places on the RNE	[ Resource Information ]
-------------------	--------------------------

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
<a href="#">Mount Manning Nature Reserve</a>	WA	Registered

State and Territory Reserves	[ Resource Information ]
------------------------------	--------------------------

Name	State
Mount Manning Range	WA

Invasive Species	[ Resource Information ]
------------------	--------------------------

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

Name	Status	Type of Presence
Mammals		

<a href="#">Capra hircus</a>		
Goat [2]		Species or species habitat likely to occur within area
<a href="#">Felis catus</a>		
Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
<a href="#">Oryctolagus cuniculus</a>		
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
<a href="#">Vulpes vulpes</a>		
Red Fox, Fox [18]		Species or species habitat likely to occur within area

Plants		
--------	--	--

<a href="#">Carrichtera annua</a>		
Ward's Weed [9511]		Species or species habitat likely to occur within area
<a href="#">Cenchrus ciliaris</a>		
Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area

Coordinates

-29.79611 119.89667,-29.7975 119.99778,-30.04972 120.04194,-30.05056 119.98778,  
-29.79611 119.89667



# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Department of Environment, Climate Change and Water, New South Wales](#)
- [-Department of Sustainability and Environment, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment and Natural Resources, South Australia](#)
- [-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [-Environmental and Resource Management, Queensland](#)
- [-Department of Environment and Conservation, Western Australia](#)
- [-Department of the Environment, Climate Change, Energy and Water](#)
- [-Birds Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-SA Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Atherton and Canberra](#)

- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

---

[Please feel free to provide feedback via the Contact Us page.](#)

[© Commonwealth of Australia](#)

[Department of Sustainability, Environment, Water, Population and Communities](#)

GPO Box 787

Canberra ACT 2601 Australia

+61 2 6274 1111



# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>

Report created: 02/04/12 17:28:24

[Summary](#)

[Details](#)

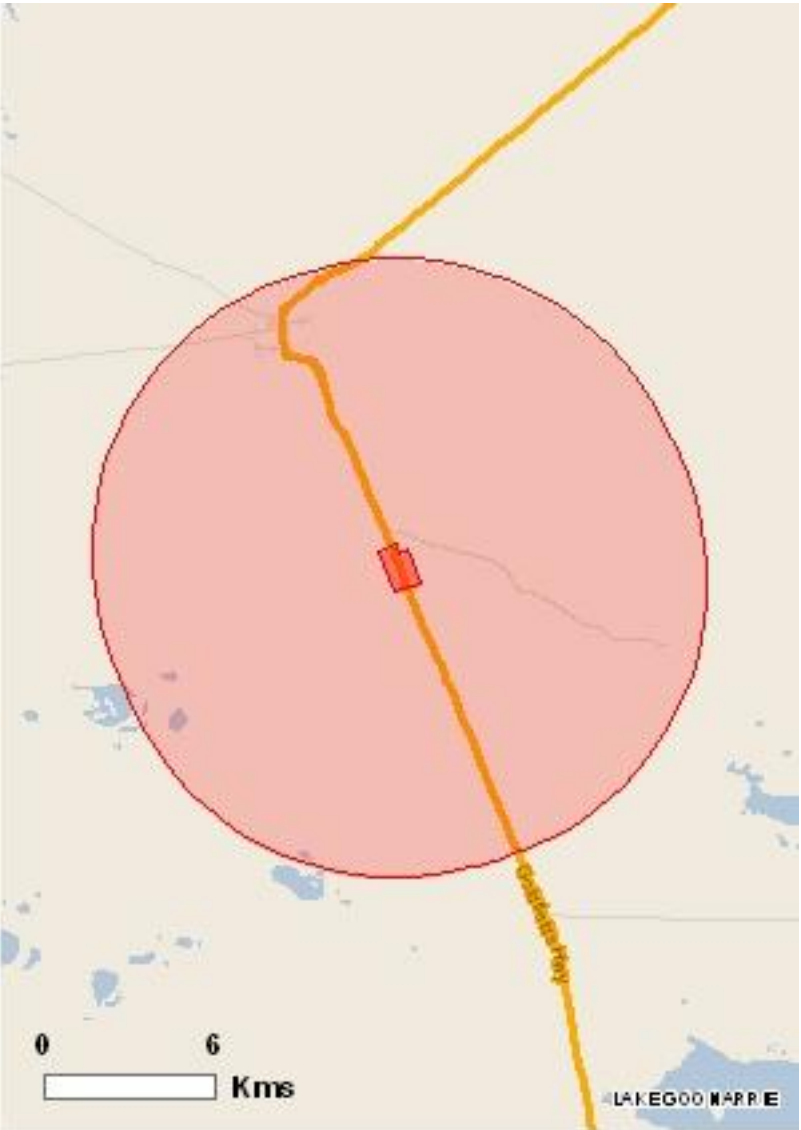
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

[Buffer: 10.0Km](#)



## Summary

### Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Areas:</a>	None
<a href="#">Threatened Ecological Communities:</a>	None
<a href="#">Threatened Species:</a>	4
<a href="#">Migratory Species:</a>	5

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov>.

<a href="#">Commonwealth Lands:</a>	1
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	3
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves:</a>	None

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">Place on the RNE:</a>	None
<a href="#">State and Territory Reserves:</a>	None
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	6
<a href="#">Nationally Important Wetlands:</a>	None

## Details

### Matters of National Environmental Significance

Threatened Species		[ Resource Information ]
Name	Status	Type of Presence
BIRDS		
<a href="#">Acanthiza iredalei iredalei</a>		
Slender-billed Thornbill (western) [25967]	Vulnerable	Species or species habitat likely to occur within area



Name	Status	Type of Presence
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat may occur within area

PLANTS		
<a href="#">Gastrolobium graniticum</a> Granite Poison [14872]	Endangered	Species or species habitat likely to occur within area
<a href="#">Ricinocarpos brevis</a> [82879]	Endangered	Species or species habitat may occur within area

Migratory Species	[ <a href="#">Resource Information</a> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.	

Name	Threatened	Type of Presence
Migratory Marine Birds		
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat may occur within area
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Species or species habitat may occur within area

Migratory Terrestrial Species		
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area

Migratory Wetlands Species		
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands	[ <a href="#">Resource Information</a> ]
--------------------	--

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species	[ <a href="#">Resource Information</a> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.	

Name	Threatened	Type of Presence
Birds		
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat may occur within area
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area

## Extra Information

Invasive Species

[ Resource Information ]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

Name	Status	Type of Presence
Mammals		
<a href="#">Capra hircus</a> Goat [2]		Species or species habitat likely to occur within area
<a href="#">Felis catus</a> Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
<a href="#">Oryctolagus cuniculus</a> Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
<a href="#">Vulpes vulpes</a> Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
<a href="#">Carrichtera annua</a> Ward's Weed [9511]		Species or species habitat may occur within area
<a href="#">Cenchrus ciliaris</a> Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area

## Coordinates

-29.76361 121.05917,-29.76167 121.06472,-29.76444 121.06583,-29.76333 121.06833,  
-29.77361 121.0725,-29.77611 121.06417,-29.76361 121.05917

## Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

## Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Department of Environment, Climate Change and Water, New South Wales](#)
- [-Department of Sustainability and Environment, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment and Natural Resources, South Australia](#)
- [-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [-Environmental and Resource Management, Queensland](#)
- [-Department of Environment and Conservation, Western Australia](#)
- [-Department of the Environment, Climate Change, Energy and Water](#)
- [-Birds Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-SA Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Atherton and Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

---

[Please feel free to provide feedback via the Contact Us page.](#)

## **Appendix C          Autumn Vertebrate Fauna Report**



## **Appendix D                      Spring Vertebrate Fauna Survey Report**

## **Appendix E                      Targeted Malleefowl Survey Report**

## **Appendix F            List of Abbreviations**

## LIST OF ABBREVIATIONS

AH Act	<i>Aboriginal Heritage Act 1972</i>
ANFO	Ammonium nitrate and fuel oil
Bennelongia	Bennelongia Environmental Consultants
BGL	Below ground level
BIF	Banded Iron Formation
DEC	Department of Environment and Conservation
DEWHA	Department of Environment, Water, Heritage and the Arts (now referred to as SEWPAC)
DEWR	Department of Environment and Water Resources (now referred to as SEWPAC)
DIA	Department of Indigenous Affairs
DME	Department of Mines and Energy (now referred to as DMP)
DMP	Department of Mines and Petroleum
DOIR	Department of Industry and Resources (now referred to as DMP)
DOW	Department of Water
DSO	Direct Shipping Ore
EP Act	<i>Environmental Protection Act 1986</i>
EPBC Act	<i>Environmentally Protection and Biodiversity Conservation Act 1999</i>
ESA	Environmentally Sensitive Area
GRM	Groundwater Resources Management Pty Ltd
ha	Hectare
IBRA	Interim Biogeographical Regionalisation for Australia
kL	kilolitre
KLA	Keith Lindbeck and Associates
km	kilometre
m	Metre
Mattiske	Mattiske Consulting Pty Ltd
mg/L TDS	Milligrams per litre Total Dissolved Solids
MGM	Mount Gibson Mine
Mining Act	<i>Mining Act 1978</i>
ML	megalitre
MMS	Macarthur Minerals Limited
MOC	Mining Operations Centre
MOU	Memorandum of Understanding
MSA	Mine Site Area
Mtpa	Million tonnes per annum
NES	National Environmental Significant
Ninox	Ninox Wildlife Consulting
OEPA	Office of Environmental Protection Authority
P	Priority (flora ranking by the DEC)
PEC	Priority Ecological Community
Project	Ularring Hematite Project
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i>
Rockwater	Rockwater Proprietary Limited

RSA	Rail Siding Area
SEWPAC	Department of Sustainability, Environment, Water, Population and Communities
SRE	Short-Range Endemic
TES	Terrestrial Ecosystems
TOG	Traditional Owner Groups
Treppo Grande	Treppo Grande Iron Pty Ltd
TSF	Tailings Storage Facility
UCL	Unallocated Crown Land
WC Act	<i>Wildlife Conservation Act 1950</i>
WRD	Waste Rock Dump