



HASTINGS
Technology Metals Limited

APPENDIX 2-3

Preliminary Fauna Environmental Management Plan



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Technology Metals Limited

October 2017

Preliminary Terrestrial Fauna Environmental Management Plan

Revision A

Summary

Title of proposal	Yangibana Rare Earths Project
Proponent name	Hastings Technology Metals Limited
EPA assessment number	2115
Purpose	<p>The purpose of this EMP is to meet the requirements of the Environmental Scoping Document for Terrestrial Fauna:</p> <ul style="list-style-type: none"> • <i>discussion of the proposed management, monitoring and mitigation methods.</i> • <i>management plans to ensure impacts are not greater than predicted, produced in accordance with Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA, 2016).</i>
Key Environmental Factor	Terrestrial Fauna
Objective	<i>To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.</i>
EMP Provisions: Outcomes	<p>No fauna deaths from ingestion of evaporation pond process liquor.</p> <p>No increase in pest species as a result of the Proposal activities.</p> <p>No uncontrolled waste released into the surrounding environment as a result of the Proposal activities.</p> <p>No fauna will become trapped in trenches as a result of the Proposal activities.</p>

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Corporate endorsement

I hereby certify that to the best of my knowledge, the EMP provisions within this Fauna Environmental Management Plan are true and correct and address the requirements of the Environmental Scoping Document for the Yangibana Rare Earths Project (Assessment number 2115).

[Signature of duly authorised proponent representative]

Name:

Signed:

Designation:

Date:

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1 Context, Scope and Rationale

1.1 Proposal

Hastings Technology Metals Limited (Hastings) proposes to develop the Yangibana Rare Earths Project (the Proposal), located approximately 150km northeast of Gascoyne Junction, in the Upper Gascoyne region of Western Australia.

Rare Earth Elements (REE) will be mined from four deposits. During mining the REE ore will be taken to the ROM pad in preparation for processing, whereas waste rock will be deposited in waste rock landforms, alongside each respective pit. A processing plant, consisting of a beneficiation process and a hydrometallurgical process, will produce a mixed rare earths carbonate product. Tailings will be disposed in three tailings storage facilities (TSFs). Support infrastructure will include, but is not limited to, power, water, accommodation facilities, airstrip and linear infrastructure.

1.2 Key Environmental Factor

1.2.1 Terrestrial fauna

This EMP specifically addresses the Other Environmental Factor: Terrestrial fauna. The implementation of the Proposal will result in clearing of no more than 1,000 Ha of vegetation within a Development Envelope of 12,098 Ha.

1.2.1.1 Proposed activities

Key activities that have the potential to affect terrestrial fauna include:

- Ground disturbance activities.
- Availability of toxic water in the evaporation pond.
- Increase in feral fauna species.

1.2.1.2 Site-specific environmental value

No rare and endangered fauna species occur with the Proposal area. However, there are a number of priority fauna and migratory birds that have been recorded in the Proposal area. There are also a number of potential Short Range Endemic (SRE) species recorded within or in the near vicinity of the Proposal area.

The major river habitat and minor creeklines habitat types are the most vulnerable to impacts from Project activities (Ecoscape 2016). These habitat types are likely to support the following identified fauna species:

- Potential SRE species (including scorpions, spiders, slaters, and centipedes).

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- Birds including Eastern Great Egret (*Ardea modesta*); Grey Falcon (*Falco hypoleuca*); Rainbow Bee-eater (*Merops ornatus*); Peregrine Falcon (*Falco peregrinus*); and Fork-tailed Swift (*Apus pacificus*).
- Fish including the Golden Gudgeon (*Hypseleotris aurea*, Priority 2).

1.3 Condition requirements

This EMP meets the requirements of the Environmental Scoping Document (EPA, April 2017) for the Yangibana Rare Earths Project (EPA Assessment Number 2115):

- *Discussion of the proposed management, monitoring and mitigation methods.*
- *Management plans to ensure impacts are not greater than predicted, produced in accordance with Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA, 2016).*

1.4 Rationale and approach

Results of baseline surveys and a number of assumptions and uncertainties inform the management approach for meeting the environmental objective of this EMP. The identified management actions, management targets, monitoring, reporting, and review and revision of management actions are aligned with the overall management approach.

1.4.1 Baseline surveys

The following studies have informed this section:

- Terrestrial Fauna Report (Ecoscape 2016)
- Flora and Fauna Report (EcoLogical 2017)
- Ecotoxicity Assessment (Hastings 2017)

The historical land use has been pastoral, and evidence of degradation along drainage lines occurs where hooved mammals and weeds are present. Other minor areas are classified as degraded from pastoral activities and exploration tracks and pads (to be rehabilitated at completion of exploration programme). Despite this, the majority (~71%) of the survey area is in excellent condition with native vegetation and habitat largely intact.

1.4.1.1 Fauna

Five species of conservation significance were recorded in the fauna study area:

- Long-tailed Dunnart (*Sminthopsis longicaudata*; listed as a Priority 4 species);
- Western Pebble-Mound Mouse (*Pseudomys chapmani*; listed as a Priority 4 species);

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- Eastern Great Egret (*Ardea modesta*; listed as a Schedule 5 species under the WC Act);
- Grey Falcon (*Falco hypoleuca*; listed as a Schedule 1 species under the WC Act); and
- Rainbow Bee-eater (*Merops ornatus*; listed as a Schedule 5 species under the WC Act).

No fauna species recorded in the fauna study area are listed as Threatened under the EPBC Act. The list does contain species listed as Schedule 1 and 5 under the WC Act and listed as Priority species by the Department of Biodiversity, Conservation and Attractions (DBCA; previously known as the Department of Parks and Wildlife).

In addition to the species recorded, a likelihood assessment for species of conservation significant fauna to occur within the fauna study area identified an additional four conservation significant species with a moderate to high likelihood of occurring within the fauna study area (Ecoscape 2016):

- Yinnietharra Rock Dragon (*Ctenophorus yinnietharra*, EPBC Act, Vulnerable)
- Peregrine Falcon (*Falco peregrinus*, WC Act S7)
- Golden Gudgeon (*Hypseleotris aurea*, Priority 2)
- Fork-tailed Swift (*Apus pacificus*, EPBC Act, Migratory).

1.4.1.2 Fauna habitat

A total of seven fauna habitat types occur within and in the near vicinity of the Project:

1. claypans;
2. granite outcrop;
3. major river;
4. minor creeklines;
5. rocky plain (includes undulating hills and lower hillslopes);
6. rocky slope and foothills; and
7. sandy plain.

The rocky plain is the most widespread habitat type with 40,965 ha, representing 74% of fauna study area, followed by sandy plain (5,812.4 ha over 10% of fauna study area). The remaining other habitats, granite outcrops, major river, minor creek line and claypans were recorded from isolated areas of smaller extent. All habitat types were recorded from the wider region and are not unique to the Development Envelope. The major river habitat and minor creeklines habitat types are the most vulnerable to impacts from Project activities (Ecoscape 2016).

1.4.1.3 Short Range Endemic Species

Thirteen potential SRE species were recorded within the fauna study area (potential SRE's belong to a group where there is knowledge gaps). The following species are considered to be potential SREs:

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<p>Risk 2: Exposed putrescible waste at the landfill encourages pest species Inherent risk severity: High Level of certainty: High Impacts: Loss of conservation significant fauna</p> <p>Risk 3: Poor waste management results in introduction or spread of pest species Inherent risk severity: High Level of certainty: High Impacts: Loss of conservation significant fauna</p> <p>Risk 4: Infrastructure trenches during the construction phase Inherent risk severity: Moderate Level of certainty: High Impacts: Loss of conservation significant fauna</p>			
Management actions	Management targets	Monitoring	Reporting
<p>Risk 1 Mitigation The <i>Evaporation Pond Operating Manual</i> will include the following mitigation actions:</p> <ul style="list-style-type: none"> fencing around the evaporation pond, ensure banks do not provide good landing sites, and bird deterrents, such as netting, water cannons. 	No fauna deaths from ingestion of evaporation pond process liquor.	<p>Monitoring of presence of birds on the evaporation pond.</p> <p>Monitoring of fauna deaths at the proposal area.</p> <p>Audit of evaporation pond management.</p>	Monitoring records and effectiveness of mitigation will be summarised in the AER.
<p>Risk 2 Mitigation The <i>Land Management Plan</i> will include the following landfill management actions:</p> <ul style="list-style-type: none"> regularly covered with soil the landfill site will be fenced to prevent access by animals and the occurrence of wind-blown litter. 	No increase in pest species as a result of the Proposal activities.	<p>Pest species monitoring.</p> <p>Audit of landfill management.</p>	The AER will include a summary of monitoring records and audit outcomes.
<p>Risk 3. Mitigation</p>	No uncontrolled waste released into surrounding	Monitoring of fauna deaths at the proposal area.	The AER will include a summary of audit outcomes, continual improvement actions

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<p>The <i>Land Management Plan</i> will include the following waste management actions:</p> <ul style="list-style-type: none"> • General domestic and office waste will be disposed of to an on-site landfill, located above the water table, away from areas that may be subject to localised inundation and away from drainage lines. • Waste oils, solvents and other hazardous material will be collected in drums and stored in a bunded area. These will be removed from site for recycling or disposal to an approved waste disposal facility in accordance with the <i>Hydrocarbon and Hazardous Substance Management Work Instruction</i>. • Tyres will be collected, removed from site and disposed to an appropriate landfill/recycling facility. • Sewage generated during operations will be treated in approved systems and discharged to irrigation areas or leach drains (in accordance with the <i>Waste Water Treatment Plant Monitoring Work Instruction</i>). <p>A training and awareness program will be implemented to promote and ensure:</p> <ul style="list-style-type: none"> • Conformance with Hastings waste management practices. 	<p>environment as a result of the Proposal activities.</p>	<p>Audit of mitigation measures.</p>	<p>and incidences of uncontrolled release of waste as a result of the Proposal activities.</p>
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<ul style="list-style-type: none"> • Fauna are not fed by the workforce. • Spill containment and clean-up procedures. 			
<p><i>Risk 4 Mitigation</i></p> <p>All trenches will be temporary and have an egress for fauna.</p>	<p>No fauna will become trapped in trenches as a result of the Proposal activities.</p>	<p>Visual monitoring of open trenches/excavations for trapped fauna.</p> <p>Monitoring of fauna deaths in open trenches.</p> <p>Audits of construction activities to ensure an egress is present in all open trenches.</p>	<p>The AER will include a summary of incidences of fauna entrapment and deaths in open trenches and audit outcomes.</p>

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2.3 Monitoring

The purpose of monitoring is to inform, through the management target/s, if the environmental objective is being achieved and when management actions will be reviewed and revised. This section summarises the monitoring program (Table 3-2) to determine whether management targets are achieved.

Table 2-2: Monitoring to measure the efficacy of management actions against the management target

Indicator	Method	Location	Frequency	Review of management actions
Management target 1: No fauna deaths from ingestion of evaporation pond process liquor.				
Fauna presence at evaporation pond	Inspections of the evaporation pond	Evaporation pond	Daily	Where inspections demonstrate presence of fauna.
	Audit effectiveness of mitigation actions	Evaporation pond	Quarterly	Non-conformance or ineffectiveness of mitigation actions.
Death of fauna species	Incident records	Proposal area	N/A	Where fauna deaths occur as a result of toxicity of evaporation pond liquors as determined by laboratory analysis of a fauna carcass. Where fauna deaths occur in the near vicinity or within the

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Indicator	Method	Location	Frequency	Review of management actions
				evaporation pond.
Management target 2: No increase in pest species as a result of the Proposal activities.				
Presence of pest species	Inspections of the landfill	Landfill	Weekly	When pest species are observed on more than one occasion.
	Trapping program	Landfill	Quarterly	Presence of pest species in traps
	Audit of mitigation actions	Landfill	Quarterly	Non-conformance or ineffectiveness of mitigation actions.
Management target 3: No uncontrolled waste released into surrounding environment as a result of the Proposal activities.				
Presence of pest species.	Audit of mitigation actions	N/A	Quarterly	Where pest species are identified. Non-conformance of Hastings mitigation actions.
	Trapping program	Accommodation facilities	Quarterly	Presence of pest species in traps

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Indicator	Method	Location	Frequency	Review of management actions
Management target 4: No fauna will become trapped in trenches as a result of the Proposal activities.				
Presence of fauna in trenches	Visual inspections of trenches	N/A	Twice daily	Non-conformance with, or ineffectiveness of, mitigation actions.

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2.4 Reporting

2.4.1 Annual reporting

The Compliance Assessment Report will be submitted to the Department of Water and Environmental Regulation (DWER), and will demonstrate compliance with the conditions of the Ministerial Statement issued under Part IV of the *Environmental Protection Act 1986* (WA).

Annual Environmental Reports shall be submitted to the Department of Mines, Industry Regulation and Safety, and DWER, and will demonstrate compliance with license conditions, relevant laws and responsible environmental management.

2.4.2 Reporting on exceedance of the management target

In the event that the management target is exceeded (or not met), the CEO of the DWER will be notified within 7 days of identification of the exceedance.

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3 Adaptive management and review of the EMP

3.1 Approach

Hastings will implement adaptive management to learn from the implementation of mitigation measures, monitoring and evaluation against management target/s, to more effectively meet the environmental objective. The following approach will be followed:

- Monitoring data will be evaluated and compared to baseline and reference site data on an annual basis (or more frequently in some instances) in a process of adaptive management to verify whether or not responses to the impact are the same or similar to predictions;
- Address evaluation of assumptions and uncertainties;
- Annual review of the risk assessment and revision of risk-based priorities on the basis of monitoring program information, incidences, verification of modelling outcomes and new information;
- Increased understanding of the ecological regime, best practice, new technologies;
- Revision through consideration of incidents and associated investigations, or when management actions are not as effective as predicted or as result of change management (e.g. construction versus operations phases);
- External changes during the life of the proposal (e.g. changes to the sensitivity of the key environmental factor, implementation of other activities in the area); and
- Annual review of this EMP as a component of the continual improvement process within the Environmental Management System.

3.2 Early response indicators, criteria and actions

Given there are no risks with either a low level of certainty or a high inherent risk rating, management and monitoring is considered sufficient and therefore early response indicators, criteria and actions have not been determined. However, should the implementation of mitigation actions be considered severely ineffective (e.g. death of >10 individuals within one week or >100 goats entering the Proposal area) and through consultation with key stakeholders, this section will be updated immediately.

3.3 Revision of management actions

Where the management target/s is not met or exceeded, Hastings will review and revise the risk assessment, review and revise management actions and identify additional management actions where necessary.

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4 Stakeholder consultation

Consistent with the EPA's expectations for this EMP to align with the principles of EIA, Hastings consulted with key stakeholders while developing this EMP. Table 4-1 provides a summary of consultation that occurred. The comments raised during consultations with stakeholders were considered in the development of the Condition EMP. The following sections present stakeholders' comments and Hastings responses to those comments.

Table 4-1: Stakeholders consulted, comments and responses

Organisation(s)	Comments	Hastings Response to Comments/Concerns
Environmental Protection Authority: Response to relevant section of the Environmental Review Document.	Requirement in the ESD for a Fauna EMP to be included as a component of the Environmental Review Document.	Production of this EMP.
Department of Biodiversity, Conservation and Attractions	A general discussion regarding the environmental values.	No further action required.

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