



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 1986*.

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) of the EP Act 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, please check that you have:

	Yes	No
Completed all the questions in Part A (essential).	✓	
Completed all applicable questions in Part B.	✓	
Included Attachment 1 – location maps.	✓	
Included Attachment 2 – additional document(s) the proponent wishes to provide (if applicable).	✓	
The following documents are provided in Attachment 2 :		
Supporting Information Document, with Appendices		
Appendix A: Legislation Relevant to Environmental Management of Proposal		
Appendix B: Draft Environmental Scoping Document (Electronic Format)		
Appendix C: Supporting Information (Technical Reports)		
<ul style="list-style-type: none"> • Level 1 Vegetation and Flora Survey, February 2013, Outback Ecology • Terrestrial Vertebrate Fauna Baseline Survey, October 2012, Outback Ecology • Terrestrial Short-range Endemic Invertebrate Fauna Baseline Survey, February 2013, Outback Ecology • Baseline Soil and Landform Assessment, Outback Ecology, December 2012 • Subterranean Fauna Summary Report, February 2013, Outback Ecology • Browns Range Rare Earth Element (REE) Project - Geochemical Data Review- Preliminary Geochemical Assessment, SRK Consulting, April 2013. 		
Appendix D: Electronic Information (Copy of Supporting Information Document)		


Included Attachment 3 – confidential information (if applicable).		NA
Enclosed an electronic copy of all referral information, including spatial data and contextual mapping but excluding confidential information – provided in Attachment 1	✓	

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?	
✓ Yes	<input type="checkbox"/> No <input type="checkbox"/> Not sure
If yes, what level of assessment?	
✓ Assessment on Proponent Information	<input type="checkbox"/> Public Environmental Review

PROPONENT DECLARATION (to be completed by the proponent)

I, Robin Spencer Jones, declare that I am authorised on behalf of Northern Minerals Limited (being the person responsible for the proposal) to submit this form and further declare that the information contained in this form is true and not misleading.

Signature 	Name (print) Robin Jones
Position Project Manager	Company Northern Minerals Limited
Date 2 May 2013	

PART A - PROPONENT AND PROPOSAL INFORMATION

1. PROPONENT AND PROPOSAL INFORMATION

1.1. Proponent

Proposal Title	Browns Range Project
Name of proponent	Northern Minerals Limited
Name of Joint Venture	N/A
Australian Company Number (if applicable)	61 119 966 353
Address of proponent	PO Box 669 West Perth WA 6872
Key proponent contact for the proposal: <ul style="list-style-type: none">• Name• Address• Phone• email	Mr Robin Jones Project Manager PO Box 669 West Perth WA 6872 Tel: +61 08 9481 2344 Fax: +61 08 9481 5929 Email: rjones@northernminerals.com.au Website: http://www.northernminerals.com.au/
Consultant for the proposal: <ul style="list-style-type: none">• Name• Address• Phone• email	Mr Tristan Derham Group Leader – Approvals Outback Ecology 1/71 Troy Terrace Jolimont WA 6014 Tel: +61 08 9388 8799 Fax: +61 08 9388 8633 Email: Tristan.derham@outbackecology.com

1.2. Proposal

Title	Browns Range Project
Description	Mining and processing of rare earth minerals
Extent (area) of proposed ground disturbance.	Current proposal disturbance will result in a maximum proposal footprint area of up to 925 hectares (ha).
Timeframe in which the activity or development is proposed to occur (including start and finish dates where applicable).	Construction is intended to commence in Q1 2015 with operations commencing in Q3 2016. The operating life of the mine is expected to be 10 years.
Details of any staging of the proposal.	The proposal will not be staged
Is the proposal a strategic proposal?	No
Is the proponent requesting a declaration that the proposal is a derived proposal? If so, provide the following information on the strategic assessment within which the referred proposal was identified: <ul style="list-style-type: none"> • title of the strategic assessment; and • Ministerial Statement number. 	No
Please indicate whether, and in what way, the proposal is related to other proposals in the region.	The proposal is not related to other projects in the region.
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?	The Browns Range Project area consists of four granted exploration licenses E80/3547, E80/3548, E80/4393 and E80/4479, which are all held by Northern Minerals Ltd
What is the current land use on the property, and the extent (area in hectares) of the property?	<p>The proposal is located within the Gordon Downs pastoral lease in the Shire of Halls Creek. While the land is zoned for cattle grazing, no pastoral activity currently occurs within the area of the proposal.</p> <p>The total extent of the exploration tenements held by Northern Minerals which form part of the Browns Range proposal is approximately 43,400 ha:</p> <ul style="list-style-type: none"> E80/3547 - 35 blocks (~10,850 ha) E80/3548 - 70 blocks (~21,700 ha) E80/4393 - 18 blocks (~5,580 ha) E80/4479 - 17 BL(~5,270 ha)

1.3. Location

Name of the Shire in which the proposal is located.	Shire of Halls Creek
For urban areas: <ul style="list-style-type: none"> • street address; • lot number; • suburb; and • nearest road intersection. 	N/A
For remote localities: <ul style="list-style-type: none"> • nearest town; and • distance and direction from that town to the proposal site. 	<p>The proposal is located adjacent to the Western Australia/Northern Territory border, approximately 160 km southeast of Halls Creek, on the Gordon Down Station in the Shire of Halls Creek.</p> <p>The nearest residential community to the proposed mine is Kundat Djaru (Ringer Soak), located approximately 35 km west-northwest of the mining area.</p>
Electronic copy of spatial data - GIS or CAD, 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. 	Enclosed?: Yes - Refer Attachment 1

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?	Not applicable

1.5. Government Approvals

<p>Is rezoning of any land required before the proposal can be implemented? If yes, please provide details.</p>		<p>An application for conversion of exploration tenements to mining, general purpose or miscellaneous tenements (as appropriate) will be submitted to the Department of Mines and Petroleum (DMP) by Northern Minerals Limited for the proposal prior to submission of a Mining Proposal and commencement of mining activities.</p>	
<p>Is approval required from any Commonwealth or State Government agency or Local Authority for any part of the proposal? If yes, please complete the table below.</p>		<p>Yes</p>	
Agency/Authority	Approval required	Application lodged Yes / No	Agency/Local Authority contact(s) for proposal
Minister for the Environment (EPA)	This referral is being made under Part IV of the EP Act 1986	Yes - this submission	OEPA
Department of Environment and Conservation (DEC)	Works Approval and Operating Licence Part V of the EP Act 1986	No	DEC
Department of Mines and Petroleum (DMP)	Mining proposal including a Mine Closure Plan under the <i>Mining Act 1978</i>	No	DMP
Department of Water (DOW)	26D & 5C licence under the RIWI Act 1914 will be required to drill for and abstract groundwater	26D licence has been granted 5C licence will be applied for prior to dewatering activities	DoW

Note: On the basis of information currently available, Northern Minerals considers that the proposal will not result in a significant impact to any matter of National Environmental Significance and accordingly, no assessment /approval will be required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The need for an EPBC referral and/or assessment will be reviewed (in consultation with DSEWPC) prior to submitting the environmental impact assessment report for the proposal.

PART B - ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

2. ENVIRONMENTAL IMPACTS

Describe the impacts of the proposal on the following elements of the environment, by answering the questions contained in Sections 2.1-2.11:

- 2.1 flora and vegetation;
- 2.2 fauna;
- 2.3 rivers, creeks, wetlands and estuaries;
- 2.4 significant areas and/ or land features;
- 2.5 coastal zone areas;
- 2.6 marine areas and biota;
- 2.7 water supply and drainage catchments;
- 2.8 pollution;
- 2.9 greenhouse gas emissions;
- 2.10 contamination; and
- 2.11 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

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

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

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

The total project footprint will be up to 925 ha. The majority of the project footprint will require the clearing of native vegetation. Project footprint areas will be located within areas of previous clearing wherever practicable, including the upgrade of the access track and internal road networks.

A total amount of native vegetation to be cleared will be determined prior to the submission of further assessment documents. Current estimated proposal disturbance footprint areas are described in Attachment 2 (Supporting Information).

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

- Yes No

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

- Yes No

An initial Level 1 survey of flora and vegetation was conducted during excellent seasonal conditions in May 2012 (Outback Ecology 2013a). The survey was conducted in accordance with EPA Guidance Statement 54a. A second survey will be completed for the in May 2013. When combined with the results of the first survey, it is expected that the survey effort will fulfil requirements for a Level 2 assessment in the proposed mine operations area. The May 2013 survey will include the proposed haul route, using a buffer of 100 m along the proposed centreline. This will at least fulfil the requirements for a Level 1 survey along the proposed haul route, which generally follows an existing access track.

The Level 1 vegetation and flora report outlining the findings of the first season survey has been included in Appendix C of Attachment 2 (Supporting Information).

2.1.5. 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

The following database searches were completed as part of the Level 1 vegetation and flora survey:

- DEC TECs and Priority Ecological Communities (PEC) database;
- Department of Environment and Conservation (DEC) Threatened Flora database;
- Declared Rare Flora and Priority Flora List;
- Western Australian Herbarium (WAH) Specimen database for Threatened (DRF and Priority) Flora species;
- NatureMap database for all flora species records occurring within the Study Area; and
- Protected Matters Database Search Tool for Threatened Species and TECs listed under the Commonwealth EPBC Act.

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

Yes No

- No Threatened Flora (DRF) listed under the *Wildlife Conservation Act 1950* (WA) were recorded in the project area (Outback Ecology 2013a);
- No Threatened Flora species listed under the EPBC Act were recorded in the project area (Outback Ecology 2013a); and
- Two Western Australian Priority flora species were recorded during baseline surveys (*Goodenia crenata* [P3] and *Trachymene villosa* [P1]) (Outback Ecology 2013a).

Flora of 'Other Conservation Significance' were recorded during baseline surveys (**Table 1**). These include:

- two taxa, *Goodenia goodeniacea* and *Sesbania muelleri* which had not previously been recorded in Western Australia;
- five taxa represented significant range extensions; and
- one "poorly collected" species (Outback Ecology 2013a).

Table 1: Flora species of 'Other Conservation Significance'

Species	Conservation significance	Quadrat no. (voucher) in which located	No. of plants (% cover)
<i>Acacia gonocarpa</i>	Possible range extension	QBrow46a (1535) QBrow52 (2)	(<1%) (35%)
<i>Acacia gonoclada</i>	Possible range extension	QBrow58 (7)	(<1%)
<i>Goodenia azurea</i> subsp. <i>azurea</i>	Poorly collected in WA	Opportunistic	50
<i>Goodenia goodeniacea</i>	First confirmed record for WA	Opportunistic	50
<i>Goodenia</i> sp. (unnamed)	Possible new species	QBrow100 (1289)	(<1%)
<i>Marsdenia australis</i>	Range extension for WA	Opportunistic	(<1%)
<i>Rhyncharrhena linearis</i>	Range extension for WA	QBrow 56 (1115)	(<1%)
<i>Sesbania muelleri</i>	May be first record for WA	QBrow 24 (1181) Brow 56 (1181)	(<1%) (1%)

(Outback Ecology 2013a)

2.1.7. If located within the Perth Metropolitan Region, is the proposed development within or adjacent to a listed Bush Forever Site?

Yes

No

The proposal is not located within the Perth Metropolitan Region

2.1.8. What is the condition of the vegetation at the site?

The vegetation condition across the Study area was considered to be 'Excellent' (after Keighery 1994), with the exception of two sites which showed minor signs of mechanical (vehicular) disturbance and supported the introduced species *Malvastrum americanum* in very low numbers. The condition in these two sites was considered to be 'Very Good'. Disturbance across the Study area is generally limited to tracks and historical exploration (Outback Ecology 2013a).

2.2. Fauna

2.2.1. 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.

2.2.2. Describe the nature and extent of the expected impact.

Terrestrial Vertebrate Fauna

Survey of the proposal area has recorded a total of 122 terrestrial vertebrate species – 19 native mammal, five introduced mammal, 61 bird, 34 reptile and three amphibian species. Six habitat types were found within the Study area and included:

- Open Shrubland over Mixed Grassland on Sandy Plain;
- Drainage Line;
- Hummock Grassland on Rocky Hill;
- Hummock Grassland on Stony Plain;
- Acacia Heath over Mixed Grassland on Sandy Plain; and
- Mixed Grassland on Sandy Plain (Outback Ecology 2012).

Habitat areas identified within the Study area were consistent with habitat types known to occur within the Winnecke and Coolindie Land Systems, within which the proposal is located. No habitat types identified within the Study area were considered regionally significant and none were found to contain an exceptional diversity of vertebrate fauna. The development of the proposal will impact on fauna habitat used by native terrestrial vertebrate fauna, however given the extent and nature of the habitat in the surrounding area, the proposal will not result in a significant impact to vertebrate fauna or fauna habitat (Outback Ecology 2012).

Terrestrial Short-range Endemic Invertebrate Fauna

A total of 315 terrestrial invertebrate species from 25 identifiable species and morphospecies have been recorded during surveys of the proposal area. Based on current knowledge, 17 of these species were designated short range endemic (SRE) species as they are not known to have been recorded outside the project area. Two SRE Mygalomorph spider species, *Aganippe* 'MYG260' and *Aname* "MYG258' were collected from restricted habitats within the Study area. The remaining 15 SRE species were collected from habitats that were not considered to be restricted within the Study area and the nominal SRE status of these species may not represent a restricted distribution but rather an artefact of a lack of regional survey work (Outback Ecology 2013b).

An additional targeted survey for Mygalomorph spiders was undertaken between December 2012 and April 2013 to search for the two restricted SRE species outside the potential impact areas; to further define the habitats where *Aganippe* 'MYG260' and *Aname* "MYG258' were collected; and to evaluate the occurrence of these habitats in the surrounding landscape, including internal drainage habitat occurring outside the Study area. Information from this targeted survey will be used to further assess the impact of the proposal on these SRE species (Outback Ecology 2013b).

Subterranean Fauna

A total of six stygofauna species have been recorded for the proposal area, including four Parabathynellidae species (all belonging to a new undescribed genus), one Bathynellidae species, and one Enchytraeidae species.

Genetic analysis of the stygofauna specimens collected demonstrated that two species (*Parabathynellidae* OES17 and *Enchytraeidae* OES17) possess a wide distribution across the proposal area. Stygofauna survey work is ongoing.

A relatively extensive troglofauna survey program, involving the deployment of more than 60 litter traps over three survey rounds, collected no troglofauna from the proposal area. These results indicate that the proposal area does not support a troglofauna assemblage.

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

Yes No

Outback Ecology was contracted by Northern Minerals to undertake a terrestrial vertebrate fauna survey of the proposal area in May 2012 (Outback Ecology 2012). A copy of the terrestrial vertebrate fauna survey report can be found in Appendix C of Attachment 2.

Outback Ecology also conducted a terrestrial SRE invertebrate fauna assessment for the proposal area (Outback Ecology 2013b). The initial terrestrial SRE invertebrate fauna survey can be found in Appendix C of Attachment 2. An additional targeted survey for Mygalomorph spiders is currently being undertaken to further assess any impact of the proposal on SRE species recorded to date.

A Level 2 subterranean fauna survey is being conducted by Outback Ecology for the proposal areas and includes sampling for troglofauna and stygofauna. A summary report outlining survey effort completed to date and findings is outlined in Appendix C of Attachment 2.

2.2.4. Has a search of DEC records for known occurrences of specially protected (threatened) fauna been conducted for the site?

Yes No

The following database searches were completed as part of the terrestrial vertebrate fauna survey:

- the Threatened and Priority Fauna Database;
- the NRETAS database;
- a Birddata Custom Atlas Bird List;
- the NatureMap database; and
- the Protected Matters Search Tool.

The following database searches were completed as part of the terrestrial SRE invertebrate survey:

- NatureMap database;
- Threatened and Priority Fauna Database held by the DEC;
- The Australian Museum's database;

- Threatened Ecological Community and Priority Ecological Community Lists; and
- Western Australian Museum (WAM) Arachnid and Millipede Database.

The following database searches were completed as part of the subterranean fauna survey:

- Western Australian Museum's (WAM) collection database;
- DEC's Naturemap database; and
- DEC Threatened Ecological Communities database

2.2.5. 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.

Terrestrial Vertebrate Fauna

Five conservation significance terrestrial fauna species were recorded within the Study area, including:

- Major Mitchell's Cockatoo (*Lophochroa leadbeateri*) – *Wildlife Conservation Act 1950*, Schedule 4;
- Lakeland Downs Mouse (*Leggadina lakedownensis*) – DEC, Priority 4;
- Australian Bustard (*Ardeotis australis*) – DEC, Priority 4;
- Bush Stone-curlew (*Burhinus grallarius*) – DEC, Priority 4; and
- Rainbow Bee-eater (*Merops ornatus*) – EPBC Act, Migratory; *Wildlife Conservation Act 1950*, Schedule 3 (Outback Ecology 2012).

2.3. Rivers, Creeks, Wetlands and Estuaries

2.3.1. Will the development occur within 200 metres 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.

There are no permanent watercourses or surface water bodies (including wetlands) in the project area. However, the proposal may result in the clearing of native vegetation located in an ephemeral floodplain and internal and seasonal drainage areas. The floodplain and drainage area support a Priority 3 flora species (*Goodenia crenata*) and two SRE Mygalomorph spider species, respectively.

The floodplains are broadly distributed and continuous outside of the proposal area. Given the broad distribution of the floodplain areas and the size of the *Goodenia crenata* population, the limited disturbance proposed to be completed as part of the proposal in these floodplain areas is unlikely to have any significant long-term impacts on this area.

The proposal will result in the clearing of approximately 10% of seasonal drainage areas identified within the proposal area. An additional targeted survey for Mygalomorph spiders is currently being undertaken to search for the two restricted SRE species outside the potential impact areas and determine the potential impact of the proposal on these species.

2.3.2. Will the development result in the clearing of vegetation within the 200 metre zone?

Yes

No

Clearing of vegetation as part of the proposal will occur within both floodplain and seasonal drainage areas. Conventional, well-proven management controls will be implemented to minimise impact of flooding on operational activities, contamination of surface water and degradation of ecosystems downstream of the proposal.

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

Yes

No

As mentioned above, the clearing of vegetation within the floodplain and seasonal drainage areas will be required as part of the proposal but no planned filling or excavation of a river, creek or wetland will occur as part of the proposal.

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

Yes

No

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

Yes

No

2.3.6. 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 <i>Swan River Trust Act 1988</i>	<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

2.4.1. Is the proposed development located within or adjacent to an existing or proposed national park or nature reserve?

Yes

No

The closest Aboriginal reserves are Kundjat Djaru (Ringer Soak), located 40 km west of the Study Area, and the Northern Tanami Indigenous Protected Area, approximately 50 km east in the Northern Territory.

DEC-managed lands closest to the proposal include the Ord River Regeneration Reserve, located approximately 100 km northwest of the proposal and the Wolfe Creek Meteorite Crater National Park, located approximately 120 km west-southwest.

The closest proposed (not gazetted) protected area is the proposed Gardiner Range Conservation Reserve, located to the south and west of the Proposal. The proposed reserve is listed as an EPA Redbook Recommended Conservation Reserve managed by the DEC (DMP 1998). The EPA Redbook Recommended Conservation Reserves are recommended by the EPA for conservation, as set out in a series of maps and text published in the Red Book Status Report (EPA 1993). The proposed upgrade of the existing access track to allow heavy vehicle haulage for the Browns Range project will occur within the northern corner of the proposed Gardiner Range Conservation Reserve.

2.4.2. 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

The closest Environmentally Sensitive Area to the proposal is the Wolfe Creek Meteorite Crater National Park

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

Yes

No

2.5. Coastal Zone Areas (Coastal Dunes And Beaches)

2.5.1. Will The Development Occur Within 300 metres of a coastal area?

(please tick)

Yes

If yes, complete the rest of this section.

No

If no, go to the next section.

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

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

Yes

No

2.5.4. Is the development likely to impact on mangroves?

Yes

No

2.6. Marine Areas and Biota

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

Yes

No

2.6.2. 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

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

Yes

No

2.7. Water Supply and Drainage Catchments

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

Yes

No

The proposal is located within the Canning-Kimberley Proclaimed Groundwater Area. The proposal is not located within a Proclaimed Surface Water Area.

2.7.2. Are you in an existing or proposed underground water supply and pollution control area?

Yes

No

The proposal is not located within an Underground Water Supply and Pollution Control area

2.7.3. Are you in a public drinking water supply area (PDWSA)?

Yes

No

The proposal is not located within a PDWSA

2.7.4. Is there sufficient water available for the proposal?

Yes No

2.7.5. Will the proposal require drainage of the land?

Yes No

The proposal will possibly involve the re-direction of local ephemeral drainage around the site into natural drainage systems. Surface water runoff from the plant and hardstand areas will be contained and treated as required and directed to the process water circuit for re-use.

2.7.6. 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.

2.7.7. What is the water requirement for the construction and operation of this proposal, in kilolitres per year?

Approximately 1.5 GLpa (1,500,000 kLpa) will be required to operate the proposal. The water requirement during construction is unlikely to exceed 0.5 GLpa (500,000 kLpa).

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

The proposal will source water from the following areas:

- groundwater from pit dewatering;
- recycling of water from tailings storage facility;
- surface water runoff from the plant and hardstand areas;
- make up water to be supplied by combination of water harvesting from plant and hardstand areas and groundwater abstraction bores (borefield location and design to be confirmed).

2.8. Pollution

2.8.1. 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.

2.8.2. Is the proposal a prescribed premise, under the environmental protection regulations 1987?

Yes

No

The following categories of prescribed premises may be triggered:

- **Category 5:** Processing or beneficiation of metallic or non-metallic ore: premises on which — 50 000 tonnes or more per year
 - metallic or non-metallic ore is crushed, ground, milled or otherwise processed; or
 - tailings from metallic or non-metallic ore are reprocessed; or
 - tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.

- **Category 6:** Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore. 50 000 tonnes or more per year
- **Category 7:** Vat or in situ leaching of metal: premises on which metal is extracted from ore with a chemical solution.
- **Category 64:** Class II or III putrescible landfill site.

A Works Approval and Operating licence application will be submitted and approval sought from the DEC under Part V of the EP Act prior to the construction and operation of the proposal.

2.8.3. Will the proposal result in gaseous emissions to air?

Yes No

The proposal will result in the combustion of gaseous emissions from burning of diesel from fixed power generating plant and mobile fleet. The proposal will also result in emissions from ore processing. Emissions may arise from the dryer, sulphation bake and calciner, which form part of the processing plant. Additional information is provided in Attachment 2 (Supporting Information).

2.8.4. 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

Air quality assessment (including modelling) will be conducted as part of environmental impact assessment studies. Due to the remote location of the site there are unlikely to be any other significant emitters to the airshed (other than bushfires) that would contribute to cumulative impacts.

2.8.5. Will the proposal result in liquid effluent discharge?

Yes No

No discharges of liquid effluents to the environment are proposed. Mine dewatering water will be used in ore processing. Process water that cannot be recycled will be contained within lined evaporation ponds. Tailings supernatant water will be reclaimed and recycled through the ore processing plant and tailings stored within an appropriately designed tailings storage facility.

Septic effluents from accommodation and office areas will be treated in proprietary sewage treatment facilities. Potentially contaminated stormwater runoff from plant and hardstand areas (including fuel or chemical storage and dispensing areas) will be contained and treated as required and directed to the process water circuit.

2.8.6. 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

No discharge to a watercourse or marine environment is proposed. Any stormwater runoff that falls within the plant or hardstand areas will be contained and treated as required and directed to the process water circuit for re-use.

2.8.7. Will the proposal produce or result in solid wastes?

Yes

No

If yes, please briefly describe the nature, concentrations and disposal location/ method.

The main solid wastes produced will be:

- Non-mineralised waste rock,
- Tailings from processing of ore; and
- Inert and putrescible waste from construction and operational activities.

Mine wastes will be stored in engineered structures located in proximity to the mine pits and processing plant. Geochemical characterisations of wastes completed to date (Attachment 2) indicate that both waste rock and tailings are generally non-acid generating and non-saline. Further testing of waste rock and tailings will be undertaken. Radiological analysis to date has shown that the ore, waste rock, tailings and products produced by the Browns Range proposal are expected to be below the definition of "radioactive materials". Further radiological analysis is proposed.

Inert and putrescible waste will be disposed of within a licensed facility that will be constructed in accordance with any conditions of a Works Approval.

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

Yes

No

If yes, please briefly describe.

The main on-site noise contributors that form part of the proposal include the crushing of ore, movement of mechanical plant; and mine ventilation plant. It is not expected that any of these sources will result in significant off-site noise impacts.

The transport of supplies to site and product from site may result in off-site noise emission resulting from an increase in vehicle movement through local communities to the designated port.

2.8.3 Will the development be subject to the Environmental Protection (Noise) Regulations 1997?

Yes

No

The accommodation village will be positioned and designed so that noise levels at the village comply with relevant assigned noise levels in the *Environmental Protection (Noise) Regulations 1997*.

2.8.4 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

Product will be transported from the site to a designated port along sealed and unsealed public roads. It is unlikely that the amenity of residents or other "sensitive premises" will be affected by dust, odour or other pollutants from mining, ore processing or product transport.

2.8.5 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

The mine accommodation village will be sited so as to ensure that it is not exposed to emissions of noise, dust or pollutants associated with mining and processing activities.

2.9 Greenhouse Gas Emissions

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

Yes

No

If yes, please provide an estimate of the annual gross emissions in absolute and in carbon dioxide equivalent figures.

Based on an average fuel consumption of less than 20,000 kL per annum, the proposal is expected to produce less than 50,000 tonnes of greenhouse gas emissions per year (in accordance with the National Greenhouse and Energy Reporting Act 2007 (NGER) screening tool).

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

2.10 Contamination

2.10.1 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

Northern Minerals has identified the presence of hydrocarbons in some of its exploration boreholes. The hydrocarbon has been identified as "hammer oil" and in one case diesel. Northern Minerals has notified the Western Australian DEC under the *Contaminated Sites Act 2003* (CS Act). On 22 February 2013, the DEC advised Northern Minerals that the Browns Range site has been classified as "Report not substantiated" and that "based on the available information, soil contamination is not suspected at the site".

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

Yes

No

If yes, please describe.

Result of testing on five groundwater samples collected at the Browns Range site were reported to the DEC Contaminated Sites Branch in December 2012. Subsequently, laboratory testing was carried out on a range of hydrocarbon products for the purpose of identifying possible sources of apparent hydrocarbons observed in some exploration boreholes.

2.10.3 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.

Northern Minerals Ltd has notified the Western Australian DEC under the CS Act (Site ID 7616). The site has been classified as "Report not substantiated".

2.11 Social Surroundings

2.11.1 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.

There are a number of Aboriginal heritage sites within the Browns Range exploration tenements. As at the date of this referral, Northern Minerals has no expectation that the known sites will be disturbed by the proposed mining operation. However the entire project area has not yet been comprehensively surveyed. Northern Minerals, in consultation with the Jaru People, will conduct further assessments of possible project impacts on Aboriginal sites and other aspects of the area which are important to the Jaru People.

2.11.2 Is the proposal on a property which contains or is near a site of high public interest (e.g. a major recreation area or natural scenic feature)?

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

2.11.3 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

3.1.1 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 website)

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

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

- Yes No

3.2 Consultation

3.2.1 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.

A stakeholder consultation register outlining consultation completed to date regarding the proposal, and comments received, can be found in Table 12 of Attachment 2.

3. REFERENCES

- EPA. (1993) *Red Book Status Report* Published series of maps and text prepared by the Environmental Protection Authority.
- Keighery, B. (1994) *Bushland Plant Survey - A guide to Plant Community Survey for the Community.*, Wildflower Society of WA (Inc.).
- Outback Ecology. (2012) *Northern Minerals Limited, Browns Range Project, Terrestrial Vertebrate Fauna Baseline Survey.*, Unpublished report prepared for Northern Minerals Ltd, October 2012.
- Outback Ecology. (2013a) *Northern Minerals Limited, Browns Range Project, Level 1 Vegetation and Flora Survey*, unpublished report prepared for Northern Minerals Limited, February 2013.
- Outback Ecology. (2013b) *Northern Minerals Limited, Browns Range Project, Terrestrial Short-range Endemic Invertebrate Fauna Baseline Survey.*, Unpublished report prepared for Northern Minerals Limited, February 2013.

