



Environmental Protection Authority

EPA REFERRAL
FORM
PROPONENT

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

PURPOSE OF THIS FORM

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

Proponents are encouraged to familiarise themselves with the EPA's *General Guide on Referral of Proposals* [see Environmental Impact Assessment/Referral of Proposals and Schemes] before completing this form.

A referral under section 38(1) by a proponent to the EPA must be made on this form. A request to the EPA for a declaration under section 39B (derived proposal) must be made on this form. This form will be treated as a referral provided all information required by Part A has been included and all information requested by Part B has been provided to the extent that it is pertinent to the proposal being referred. Referral documents are to be submitted in two formats – hard copy and electronic copy. The electronic copy of the referral will be provided for public comment for a period of 7 days, prior to the EPA making its decision on whether or not to assess the proposal.

CHECKLIST

Before you submit this form, have you

	Yes	No
Completed all the questions in Part A (essential)	Y	
Completed all applicable questions in Part B	Y	
Included Appendix 1 – location maps	Y	
Included Appendix 2 – additional document the proponent wishes to provide (if applicable)	Y	
Included Appendix 3 – confidential information (if applicable)	N	
Enclosed the CD of all referral information, including spatial data and contextual mapping but excluding confidential information.	Y	

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

DO YOU CONSIDER THE PROPOSAL REQUIRES FORMAL ENVIRONMENTAL IMPACT ASSESSMENT?		
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NOT SURE
IF YES, WHAT LEVEL OF ASSESSMENT?		
<input type="checkbox"/> ASSESSMENT ON PROPONENT INFORMATION		
<input type="checkbox"/> PUBLIC ENVIRONMENTAL REVIEW		

PROPONENT DECLARATION (To be completed by the proponent)

I, Steve Murdoch, declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature <i>SMurdoch</i>	Name: <i>STEVEN MURDOCH</i>
Position: Chief Executive Officer	Company: Karara Mining Limited
Date: <i>24.6.2013</i>	

PART A - PROPONENT AND PROPOSAL INFORMATION

(All fields of this Part must be completed for this document to be treated as a referral)

1.1 Proponent

Name	Karara Mining Limited (KML)
Joint Venture parties (if applicable)	N/A
Postal Address	PO Box 7200 Cloisters Square WA 6850
Key proponent contact for the proposal <ul style="list-style-type: none"> • Name • Address • Phone • Email 	Rhys Houlihan Karara Mining Limited (KML) Level 8, London House, 216 St George's Terrace, Perth WA 6000 T: (08) 6298 1032 M: 0447 988 886 rhys.houlihan@kararamining.com.au
Consultant for the proposal (if applicable) <ul style="list-style-type: none"> • Name • Address • Phone • Email 	N/A

1.2 Proposal

Title	Hinge Iron Ore Project (Hinge Project)
Description	<p>The Hinge Project will mine approximately 4 million tonnes of iron ore, at a mining rate of 1 - 2 million tonnes per annum (Mtpa). The Hinge Project life is expected to be 2 years (with an option of extending to 4 years depending on the mining rate).</p> <p>The Hinge Project proposal encompasses the Hinge Minesite (Minesite) and the Hinge Haul Road (Haul Road). The Hinge Project proposes to road haul mined material from the minesite, via the Haul Road, to the existing crushing and screening plant at the Blue Hills North minesite (part of the approved MIOP project). Product will then be taken by road train to the Karara rail loop and transported by rail to Geraldton Port (outside the scope of this referral).</p> <p>The Hinge Project will utilise existing facilities at the Karara Minesite for camp, bioremediation, landfill etc.</p> <p>The Hinge Minesite will include some limited equipment maintenance workshops, hardstand areas, refuelling facilities, washdown bays, administration buildings, magazine, turkey's nest, storage areas, option for a crushing and screening plant (if required), and ROM pad.</p>

Extent (area) of proposed ground disturbance	<p>The Proposal will entail two primary aspects; being the Mine site and the Haul Road. The table below provides a summary of the disturbance for each aspect:</p> <table border="1" data-bbox="564 241 1398 555"> <thead> <tr> <th data-bbox="564 241 842 277">Element</th> <th data-bbox="842 241 1123 277">Location</th> <th data-bbox="1123 241 1398 277">Authorised Extent</th> </tr> </thead> <tbody> <tr> <td data-bbox="564 277 842 416">Minesite</td> <td data-bbox="842 277 1123 416">As per Figure 1 and coordinates provided in Appendix C</td> <td data-bbox="1123 277 1398 416">A clearing footprint of 300 ha within a disturbance envelope of 680ha</td> </tr> <tr> <td data-bbox="564 416 842 555">Haul Road</td> <td data-bbox="842 416 1123 555">As per Figure 1 and coordinates provided in Appendix C</td> <td data-bbox="1123 416 1398 555">A clearing footprint of 30 ha within a disturbance envelope of 120ha</td> </tr> </tbody> </table>	Element	Location	Authorised Extent	Minesite	As per Figure 1 and coordinates provided in Appendix C	A clearing footprint of 300 ha within a disturbance envelope of 680ha	Haul Road	As per Figure 1 and coordinates provided in Appendix C	A clearing footprint of 30 ha within a disturbance envelope of 120ha
Element	Location	Authorised Extent								
Minesite	As per Figure 1 and coordinates provided in Appendix C	A clearing footprint of 300 ha within a disturbance envelope of 680ha								
Haul Road	As per Figure 1 and coordinates provided in Appendix C	A clearing footprint of 30 ha within a disturbance envelope of 120ha								
Timeframe in which the activity or development is proposed to occur (include start and finish dates where applicable).	Construction to commence within 2 months of gaining approvals. First shipment of hematite product expected within 6 months of gaining approvals.									
Details of any staging of the proposal	N/A									
Is the proposal a strategic proposal?	No									
<p>Is the proponent requesting a declaration that the proposal is a derived proposal?</p> <p>If so, provide the following information on the strategic assessment within which the referred proposal was identified -</p> <ul style="list-style-type: none"> • Title of the strategic assessment • Ministerial Statement number 	N/A									
Indicate whether, and in what way, the proposal is related to other proposals in the region.	<p>The proposal is related to the Mungada Iron Ore Project (Ministerial Statement 806) and the Karara Iron Ore Project (Ministerial Statement 805). Both projects were approved on 8 September 2009.</p> <p>Refer to Figure 2 for the location of the Hinge Project and Haul Road in relation to the Mungada Iron Ore Project and the Karara Iron Ore Project.</p>									
Does the proponent own the land on which the proposal is to be established? If not, what other arrangements have been established to access the land?	<p>The minesite shall occur on mining tenement M59/748 (currently in application), that overlies the existing tenements E59/817 and E59/1170.</p> <p>The Haul Road shall occur on tenements G59/38, L59/128 and M59/648.</p> <p>All tenements are owned by Karara Mining Ltd.</p> <p>The tenements are underlied by unallocated crown land managed for the purposes of conservation by the Department of Environment and Conservation (commonly referred to as the 'Karara block').</p>									

What is the current land use on the property, and the extent (area in hectares) of the property?	The property is ex-pastoral land (unallocated crown land managed for the purposes of conservation by the Department of Environment and Conservation (commonly referred to as the 'Karara block').
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1.3 Location

Name of the Shire in which the proposal is located	Shire of Perenjori
For urban areas – <ul style="list-style-type: none"> • street address • lot number • suburb • nearest road intersection 	N/A
For remote localities – <ul style="list-style-type: none"> • nearest town • distance and direction from that town to the proposal site 	The Hinge Project is located approximately 76km northeast of Perenjori town site in the Mid-West region of Western Australia.
Electronic spatial data - GIS or CAD on CD, geo-referenced and conforming to the following parameters: <ul style="list-style-type: none"> • GIS: polygons representing all activities and named • CAD: simple closed polygons representing all activities and named • datum: GDA94 • projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA) • format: Arcview shapefile, Arcinfo coverages, Microstation or AutoCAD 	GIS maps and spatial data are included as Figures and attached to the end of this form.

1.4 Confidential Information

Does the proponent wish to request the EPA to allow any part of the referral information to be treated as confidential?	No
If yes, is confidential information attached as a separate document in hard copy.	N/A

1.5 Government Approvals

Is rezoning of any land required before the proposal can be implemented? If Yes, provide details.		No	
Is approval required from any Commonwealth or State Government agency or Local Authority for any part of the proposal? If yes, complete the table below -		Yes	
Agency/Authority	Approval Required	Application lodged Yes / No	Agency/Local Authority contact/s for proposal
Department of Mines and Petroleum (DMP)	Mining Proposal under the <i>Mining Act 1978</i>	No	Eugene Bouwhuis and Tyler Sjudovic
Department of Aboriginal Affairs (DAA)	Approval to disturb site under Section 18 of the <i>Aboriginal Heritage Act 1972</i>	No	Shaye Hayden
Department of Water (DoW)	Abstraction licences – Section 5C of the RIWI Act 1914 including abstraction of pit water for dust suppression purposes	No	Natalie Lauritsen
DMP	Native Vegetation Clearing Permit	No	Adam Buck

PART B - ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

2. ENVIRONMENTAL IMPACTS

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

- (i) flora and vegetation;
- (ii) fauna;
- (iii) rivers, creeks, wetlands and estuaries;
- (iv) significant areas and/ or land features;
- (v) coastal zone areas;
- (vi) marine areas and biota;
- (vii) water supply and drainage catchments;
- (viii) pollution;
- (ix) greenhouse gas emissions;
- (x) contamination; and
- (xi) social surroundings.

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

For all information, please indicate:

- (a) the source of the information; and
- (b) the currency of the information.

2.1 Flora and Vegetation

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

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

- (please tick) Yes ***If yes, complete the rest of this section***
 No ***If no, go to the next section***

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

The total clearing footprint for the Hinge Project is approximately 330 ha within the development envelope. This comprises of approximately 300ha for Minesite disturbance and up to 30ha for the Haul Road. Refer to Figures 3 and 4, respectively.

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

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

Exempt from this requirement under Part IV of the *Environmental Protection Act 1986*.

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

Yes

No

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

A Level 2 flora surveys have been undertaken for the Haul Road and Minesite survey areas by Outback Ecology in January 2013 and Astron Environmental Services in December 2012, respectively. The survey areas (development envelope) comprised of approximately 760ha for the Minesite and 130ha for the Haul Road. Refer to Figures 3 and 4.

The flora survey reports are attached as Appendices D and E of this document.

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

Yes

No

If you are proposing to clear native vegetation for any part of your proposal, a search of DEC records of known occurrences of rare or priority flora and threatened ecological communities will be required. Please contact DEC for more information.

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

Yes

No

If **yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

State Conservation Significant Species

Flora surveys identified no Threatened flora within the disturbance footprint for the project.

Eight species of priority flora were found within the development envelope, as detailed in table 1 below.

Appendix A and B provide a summary of the impact to the priority species.

Table 1. Priority Species identified within disturbance footprint

Species Name	Priority Listing	Locality	
		Minesite	Haul Road
<i>Prostanthera</i> sp. Karara (D. Coultas & K. Greenacre Opp 8)	P1	✓	
<i>Calandrinia kalanniensis</i>	P2		✓
<i>Drummondita fulva</i>	P3	✓	✓
<i>Dicrastylis linearifolia</i>	P3	✓	
<i>Grevillea globosa</i>	P3	✓	
<i>Micromyrtus trudgenii</i>	P3	✓	✓
<i>Persoonia pentasticha</i>	P3	✓	
<i>Psammomoya implexa</i>	P3	✓	

EPBC Act

No Threatened Ecological Communities pursuant to Commonwealth legislation or listed by the DEC were recorded in the Minesite development envelope (Astron Environmental Services, 2013).

No Threatened Ecological Communities were recorded within the Haul Road development envelope (Outback Ecology Services, 2013).

No EPBC Act listed flora species were found in the Minesite development envelope (Astron Environmental Services, 2013).

No EPBC Act listed flora species were found in the Haul Road development envelope (Outback Ecology Services, 2013).

Priority Ecological Communities (PEC)

No vegetation consistent with the PECs previously mapped within the region are impacted by this application.

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

Yes

No

If **yes**, please indicate which Bush Forever site is affected (site number and name of site where appropriate).

What is the condition of the vegetation at the site?

Vegetation Health

The vegetation recorded in the development envelope was mostly in 'very good' and a few areas 'excellent' (Keighery 1994) condition (Astron Environmental Services, 2012 / Outback Ecology, 2013).

Weed Species

Five introduced species were found within the Minesite development envelope, all of them being annuals and at very low densities. These were **Brassica tournefortii*, **Cuscuta epithimum*, **Erodium aureum*, **Mesembryanthemum nodiflorum*, and **Wahlenbergia capensis* (Astron Environmental Services, 2012).

Remnant Vegetation

The Hinge Project occurs in the south-west of the Yalgoo sub-region. In this area, hills are dominated by *Acacia ramulosa* and *A. acuminata* scrub, mid-slopes are characterised by *A. ramulosa*, *A. acuminata* and *Melaleuca uncinata*, the sandplains are characterised by *A. ramulosa* and *A. murrayana*, and *A. ramulosa*. Scattered *Callitris* sp. and *Eucalyptus* sp. trees are characteristic of the vegetation in the valleys (Beard 1976). Beard (1976) mapped pre-European vegetation types across the Murchison region at a scale of 1: 1,000,000.

2.2 Fauna

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

(please tick)

Yes

If yes, complete the rest of this section

No

If no, go to the next section

Fauna surveys were undertaken of both the Haul Road and Minesite survey areas by Bamford Consulting Ecologists in November 2012 and January 2013, respectively. These are attached as Appendix F and G.

Describe the nature and extent of the expected impact of fauna and fauna habitat.

Overview of fauna assemblage

The desktop survey identified 245 vertebrate fauna species potentially occurring in the Minesite development envelope. During the surveys in 2011 and 2012, 54 fauna species were recorded, comprising 42 bird, five mammal and seven reptile species. A total of 30 conservation significant vertebrate species and four invertebrate species are considered likely to occur in the Minesite development envelope.

Eight conservation significant vertebrate fauna species were recorded during the field surveys: Western Spiny-tailed Skink (*Egernia stokesii badia*), Malleefowl (*Leipoa ocellata*), Major Mitchell's Cockatoo (*Lophochroa leadbeateri*), Redthroat (*Sericornis brunneus*), Western Yellow Robin (*Eopsaltria griseogularis rosinae*), Golden Whistler (*Pachycephala pectoralis*), White-browed Babbler (*Pomatostomus superciliosus ashbyi*) and Crested Bellbird (*Oreoica gutturalis*). The conservation significant Shield-backed Trapdoor Spiders (*Idiosoma nigrum*) was also recorded (Table 2).

Table 2 details the potential impacts of the Hinge Project upon conservation significant species with significance criteria rated by Table 3, criteria for impact assessment.

Table 2: Potential impacts upon conservation significant species that may occur in the Hinge Project (Bamford Consulting Ecologists, 2012).

Common Name	Species Name	Nature and significance of likely impact	
		Nature of impact	Significance
Malleefowl	<i>Leipoa ocellata</i>	Loss of habitat and disturbance, loss of breeding sites (mounds). Species known to be sensitive to roadkill from increased traffic.	Minor (resident population of Malleefowl likely be impacted, however disturbance area is small and mounds have been found in Badja Station, with habitat extensive in local area. Increased traffic limited to a few roads).
Shield-backed Trapdoor Spider	<i>Idiosoma nigrum</i>	Loss of habitat and disturbance	Moderate (resident population of spiders likely be impacted, however disturbance area is small and habitat is extensive in local area).
Western Spiny-Tailed Skink	<i>Egernia stokesii badia</i>	Habitat loss, disturbances to breeding (removal of habitat trees and logs)	Moderate (conservation significant species, occurs in fragmented populations in the region and resident population identified in project area likely to be impacted. Placing associated works outside

Common Name	Species Name	Nature and significance of likely impact	
		Nature of impact	Significance
			skink habitat could reduce this. Individuals may also disperse through project area).
Gilled Slender Blue-tongue	<i>Cyclodomorphus branchialis</i>	Habitat loss and disturbance. Loss and fragmentation of ridge top habitat.	Moderate (conservation significant species, occurs in fragmented populations in the region, may occur in Project area).
Woolley's <i>Pseudantechinus</i>	<i>Pseudantechinus woolleyae</i>	Loss and fragmentation of habitat.	Moderate (conservation significant species, occurs in fragmented populations in the region, occurs in project area and substantial proportion of habitat likely to be impacted).
Western Yellow Robin	<i>Eopsaltria griseogularis rosinae</i>	Loss of habitat, some localised population loss through disturbance.	Moderate (Most CS3 species are at the limit of their range and patchily distributed in the Murchison. Also restricted distribution in the Project area).
Carpet Python	<i>Morelia spilota imbricata</i>	Loss of habitat, potential for roadkill.	Minor (conservation significant species, occurs in fragmented populations in the region, but Project area may be outside range).
CS3 Reptiles (Mulga Dragon, Reticulated Velvet Gecko)	<i>Caimanops Amphiboluroides, Oedura reticulata</i>	Loss of habitat, some localised population loss through disturbance.	Moderate - Minor (loss of habitat, fragmentation of populations).
Slender-billed Thornbill	<i>Acanthiza iredalei</i>	Potential for loss of habitat.	Negligible (suitable habitat not present in Project area, unlikely to occur).
Peregrine Falcon	<i>Falco peregrinus</i>	Potential loss of habitat and disturbance.	Minor (likely in project area as occasional visitor).
Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>	Loss of breeding habitat (tree hollows).	Minor (conservation species, habitat mostly outside impact area).
Rainbow Bee-eater	<i>Merops ornatus</i>	Potential loss of habitat and disturbance.	Minor (likely to occur as an occasional visitor).
Fork-tailed Swift	<i>Apus pacificus</i>	Potential loss of habitat.	Minor (likely to occur as rare visitor).
Crested Bellbird (southern)	<i>Oreoica gutturalis</i>	Habitat loss and fragmentation.	Minor (locally widespread and may be transitional with non-significant race).
White-browed Babbler (western wheatbelt)	<i>Pomatostomus superciliosus ashbyi</i>	Habitat loss and fragmentation.	Minor (locally widespread and may be transitional with non-significant race).
Rufous Fieldwren (western wheatbelt)	<i>Calamanthus campestris montanellus</i>	Potential loss of habitat.	Negligible (suitable habitat not likely to be present in Project area).

Common Name	Species Name	Nature and significance of likely impact	
		Nature of impact	Significance
Australian Bustard	<i>Ardeotis australis</i>	Loss of habitat. Risk of roadkill.	Minor (minor loss of habitat).
Bush Stone-curlew	<i>Burhinus grallarius</i>	Loss of habitat. Risk of roadkill.	Minor (minor loss of habitat, widespread species present in small numbers).
Grey Falcon	<i>Falco hypoleucos</i>	Potential loss of habitat and disturbance.	Minor (likely in Project area as occasional visitor).
Other CS3 Birds, ie Golden Whistler, Redthroat	<i>Pachycephala pectoralis</i> , <i>Sericornis brunneus</i>	Loss of habitat, some localised population loss through disturbance.	Minor (Most CS3 species are at the limit of their range and patchily distributed in the Murchison. Also restricted distribution in the Project area).
Kultarr	<i>Antechinomys laniger</i>	Loss of habitat, feral predation.	Minor (species probably widespread at low density).
Common Brushtail Possum	<i>Trichosurus vulpecula</i>	Loss of habitat, potential for roadkill.	Minor (species probably widespread at low density).
Short Range Endemic (SRE) Invertebrates		Potential for habitat loss.	Moderate (Most species likely to be restricted to the ridge and seasonally moist sites where runoff is concentrated, making them vulnerable to habitat loss and hydrological change).

Table 3: Criteria for impact assessment (Bamford Consulting Ecologists, 2012)

Impact Category	Observed Impact
Negligible	Effectively no population decline; at most few individuals impacted and any decline in population size within the normal range of annual variability.
Minor	Short-term population decline (recovery after end of project) within project area, no change in viability of conservation status of population. Where environment permanently altered, no change in viability or conservation status of population.
Moderate	Permanent population decline, change in viability or conservation status of population considered unlikely.
Major	Permanent population decline resulting in change in viability or conservation status of population.
Critical	Taxon extinction.

Impact on EPBC Act Listed Species

Malleefowl

The Hinge Project is likely to have a **Minor** impact on Malleefowl (*Leipoa ocellata*) – which are a Vulnerable species (and Migratory) under the EPBC Act and Schedule 1 (fauna that is rare or likely to become extinct) under the *Wildlife Conservation Act 1950* (WA) (Bamford Consulting Ecologists, 2012).

Surveys by Bamford Consulting Ecologists identified no active Malleefowl mounds and 28 inactive mounds in the development envelope.

Western-Spiny Tailed Skink

The Western Spiny-tailed Skink (*Egernia Stokesii badia*) (WSTS), is listed as Endangered under the EPBC Act and Schedule 1 (fauna that is rare or likely to become extinct) under the *Wildlife Conservation Act 1950* (WA) (Bamford Consulting Ecologists, 2012). Two WSTS scat deposits were recorded within the Minesite development envelope shown in Figure 2 of Appendix F and no evidence of WSTS were found within the Haul Road development envelope.

There are two small areas within the Minesite development envelope suitable for WSTS habitat as shown in Figure 7 of Appendix F. These areas are identified as such due to the presence of *Eucalyptus loxophleba* spp. *Supraelevis*. It was also determined that of these two areas, the north western strip was better suited for skinks as it contained larger trees with more hollow logs (Bamford Consulting 2012). The Hinge Project is expected to have a **Moderate impact** on the Western Spiny-tailed skink (Table 2) (Bamford Consulting Ecologists, 2012).

Shield-backed Trap door Spider

The Shield-backed Trap Door Spider (*Idiosoma nigrum*) (SBTS), is listed as Endangered under the EPBC Act and Schedule 1 (fauna that is rare or likely to become extinct) under the *Wildlife Conservation Act 1950* (WA) (Bamford Consulting Ecologists, 2012). Out of the 152 quadrats surveyed in 2011 and 2012 in the Minesite development envelope, 38 quadrats contained spider burrows, with a total of 144 active spider burrows recorded as shown in Figure 2b of Appendix G. A total of 18 quadrats were surveyed in the Haul Road development envelope and 6 of these also contained spider burrows with a total of 33 active spider burrows recorded as shown in Figure 2a of Appendix G. Spider burrows were generally found from the lower to upper slopes of the Hinge ridge and a smaller rise to the south (Bamford Consulting Ecologists 2013).

Compared to Karara, Mungada and Shine ridges, Hinge has a lower density of spiders (Table 14 Appendix F (Hinge Minesite Fauna Survey)). For example, Shine population is estimated at 44,550 whereas at the Hinge Minesite the population is estimated at 19,561.

At other ridges in the Karara area, estimated population sizes ranged from approximately 20,000 spiders to 230,000 spiders on each ridge, depending on the ridge size. These estimates were calculated from the average abundance of 297 burrows per ha (the average of Karara, Mungada and Shine) and a 'predicted occupied habitat', an area based on spider records, contours and prospect boundaries (Bamford Consulting Ecologists 2013).

The Minesite disturbance footprint may directly impact upon approximately 10% of the spider population in the Hinge area based on likely occupied habitat.

The Hinge Project is expected to have a **Minor impact** on the Shield-backed Trapdoor Spider (Table 17) (Bamford Consulting Ecologists, 2013).

Impact on Subterranean Fauna

In accordance with Guidance Statement 54 Consideration of subterranean fauna in groundwater and caves during environmental impact assessment in WA (EPA 2003) and the draft Environmental Assessment Guideline (EAG) Consideration of Subterranean Fauna in Environmental Impact Assessment in WA (EPA 2013), the likelihood of subterranean fauna and potential impacts on its habitat as a result of this project is considered low.

The regional evidence from numerous stygofauna sampling programs undertaken to date, closest being 13km to the Hinge Project, indicates the potential impacts to species, population and assemblage level are not significant. No significant populations or species of stygofauna were recorded during regional subterranean fauna surveys.

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

Yes No

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

Refer Appendix F and G of this form.

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

Yes No (please tick)

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

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

Four EPBC Act listed threatened fauna species may be found in the Hinge Project area (Bamford Consulting Ecologists, 2013) – Refer Appendix F

2.3 Rivers, Creeks, Wetlands and Estuaries

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

(please tick) Yes ***If yes, complete the rest of this section***
 No ***If no, go to the next section***

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

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

- * Will the development result in the filling or excavation of a river, creek, wetland or estuary?
 Yes No **If yes**, please describe the extent of the expected impact.

- * Will the development result in the impoundment of a river, creek, wetland or estuary?
 Yes No **If yes**, please describe the extent of the expected impact.

- * Will the development result in draining to a river, creek, wetland or estuary?
 Yes No **If yes**, please describe the extent of the expected impact.

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

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

2.4 Significant Areas and/ or Land Features

- * Is the proposed development located within or adjacent to an existing or proposed National Park or Nature Reserve?
 Yes No **If yes**, please provide details.

- * Are you aware of any Environmentally Sensitive Areas (as declared by the Minister under section 51B of the EP Act) that will be impacted by the proposed development?
 Yes No **If yes**, please provide details.

- * Are you aware of any significant natural land features (e.g. caves, ranges etc) that will be impacted by the proposed development?
 Yes No **If yes**, please provide details.

Banded Ironstone Formation Ridges

The Hinge Project is located on a Banded Ironstone Formation (BIF) ridge. Some of these ridges have been identified as significant by DEC as they often support fauna and flora populations and communities of high environmental/conservation significance (including endemic species) as well as indigenous heritage sites (DEC, 2007a).

The Hinge Project is not located within any area considered of high environmental significance by DEC (DEC, 2007a).

2.5 Coastal Zone Areas (Coastal Dunes and Beaches)

- * Will the development occur within 300m of a coastal area?
(please tick) Yes ***If yes, complete the rest of this section***
 No ***If no, go to the next section***

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

- * Will the development impact on coastal areas with significant landforms including beach ridge plain, cusped headland, coastal dunes or karst?
 Yes No ***If yes, please describe the extent of the expected impact.***

- * Is the development likely to impact on mangroves?
 Yes No ***If yes, please describe the extent of the expected impact.***

2.6 Marine Areas and Biota

- * Is the development likely to impact on an area of sensitive benthic communities, such as seagrasses, coral reefs or mangroves?
 Yes No ***If yes, please describe the extent of the expected impact.***

- * Is the development likely to impact on marine conservation reserves or areas recommended for reservation (as described in A Representative Marine Reserve System for Western Australia, CALM, 1994)?
 Yes No ***If yes, please describe the extent of the expected impact.***

- * Is the development likely to impact on marine areas used extensively for recreation or for commercial fishing activities?
 Yes No ***If yes, please describe the extent of the expected impact, and provide any written advice from relevant agencies (e.g. Fisheries WA).***

2.7 Water Supply and Drainage Catchments

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

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

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

Groundwater

The Hinge Project is located within the Gascoyne Proclaimed Groundwater Area (Department of Water, 2009).

Surface Water

The Hinge Project is not within a Proclaimed Surface Water Protection Area (Department of Water, 2009).

Further Studies

Refer Appendix H - Surface Water and Stormwater Management Study (Pritchard Francis, 2012).

KML is currently in the process of developing a hydrogeological assessment accompanied with a site water balance model and subsequent water management plan regarding the implementation of an abstraction bore field. Once implemented a hydrogeological groundwater model will be developed to provide a better understanding of the groundwater regime before, during and after the completion of mining. This will be completed prior to undertaking any construction and mining at the Hinge Project.

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

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

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

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

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

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

- * Is there sufficient water available for the proposal?

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

Yes No (please tick)

The proposal will require approximately 60 000 kL/a of water in the first year for construction purposes followed by 350 000 kL/a in subsequent years. Water for mining is proposed to be sourced from abstraction bores located within or adjacent to the mining operations, or from supplies from existing licences at Terapod and Blue Hills North. Should this option be required, water will be transferred via pipelines and/or water carts along the Hinge Haul Road.

* Will the proposal require drainage of the land?

Yes

No

If yes, how is the site to be drained and will the drainage be connected to an existing Local Authority or Water Corporation drainage system? Please provide details.

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

(please tick)

Yes

If yes, complete the rest of this section

No

If no, go to the next section

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

Construction (Dust Suppression): Approximately 60 000 kL/yr

Operations (Dust Suppression): Approximately 350 000 kL/yr

* What is the proposed source of water for the proposal? (e.g. dam, bore, surface water etc.)

Water will be sourced from licensed groundwater bores at the Hinge Project mine site (construction and operations). A Section 5C of the *Rights in Water Irrigation Act 1914* water abstraction licence application for the abstraction and use of dewatered pit water and will be submitted to the Department of Water by KML on the completion of a hydrogeological assessment.

2.8 Pollution

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

(please tick)

Yes

If yes, complete the rest of this section

No

If no, go to the next section

* Is the proposal a prescribed premises under the Environmental Protection Regulations?

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

Yes

No

If yes, please describe what category of prescribed premises.

The Hinge Project proposes to road haul material to the existing crushing and screening plant at the Blue Hills North minesite (part of the approved MIOP Project Licence Number L8606/2011/1).

- * Will the proposal result in gaseous emissions to air?
 Yes No **If yes**, please briefly describe.

Greenhouse gas emissions will occur from the use of light vehicles, blasting, mobile equipment and on-site diesel gensets.

- * Have you done any modelling or analysis to demonstrate that air quality standards will be met, including consideration of cumulative impacts from other emission sources?
 Yes No **If yes**, please briefly describe.

- * Will the proposal result in liquid effluent discharge?
 Yes No **If yes**, please briefly describe the nature, concentrations and receiving environment.

Minor discharge will occur from onsite abluion facilities. This will be managed by KML through appropriate systems approved by the Department of Health (DoH) under the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*.

- * If there is likely to be discharges to a watercourse or marine environment, has any analysis been done to demonstrate that the State Water Quality Management Strategy or other appropriate standards will be able to be met?
 Yes No **If yes**, please describe.

- * Will the proposal produce or result in solid wastes?
 Yes No **If yes**, please briefly describe the nature, concentrations and disposal location/ method.

The development will result in a small volume of putrescible and general/public waste that will be disposed of at the registered landfill (Registration R2155/2010/1) located at the Karara minesite.

- * Will the proposal result in significant off-site noise emissions?
 Yes No **If yes**, please briefly describe.

- * Will the development be subject to the Environmental Protection (Noise) Regulations?
 Yes No **If yes**, has any analysis been carried out to demonstrate that the proposal will comply with the Regulations?
Please attach the analysis.

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

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

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

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

2.9 Greenhouse Gas Emissions

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

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

Based on the current project scope, HIOP is unlikely to result in substantial greenhouse gas emissions (i.e. greater than 100 000 tonnes of carbon dioxide equivalent) as predicted using current modelling. HIOP is therefore unlikely to trip the reporting threshold (>25kT of CO₂^e per year per facility) under the *National Greenhouse and Energy Reporting Act 2007*.

This emissions estimate is based on the emissions reportable under the *National Greenhouse and Energy Reporting Act 2007* which includes Scope one and Scope two emission calculations associated with diesel fuel combustion and purchased electricity respectively. Greenhouse gas emissions will also be generated by the land clearing required during construction however these are not reportable under this Act and will be somewhat offset by the rehabilitation that will occur either progressively during construction or at the cessation of HIOP.

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

2.10 Contamination

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

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

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

Yes ✓ No **If yes**, please describe.

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

Yes ✓ No **If yes**, please describe.

The proposed Hinge Project minesite area has not been used in the past for activities that may have caused soil contamination (Payne et al, 1998).

2.11 Social Surroundings

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

Yes No Unsure **If yes, please describe**

A Section 18 application under the *Aboriginal Heritage Act 1972* shall be submitted by KML to the Department of Indigenous Affairs (DIA).

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

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

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

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

3. PROPOSED MANAGEMENT

3.1 Principles of Environmental Protection

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

- | | | |
|--|-------|-----------------------------|
| 1. The precautionary principle. | ✓ Yes | <input type="checkbox"/> No |
| 2. The principle of intergenerational equity. | ✓ Yes | <input type="checkbox"/> No |
| 3. The principle of the conservation of biological diversity and ecological integrity. | ✓ Yes | <input type="checkbox"/> No |
| 4. Principles relating to improved valuation, pricing and incentive mechanisms. | ✓ Yes | <input type="checkbox"/> No |
| 5. The principle of waste minimisation. | ✓ Yes | <input type="checkbox"/> No |

□ Is the proposal consistent with the EPA's Environmental Protection Bulletins/Position Statements and Environmental Assessment Guidelines/Guidance Statements (available on the EPA web)?

- ✓ Yes No

3.2 Consultation

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

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

The following table summarises the planned consultations, and consultations to date, for the Hinge Project:

Planned consultations

Category	Stakeholders consulted or to be consulted
Governments	State and Commonwealth Government Departments and Agencies (DMP, DEC (including Geraldton regional office), OEPA, DoW, SEWPAC) Local Government representatives (Shire of Perenjori)
Industry and business	Local and regional industries and businesses (including mining companies) KML employees
Aboriginal groups	Registered Native Title claimant group being Widi Mob. Other Aboriginal people claiming an interest in the Project
Landholders	Pastoral lease holders and managers (Karara, Ninghan and Badja stations), including DEC
Relevant communities	-

Consultations to date

Organization/Individual Consulted	Contact Person	Date Contacted	Topics Discussed	Outcome
Department of Mines and Petroleum (DMP)	TBA		Hinge Project in general especially potential impacts on heritage, fauna and flora values within the footprint of the Project.	Nil
Department of Sustainability, Environment, Water, Populations and Communities (SEWPAC)	TBA		Hinge Project in general especially potential impacts on heritage, fauna and flora values within the footprint of the Project. EPBC referral requirements.	Nil
Shire of Perenjori	Alison Mills - CEO	28 th May 2013	Hinge Project in general. Potential involvement with the Shire of Yalgoo.	Nil
Department of Indigenous Affairs (DIA)	TBA		Summary of the Hinge Project. Heritage impacts of the Hinge Project. Requirements for Section 18 approval.	Nil
Department of Environment and Conservation (DEC) Perth Environmental Management Branch	Skye Kelliher, Murray Baker, Melissa Perke	23 rd May 2013	Summary of the Hinge Project.	Nil
Department of Environment and Conservation (DEC) Nature Conservation Midwest Branch	Melissa Peake, Jaimee Conway-Physick	27 th May 2013	Summary of the Hinge Project. Approval requirements.	Nil
Department of Environment and Conservation (DEC) Industry Regulation Midwest Branch	TBA		Summary of the Hinge Project. Approval requirements.	Nil
Office of Environmental Protection Authority (OEPA)	Mark Jefferies	26 th April 2013	Summary of the Hinge Project.	Nil
Department of Water (DoW)	Natalie Lauritsen	4 th February 2013	Summary of the Hinge Project.	Nil

REFERENCES

- Astron Environmental Services 2012. Hinge Iron Ore Study Vegetation and Flora Survey. September 2012.
- Bamford Consulting Ecologists 2012. Significant Fauna Survey of the Hinge Haul Road: November 2012.
- Bamford Consulting Ecologists 2013. Hinge Project Area Fauna Assessment. A Report Prepared for Karara Mining Limited. January 2013.
- Bancroft, W. and Bamford, M. 2007. Fauna values of Gindalbie Metals' Karara and Mungada Hematite/Magnetite Projects. May 2007. A report prepared for Woodman Environmental Consulting Pty Ltd, Perth, Western Australia.
- Beard, J.S., 1990. Plant Life of Western Australia, Kangaroo Press Pty Ltd, NSW.
- Bureau of Meteorology, 2008. Bureau of Meteorology. Accessed <http://www.bom.gov.au/>.
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- Rockwater, 2013. Hinge Iron Ore Deposit. Results of Permeability Testing. February 2013.
- Soil Water Consultants. 2012a. Hinge Deposit Geochemical Characterisation. Report prepared for Gindalbie Metals Limited. February 2013.
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- Terra Rosa Cultural Resource Management, 2011. Heritage Survey of the Hinge Development Area and Haul Road. October 2011.
- Woodman Environmental Consulting, 2008a. Flora and Vegetation Impact Assessment – Proposed Mungada Iron Ore Project. Unpublished report to Karara Mining Ltd. September 2008.
- Woodman Environmental Consulting, 2008b. Flora and Vegetation – Cumulative Impact Assessment, Karara-Mungada Project Survey Area, Karara Mining Proposal and Mungada Mining Proposal of the Greater Karara Iron Ore Project and Midwest Blue Hills DSO Project. Unpublished report to Karara Mining Ltd. November 2008.

APPENDICES

Appendix A: Preliminary Assessment Against EPA Factors and Objectives

Appendix B: Cumulative Environmental Impacts Data Table

Appendix C: Coordinate Data

Appendix D: Hinge Iron Ore Study – Vegetation and Flora Survey. Astron Environmental Services, 2013.

Appendix E: Targeted Flora and Vegetation Assessment – Hinge Haul Road. Outback Ecology Services, 2013.

Appendix F: Hinge Project Area Fauna Assessment. Bamford Consulting Ecologists, 2012.

Appendix G: Significant Fauna Survey of the Hinge Haul Road. Bamford Consulting Ecologists 2012.

Appendix H: Desktop Surface Water and Stormwater Management Study for the Hinge Project Shire of Perenjori Western Australia. Pritchard Francis, 2013.

Appendix I: Hinge Deposit Geochemical Characterisation. Soil Water Consultants, 2013.

Appendix J: Hinge Iron Ore Deposit - Results of Permeability Testing. Rockwater, 2012.

Appendix K: Heritage Survey of the Hinge Development Area and Haul Road. Terra Rosa Cultural Resource Management, 2011.

Appendix L – Hinge Project Environmental Offsets Reporting Form