



Form for the referral of a proposal to the Environmental Protection Authority under Section 38 of the *Environmental Protection Act 1986*

Referrer information			
Who is referring this proposal?		<input checked="" type="checkbox"/> Proponent <input type="checkbox"/> Decision-making authority <input type="checkbox"/> Community member/third party	
Name Haakon Nielssen		Signature	
Position	Manager – Environment, Approvals and Heritage	Organisation	Atlas Iron Pty Ltd
Email	haakon.nielssen@atlasiron.com.au		
Address	Level 17 Raine Square	300 Murray Street	
	Perth	WA	6000
Date	18 February 2021		
Does the referrer request that the EPA treat any part of the proposal information in the referral as confidential? <i>Provide confidential information in a separate attachment.</i>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Referral declaration for organisations, proponents and decision-making authorities: I, Haakon Nielssen , declare that I am authorised to refer this proposal on behalf of Atlas Iron Pty Ltd and further declare that the information contained in this form is true and not misleading.			

Part A: Proponent and proposal description

Proponent information

Name of the proponent/s (including Trading Name if relevant)	Atlas Iron Pty Ltd
Australian Company Number(s) <input checked="" type="checkbox"/>	110 396 168
OR Australian Business Number(s) <input type="checkbox"/>	
Contact for the proposal (if different from the referrer) <i>Please include name, physical address, phone, and email.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the proponent have the legal access required for the implementation of all aspects of the proposal? <i>If yes, provide details of legal access authorisations / agreements / tenure.</i> <i>If no, what authorisations / agreements / tenure is required and from whom?</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No The Proposal is predominantly located on mining tenement M45/1243-I, with road access partly on exploration tenement E46/1129-I.

Proposal type

<p>What type of proposal is being referred?</p> <p>For a change to an approved proposal please state the Ministerial Statement number/s (MS No./s) of the approved proposal</p> <p>For a derived proposal please state the Ministerial Statement number (MS No.) of the associated strategic proposal</p>	<p><input checked="" type="checkbox"/> significant – new proposal</p> <p><input type="checkbox"/> significant – change to approved proposal (MS No./s: _____)</p> <p><input type="checkbox"/> proposal under an assessed planning scheme</p> <p><input type="checkbox"/> strategic</p> <p><input type="checkbox"/> derived (Strategic MS No.: _____)</p>
<p>For a significant proposal:</p> <ul style="list-style-type: none"> Why do you consider the proposal may have a significant effect on the environment and warrant referral to the EPA? 	<p>The Proposal includes clearing of up to 1,913 ha of vegetation within a Development Envelope of 4,465 ha to support the development, operation and closure of five iron ore pits.</p> <p>Atlas Iron has conducted desktop assessments and field surveys at a local level to investigate the potential risks to Environmental Factors.</p> <p>The following preliminary key environmental factors have been identified for the Proposal:</p> <ul style="list-style-type: none"> Flora and Vegetation Terrestrial Fauna Subterranean Fauna Inland Waters Greenhouse Gas Emissions Social Surroundings.

<p>For a proposal under an assessed planning scheme, provide the following details:</p> <ul style="list-style-type: none"> • Scheme name and number <p>For the Responsible Authority:</p> <ul style="list-style-type: none"> • What new environmental issues are raised by the proposal that were not assessed during the assessment of the planning scheme? • How does the proposal not comply with the assessed scheme and/or the environmental conditions in the assessed planning scheme? 	Not applicable.
Proposal description	
Title of the proposal	McPhee Creek Iron Ore Project
Name of the Local Government Authority in which the proposal is located.	Shire of East Pilbara
<p>Location:</p> <p>a) street address, lot number, suburb, and nearest road intersection; or</p> <p>b) if remote the nearest town and distance and direction from that town to the proposal site.</p>	<p>The Proposal is located approximately 30 km north of Nullagine, in the Pilbara region of Western Australia.</p> <p>The Proposal is located on the following mining tenure:</p> <ul style="list-style-type: none"> • M 45/1243-I • E 46/1129-I
<p>Proposal description – including the key characteristics of the proposal</p> <p><i>Provide as an attachment to the form</i></p>	Please refer to Attachment A – Proposal Description.
<p>Have you provided electronic spatial data, maps and figure in the appropriate format?</p> <p><i>Refer to instructions at the front of the form</i></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Spatial data for Development Envelope and Conceptual Footprint submitted with referral. Figures are provided in Attachment B - Figures</p>
<p>What is the current land use on the property, and the extent (area in hectares) of the property?</p>	<p>The Proposal includes a proposed Development Envelope of approximately 4,465 ha, of which up to 1,913 ha is proposed to be cleared.</p> <p>Bonney Downs Station (a privately held pastoral lease) overlies the southern portion of the Development Envelope. The northern portion of the Development Envelope is on Unallocated Crown Land.</p> <p>The Development Envelope is located on land subject to a registered Njamal Native Title claim.</p>
<p>Have you had pre-referral discussions with the EPA at DWER Services? If so, quote the reference number and/or the DWER contact.</p>	A pre-referral consultation session for the Proposal was held with the EPA Services on 29 January 2021.

Part B: Environmental impacts

Environmental factors

What are the likely significant environmental factors for this proposal?

- Benthic Communities and Habitat
- Coastal Processes
- Marine Environmental Quality
- Marine Fauna
- Flora and Vegetation
- Landforms
- Subterranean Fauna
- Terrestrial Environmental Quality
- Terrestrial Fauna
- Inland Waters
- Air Quality
- Greenhouse Gas Emissions
- Social Surroundings
- Human Health

For **each** of the environmental factors identified above, complete the following table, or provide the information in a supplementary report

Potential environmental impacts

1	EPA Factor	Flora and vegetation
2	<p>EPA policy and guidance - What have you considered and how have you applied them in relation to this factor?</p>	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2020a) lists the objective for this factor as:</p> <ul style="list-style-type: none"> • <i>To protect flora and vegetation so that biological diversity and ecological integrity are maintained.</i> <p>In considering this objective, the Proponent has sought to quantify the existing biological diversity and ecological integrity of the area through environmental surveys.</p> <p>The following policy and guidance is relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Flora and Vegetation</i> (EPA 2016a). • <i>Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment</i> (EPA 2016b). <p>The Proponent has considered the above-mentioned policy and guidance in the following ways:</p> <ul style="list-style-type: none"> • Planning, design and implementation of the environmental surveys. • Preliminary assessment of potential impacts. • Application of the mitigation hierarchy.
3	<p>Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts</p>	<p>Consultation with decision-making authorities (Department of Water and Environmental Regulation (DWER); Department of Biodiversity, Conservation and Attractions (DBCA); Department of Mining, Industry Regulation and Safety (DMIRS)) and other key stakeholders is ongoing.</p> <p>A pre-referral consultation with EPA Services in relation to the Proposal was held on 29 January 2021.</p> <p>Consultation with the Native Title claimants, the Njamal People, is ongoing. In addition, the Proponent has engaged with Bonney Downs pastoral station.</p> <p>The Proponent will continue to consult with relevant stakeholders during the environmental assessment process.</p>

4	<p>Receiving environment – Describe the current condition of the receiving environment in relation to this factor.</p>	<p>The receiving environment in the proposed Development Envelope is generally well understood. Numerous surveys have been conducted over a number of years including baseline surveys and targeted conservation significant species surveys (refer Attachment C).</p> <p>Vegetation within the proposed Development Envelope is generally typical of the Chichester Interim Biogeographic Regionalisation for Australia (IBRA) sub-region.</p> <p>The majority of the intact vegetation in the proposed Development Envelope is considered to be in Good to Excellent condition. Some areas have been degraded from exploration drilling.</p> <p>Seventeen vegetation types were mapped within the Development Envelope (including ‘Cleared’ areas) (Ecoscape 2020a, b). These have been broadly grouped based on the following three landform types: predominantly hillcrests/hillslopes, stony plains and predominantly drainage lines.</p> <p>Significant Vegetation</p> <p>None of the vegetation types mapped in the Development Envelope are considered to represent any current Western Australian listed or Commonwealth EPBC Act listed Threatened Ecological Community (TEC) and none are known from the vicinity.</p> <p>One vegetation type within the Development Envelope represents potentially groundwater dependent vegetation; EvApyCci due to the presence of <i>Eucalyptus victrix</i>; however, this species is a facultative phreatophyte, meaning it is deep rooted and taps into groundwater opportunistically if available, but can also be supported by surface water inputs to the vadose (unsaturated) zone in certain situations and stand densities (Ecoscape 2020b).</p> <p>Flora</p> <p>No Threatened flora species have been recorded within the proposed Development Envelope; however, Priority flora species have been recorded.</p> <p>A total of seven introduced flora species (weeds) were recorded in the Development Envelope (Ecoscape 2020b).</p>
5	<p>Proposal activities – Describe the proposal activities that have the potential to impact the environment</p>	<p>Proposal activities that have the potential to impact flora and vegetation include:</p> <ul style="list-style-type: none"> • Clearing for mine and infrastructure development resulting in direct loss of native vegetation. • Vehicle movements during construction and operations causing the Introduction and/or spread of weeds. • Mine dewatering and infrastructure development leading to altered hydrological regimes and potential indirect impacts to vegetation. • Mining activities leading to a degradation of vegetation through dust deposition.
6	<p>Mitigation – Describe the measures proposed to manage and mitigate the potential environmental impacts.</p>	<p>During Proposal design, the mitigation hierarchy (avoid, minimise and rehabilitate) has been applied to avoid and minimise potential impacts of the Proposal to flora and vegetation as far as practicable. Mitigation measures include:</p> <ul style="list-style-type: none"> • Avoidance of direct impacts to Priority flora species as far as practicable • Minimising clearing with a maximum of 1,913 ha of native vegetation to be removed. • clearing of vegetation unit EvApyCci, which represents potential groundwater dependent vegetation, will be minimised as far as practicable • targeted weed control.

7	<p>Impacts – Assess the impacts of the proposal and review the residual impacts against the EPA objective.</p>	<p>After the application of the mitigation hierarchy, the Proposal is predicted to result in the following impacts to flora and vegetation:</p> <ul style="list-style-type: none"> • Clearing of up to 1,913 ha of native vegetation. • Loss of some individuals of priority flora species recorded in the Development Envelope. • Controlled discharge of surplus water may alter vegetation within the wetting front of the receiving creeklines, for the duration of discharge. • Spread of weeds and dust deposition are expected to be managed within the Development Envelope through the application of standard weed and dust management measures and are not predicted to result in significant impacts to flora and vegetation. • No listed threatened flora species, TECs or PECs are present within the Development Envelope. <p>The significant residual impacts, after the implementation of the mitigation hierarchy include clearing of native vegetation in Good to Excellent condition. The Proponent considers the Proposal can be managed to meet the EPA’s objective for flora and vegetation.</p>
8	<p>Assumptions - Describe any assumptions critical to your assessment e.g. particular mitigation measures or regulatory conditions.</p>	<p>Impacts to priority flora species are not expected to be significant nor are they expected to result in a change to their conservation status.</p> <p>Groundwater drawdown may potentially affect vegetation health, condition and alter vegetation structure; however, drawdown is not predicted to result in total loss of vegetation in affected areas and no vegetation is considered to be limited to the drawdown area or Development Envelope. Therefore, these impacts are not considered significant.</p> <p>The increased availability of water as a result of surplus water discharge may result in changes in vegetation type and density within the discharge extent; however, these changes are expected to be temporary and over time, vegetation is expected to return to pre-discharge composition and density following the cessation of discharge. These changes are not expected to be significant.</p>

Potential environmental impacts		
1	EPA Factor	Terrestrial Fauna
2	<p>EPA policy and guidance - What have you considered and how have you applied them in relation to this factor?</p>	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2020a) lists the objective for terrestrial fauna as follows:</p> <ul style="list-style-type: none"> • <i>To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.</i> <p>In considering this objective, the Proponent has sought to quantify the existing biological diversity and ecological integrity of the area through environmental surveys.</p> <p>The following policy and guidance are relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Terrestrial Fauna</i> (EPA 2016c). • <i>Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment</i> (EPA 2020b). • <i>Technical Guidance: Sampling Methods for Terrestrial Vertebrate Fauna</i> (EPA 2016d). • <i>Technical Guidance: Sampling Methods for Short Range Endemic Invertebrate Fauna</i> (EPA 2016e). <p>The Proponent has considered the above-mentioned policy and guidance in the following ways:</p> <ul style="list-style-type: none"> • Planning, design and implementation of the environmental surveys. • Preliminary assessment of potential impacts. • Application of the mitigation hierarchy.
3	<p>Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts</p>	<p>Consultation with decision-making authorities DWER; DBCA; DMIRS and other key stakeholders is ongoing.</p> <p>A pre-referral consultation with EPA Services in relation to the Proposal was held on 29 January 2021.</p> <p>Consultation with the Native Title claimants, the Njama! People is ongoing. In addition, the Proponent has engaged with Bonney Downs pastoral station.</p> <p>The Proponent will continue to consult with relevant stakeholders during the environmental assessment process.</p>
4	<p>Receiving environment – Describe the current condition of the receiving environment in relation to this factor.</p>	<p>The receiving environment in the proposed Development Envelope is generally well understood. Numerous surveys have been conducted including baseline surveys and targeted threatened fauna surveys (refer Attachment D).</p> <p>Fauna habitat</p> <p>A total of eight fauna habitat types have been recorded in the Development Envelope (Biologic 2020a) and include:</p> <ul style="list-style-type: none"> • Gorge/Gully • Breakaway/Cliff • Hilltop/Hillslope • Drainage Line • Rocky Foothills • Spinifex Sandplain • Spinifex Stony Plain • Calcrete. <p>The highest value fauna habitat types for fauna species known or likely to occur in the Development Envelope are Gorge/Gully and Breakaway/Cliff habitat types which provide high value denning/roosting and foraging habitats. The remaining habitat types are considered to be of moderate to low value and are common and widespread in the region (Biologic 2020a).</p>

		<p>A total of 18 caves have been recorded in the Development Envelope. Of these, seven caves show usage by Pilbara Leaf-nosed Bat, and seven show usage by Ghost Bat. All 18 caves are potential or confirmed nocturnal refuges/roosts for Pilbara Leaf-nosed Bat. Of the 18 caves, 12 are potential or confirmed Ghost Bat night roosts, five are potential or confirmed Ghost Bat day roosts and one is undescribed. Habitat types and caves are depicted in Figure 4 in Attachment B. These will be further described in the Environmental Review Document.</p> <p>Significant fauna</p> <p>A total of eight species of conservation significance have been recorded within the Development Envelope:</p> <ul style="list-style-type: none"> • Northern Quoll (<i>Dasyurus hallucatus</i>) – EPBC Act and <i>Biodiversity Conservation Act 2016</i> (BC Act) – Endangered. Multiple records over a number of years indicating a resident population. • Pilbara Leaf-nosed Bat (<i>Rhinoicteris aurantia</i>) – EPBC Act and BC Act – Vulnerable. The timing and abundance of calls indicate that a permanent diurnal roost may be present at Crescent Moon in the Development Envelope. Evidence of usage of seven caves as nocturnal roosts. Further studies are proposed to identify the roost location. • Ghost Bat (<i>Macroderma gigas</i>) – EPBC Act and BC Act – Vulnerable. Resident in the Development Envelope with evidence of usage of seven caves. No maternity roosts recorded. • Pilbara Olive Python (<i>Liasis olivaceus barroni</i>) – EPBC Act and BC Act – Vulnerable. Multiple records over a number of years. • Greater Bilby (<i>Macrotis lagotis</i>) – EPBC Act and BC Act – Vulnerable. Historic records from one location in the Development Envelope. No recent records. • Long-tailed Dunnart (<i>Sminthopsis longicaudata</i>) – DBCA listed Priority 4 • Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>) – DBCA listed Priority 4 • Fork-tailed Swift (<i>Apus pacificus</i>) – EPBC Act and BC Act – Migratory <p>Short Range Endemic (SRE) Invertebrate Fauna</p> <p>Seventeen potential SRE species have been recorded within the Development Envelope. Of these species, one species is considered a confirmed SRE and 16 are considered potential SRE (Biologic 2020a).</p> <p>Aquatic fauna</p> <p>Aquatic fauna surveys have been conducted in these surface water features, including along McPhee Creek, Branch of McPhee Creek and Unnamed Creek across and outside of the Development Envelope since 2011. For the majority of surface water features assessed in-stream habitat is considered high quality, including complex heterogenous substrates, such as submerged macrophytes, emergent macrophytes, large woody debris, root mats and trailing vegetation. Aquatic fauna surveys have identified 90 invertebrate taxa, 234 aquatic macroinvertebrates and four fish species.</p>
5	<p>Proposal activities – Describe the proposal activities that have the potential to impact the environment</p>	<p>Proposal activities that have the potential to impact terrestrial fauna include:</p> <ul style="list-style-type: none"> • Clearing for mine and infrastructure development resulting in direct loss of fauna habitat and/or fragmentation. • Vehicle movements during construction and operations causing injury to or mortality of terrestrial fauna. • Mine dewatering and infrastructure development leading to altered hydrological regimes and potential impacts to fauna habitat. • Mine construction and operations leading to disturbance to fauna from dust, light, noise and vibration.

		<ul style="list-style-type: none"> • Clearing and associated mining activities causing the introduction or spread of weeds and feral predators.
6	<p>Mitigation – Describe the measures proposed to manage and mitigate the potential environmental impacts.</p>	<p>During Proposal design the mitigation hierarchy (avoid, minimise and rehabilitate) has been applied to avoid and minimise potential impacts of the Proposal to terrestrial fauna, as far as practicable. Mitigation measures include:</p> <ul style="list-style-type: none"> • Minimising direct impacts to areas of high value habitat including through the establishment of a Significant Fauna Exclusion Zone. • Avoidance of direct impacts to a permanent diurnal Pilbara Leaf-nosed Bat roost, if identified within the Development Envelope. • Minimising clearing, with a maximum of 1,913 ha of native vegetation (fauna habitat) to be removed. • Minimising vehicle strike through the implementation of vehicle speed limits • Avoidance of barbed wire fencing will be avoided where possible. If use of barbed wire fencing can't be avoided, reflectors will be installed to deter bat interaction • Targeted weed control • Feral cat control undertaken in response to sightings • Minimising impacts to surface water pools.
7	<p>Impacts – Assess the impacts of the proposal and review the residual impacts against the EPA objective.</p>	<p>The predicted impacts to terrestrial fauna from the Proposal after applying the mitigation hierarchy (avoid, minimise, rehabilitate) are:</p> <ul style="list-style-type: none"> • Clearing of up to 1,913 ha, including clearing of some fauna habitat considered to be of high value. • Direct impact to surface water features. • Groundwater drawdown associated with dewatering has the potential to impact fauna habitat. • Development of pit lakes post-closure represents a hazard to native fauna. • Surplus water discharge to three receiving creeklines. • Dust, light, noise, vibration, weeds and feral cats are expected to be managed within the Development Envelope and are not predicted to result in significant impacts to terrestrial fauna. • Direct impact to some potential SRE species. <p>Through the implementation of the mitigation hierarchy, the residual impacts of the Proposal to terrestrial fauna and habitat are as low as reasonably practicable. There are significant residual impacts to high value habitat at a local scale; however, the Proposal is not expected to adversely affect the conservation status of any species (including MNES and SREs). As such, the EPA's objective for terrestrial fauna will be met and biological diversity and ecological integrity will be maintained.</p>
8	<p>Assumptions - Describe any assumptions critical to your assessment e.g. particular mitigation measures or regulatory conditions.</p>	<p>Impacts to the majority of potential SRE species recorded are not expected to be significant due to multiple records within the Development Envelope.</p>

Potential environmental impacts		
1	EPA Factor	Subterranean fauna
2	EPA policy and guidance - What have you considered and how have you applied them in relation to this factor?	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2020a) lists the objective for this factor as:</p> <ul style="list-style-type: none"> • <i>To protect subterranean fauna so that biological diversity and ecological integrity are maintained.</i> <p>In considering this objective, the Proponent has sought to quantify the existing biological diversity and ecological integrity of the area through environmental surveys.</p> <p>The following policy and guidance are relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Subterranean Fauna</i> (EPA 2016f). • <i>Technical Guidance: Subterranean Fauna Surveys</i> (EPA 2016g). • <i>Technical Guidance: Sampling Methods for Subterranean Fauna</i> (EPA 2016h). <p>The Proponent has considered the above-mentioned policy and guidance in the following ways:</p> <ul style="list-style-type: none"> • Planning, design and implementation of the environmental surveys undertaken. • Preliminary assessment of potential impacts. • Application of the mitigation hierarchy.
3	Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts	<p>Consultation with decision-making authorities DWER; DBCA; DMIRS and other key stakeholders is ongoing.</p> <p>A pre-referral consultation with EPA Services in relation to the Proposal was held on 29 January 2021.</p> <p>Consultation with the Native Title claimants, the Njamal People is ongoing. In addition, the Proponent has engaged with Bonney Downs pastoral station. The Proponent will continue to consult with relevant stakeholders during the environmental assessment process.</p>
4	Receiving environment – Describe the current condition of the receiving environment in relation to this factor.	<p>The receiving environment in the proposed Development Envelope is generally well understood. A number of studies have been conducted over numerous years.</p> <p>Troglofauna</p> <p>Medium and high suitability troglofaunal habitat occurs within the Development Envelope. A total of 47 troglofauna taxa were recorded from the Development Envelope.</p> <p>None of the troglofauna taxa, nor the communities recorded in the Development Envelope, are listed or recognised as conservation priorities under state or federal legislation (Biologic 2020b).</p> <p>Stygofauna</p> <p>Depth to groundwater within the orebody (generally greater than 40 m bgl) is a likely constraint to stygofauna abundance and diversity; however, groundwater quality is suitable to support stygofauna.</p> <p>A total of 12 stygofauna taxa have been recorded in the Development Envelope. None of the stygofauna taxa, nor the communities recorded in the Development Envelope, are listed or recognised as conservation priorities under state or federal legislation (Biologic 2020b).</p>
5	Proposal activities – Describe the proposal activities that have the potential to impact the environment	<p>Proposal activities that have the potential to impact subterranean fauna include:</p> <ul style="list-style-type: none"> • Mine development and dewatering causing loss of potential subterranean fauna habitat. • Mine development and dewatering causing loss of subterranean individuals. • Clearing, mining and infrastructure development leading to indirect impacts to subterranean fauna habitat through altered infiltration or nutrient flux. • Mining operations resulting in reduction of soil or groundwater quality.

6	<p>Mitigation – Describe the measures proposed to manage and mitigate the potential environmental impacts.</p>	<p>During Proposal design, the mitigation hierarchy (avoid, minimise and rehabilitate) has been applied to avoid and minimise potential impacts of the Proposal to subterranean fauna, as far as practicable. Mitigation measures include:</p> <ul style="list-style-type: none"> • Minimise removal of subterranean fauna habitat, where possible. • Minimise groundwater drawdown to that which is required for safe mining. • Manage hydrocarbon and waste rock to minimise the potential for contamination of habitat.
7	<p>Impacts – Assess the impacts of the proposal and review the residual impacts against the EPA objective.</p>	<p>The predicted impacts to subterranean fauna from the Proposal after applying the mitigation hierarchy (avoid, minimise, rehabilitate) are:</p> <ul style="list-style-type: none"> • Removal of subterranean habitat and individuals within the proposed pits. • Loss of subterranean fauna habitat from groundwater drawdown. • Indirect impacts to habitat quality will be investigated as part of the impact assessment. <p>Through the implementation of the EPA mitigation hierarchy, the residual impacts of the Proposal can be managed to meet the EPA's objective for subterranean fauna and the Proponent considers that the residual impact will not be significant.</p>
8	<p>Assumptions - Describe any assumptions critical to your assessment e.g. particular mitigation measures or regulatory conditions.</p>	<p>It is expected that subterranean fauna taxa recorded in the Conceptual Footprint will continue to occur in areas of remaining connected habitat outside of the Conceptual Footprint, following Proposal implementation.</p> <p>Progressive rehabilitation and hydrocarbon management are expected to minimise any indirect impact to subterranean species or subterranean fauna habitat.</p> <p>Groundwater drawdown will be minimised to that which is necessary for below water table mining.</p>

Potential environmental impacts		
1	EPA Factor	Inland Waters
2	EPA policy and guidance - What have you considered and how have you applied them in relation to this factor?	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2020a) lists the objective for this factor as:</p> <ul style="list-style-type: none"> To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected. <p>In considering this objective, the Proponent has sought to understand and describe the existing hydrological regime.</p> <p>The following guidance is relevant to this factor:</p> <ul style="list-style-type: none"> Environmental Factor Guideline: Inland Waters (EPA 2018). <p>The Proponent has considered the above-mentioned policy and guidance in the following ways:</p> <ul style="list-style-type: none"> Planning, design and implementation of the environmental surveys. Preliminary assessment of potential impacts. Application of the mitigation hierarchy.
3	Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts	<p>Consultation with decision-making authorities DWER; DBCA; DMIRS and other key stakeholders is ongoing.</p> <p>A pre-referral consultation with EPA Services in relation to the Proposal was held on 29 January 2021.</p> <p>Consultation with the Native Title claimants, the Njama! People is ongoing. In addition, the Proponent has engaged with Bonney Downs pastoral station. The Proponent will continue to consult with relevant stakeholders during the environmental assessment process.</p>
4	Receiving environment – Describe the current condition of the receiving environment in relation to this factor.	<p>The receiving environment in the proposed Development Envelope is generally well understood. A number of hydrological investigations have been completed and are still underway to inform the impact assessment.</p> <p>Surface water</p> <p>The Proposal is located in the Western Plateau drainage division, within the De Grey River Basin. Drainage in the Development Envelope is characterised by steep slopes and well-defined channels that flow off of the northeast-southwest trending ridgeline where the main orebody occurs (460 mAHD), approximately 60 m above the surrounding landscape (GHD 2020a). This ridgeline represents the top of four ephemeral creek catchments within the Development Envelope; which flow to either the Nullagine or Coongan Rivers, which are both tributaries of the De Grey River (GHD 2020b). Drainage from the main ridgeline predominantly trends southeast via McPhee Creek, Branch of McPhee Creek and Lionel Creek catchments to the Nullagine River, whereas flow from the northwest extent of the Development Envelope drains via Spinaway and Sandy Creek catchments to their confluence with the Coongan River (Biologic 2020c; GHD 2020a).</p> <p>A number of surface water pools have been recorded in the Development Envelope (Biologic 2020c) including temporary/seasonal, semi-permanent and permanent pools (Biologic 2020c) (Figure 4). Typical of other pools in the Pilbara, pools in the Development Envelope support fresh to saline ecosystems (Biologic 2020b) and are not considered to be groundwater dependent.</p> <p>Groundwater</p> <p>The Proposal is located on the eastern extent of the Pilbara Craton, within the Paddy Market Formation aquifer. Within the Development Envelope, this formation constitutes banded iron formation (BIF) mineralisation that has been heavily deformed by northeast trending faults (GHD 2020b). Groundwater resources within the Development Envelope are controlled by these deformed fractured rock systems that are fed by shallow alluvial hydrological channels associated with existing and paleo drainage (GHD 2020b). The Proposal is</p>

		<p>considered to lie within a localised paleochannel with limited connectivity to regional aquifer systems (GHD 2020b).</p> <p>Groundwater within the Development Envelope is fresh with a median TDS of 211 mg/L (GHD 2020a).</p>
5	<p>Proposal activities – Describe the proposal activities that have the potential to impact the environment</p>	<p>Proposal activities that have the potential to impact inland waters include:</p> <ul style="list-style-type: none"> • Dewatering in support of below groundwater table mining, lowering the groundwater table. • Mine and infrastructure development leading to alteration of surface water hydrology. • Discharge of surplus mine water into three creeklines leading to impacts to surface water quality and flows.
6	<p>Mitigation – Describe the measures proposed to manage and mitigate the potential environmental impacts.</p>	<p>During Proposal design the mitigation hierarchy (avoid, minimise and rehabilitate) has been applied to avoid and minimise potential impacts of the Proposal inland waters, as far as practicable. Mitigation measures include:</p> <ul style="list-style-type: none"> • Avoidance of impact to surface water features, as far as practicable. • Management of surplus water discharge to ensure the wetting front remains upstream of surface water pools within the receiving creeklines. • Diversion of surface flows around pits to maintain catchment flows as far as practicable. • Storage and treatment of pit dewater to ensure only high-quality water is discharged to creeklines. • Storage areas (chemicals, hydrocarbons etc.) to be located away from, or banded off from, external surface water flows.
7	<p>Impacts – Assess the impacts of the proposal and review the residual impacts against the EPA objective.</p>	<p>The predicted impacts to inland waters from the Proposal after applying the mitigation hierarchy (avoid, minimise, rehabilitate) are:</p> <ul style="list-style-type: none"> • Direct impact to some surface water features in the Development Envelope. • Groundwater drawdown from dewatering activities. • Altered surface water regimes due to infrastructure and surface water discharge. • Development of pit lakes post-closure. <p>Through the implementation of the mitigation hierarchy, the residual impacts of the Proposal to inland waters will be as low as reasonably practicable and the EPA objective for inland waters will be met.</p>
8	<p>Assumptions - Describe any assumptions critical to your assessment e.g. particular mitigation measures or regulatory conditions.</p>	<p>Alteration of groundwater quality is not anticipated to occur as a result of the Proposal.</p> <p>Groundwater drawdown is predicted to remain largely confined to the main range within the Conceptual Footprint.</p>

Potential environmental impacts		
1	EPA Factor	Social Surroundings
2	EPA policy and guidance - What have you considered and how have you applied them in relation to this factor?	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2020a) lists the objective for this factor as:</p> <ul style="list-style-type: none"> • <i>To protect social surroundings from significant harm.</i> <p>The following policy and guidance are relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Social Surroundings</i> (EPA 2016i). <p>The Proponent has considered the above-mentioned policy and guidance in the following ways:</p> <ul style="list-style-type: none"> • Planning and design of relevant surveys undertaken. • Preliminary assessment of potential impacts. • Application of the mitigation hierarchy.
3	Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts	<p>Consultation with decision-making authorities DWER; DBCA; DMIRS and other key stakeholders is ongoing.</p> <p>A pre-referral consultation with EPA Services in relation to the Proposal was held on 29 January 2021.</p> <p>A Native Title Agreement (NTA) with the registered Native Title claimants, Njamal in relation to the use of the land within the Development Envelope, has been negotiated. This NTA provides the framework through which the Proponent and Njamal work together to manage the cultural values in the areas in which the Proponent operates. Ongoing engagement with Njamal is maintained through formal and informal engagement frameworks. The NTA requires the Proponent to keep Njamal informed about the status of environmental and other approvals. The Proponent will continue to consult with relevant stakeholders during the environmental assessment process.</p>
4	Receiving environment – Describe the current condition of the receiving environment in relation to this factor.	<p>The receiving environment in the proposed Development Envelope is generally well understood. Archaeological and ethnographic surveys have been undertaken in collaboration with the Njamal Traditional Owners. Further studies are proposed for 2021.</p> <p>The Proposal is located approximately 30 km north of the Nullagine townsite in the Pilbara region of Western Australia. Site access is via Marble Bar Road.</p> <p>Bonney Downs Station, a privately held pastoral lease, overlies the southern portion of the Development Envelope. Bonney Downs Station extends from south of Marble Bar to north of Newman along the Nullagine River and Marble Bar Road. The northern portion of the Development Envelope is on Unallocated Crown Lands.</p> <p>Three conservation areas are within 200 km of the Development Envelope. These are Ex Meentheena nature reserve, which is located approximately 15 km northeast, Karlamilyi National Park approximately 170 km southeast and Karijini National Park located approximately 40 km west of the Development Envelope.</p> <p>Three lower tributaries of the Nullagine River, including the McPhee Creek, Branch of McPhee Creek and Lionel Creek intersect the Development Envelope. The Nullagine River feeds into the culturally significant De Grey River and reaches the ocean approximately 70 km north northeast of Port Hedland.</p> <p>Sites of high cultural significance to the Njamal Traditional Owners include permanent water courses, faunal and botanical resources, rock shelters and places where traditional knowledge can be shared, and ceremonies conducted.</p>
5	Proposal activities – Describe the proposal activities that have the potential to impact the environment	<p>Proposal activities that have the potential to impact social surroundings include:</p> <ul style="list-style-type: none"> • Direct disturbance of sites of cultural significance. • Indirect disturbance of sites of cultural significance as a result of dust and vibrations.

		<ul style="list-style-type: none"> • Indirect disturbance of sites of cultural significance as a result of altered hydrological regimes. • Restriction of access to country. • Vehicle and machinery movements and mine blasting may alter amenity as a result of dust, noise. • Installation of infrastructure may alter visual amenity.
6	Mitigation – Describe the measures proposed to manage and mitigate the potential environmental impacts.	<p>The Proposal has been designed to avoid impacts to sites of significant cultural heritage significance and in response to consultation with the Njamal Traditional Owner group. Consultation and the application of the mitigation hierarchy to the Proposal design is ongoing.</p> <p>Disturbance will be managed through internal Proponent processes to avoid unauthorised disturbance to sites and places of cultural significance.</p> <p>Visual amenity impacts will be assessed from sites of high cultural significance and impacts to visual amenity will be minimised where possible.</p>
7	Impacts – Assess the impacts of the proposal and review the residual impacts against the EPA objective.	<p>After the application of avoidance and management measures, the Proposal will result in the following outcomes:</p> <ul style="list-style-type: none"> • Direct disturbance of sites of cultural heritage significance. • Continued access to retained sites of cultural heritage significance. • Alteration to visual amenity and experience of being on country. <p>Consultation with Traditional Owners regarding the Proposal is ongoing through both formal and informal forums. Consultation outcomes will inform the assessment of the significance of impacts to social surroundings.</p>
8	Assumptions - Describe any assumptions critical to your assessment e.g. particular mitigation measures or regulatory conditions.	<p>The Proponent acknowledges the high cultural significance of water systems to the Njamal Traditional Owners and further consultations will be ongoing to manage any indirect impacts and improve sustainable cultural heritage outcomes.</p>

Potential environmental impacts		
1	EPA Factor	Greenhouse Gas emissions
2	EPA policy and guidance - What have you considered and how have you applied them in relation to this factor?	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2020a) lists the objective for this factor as:</p> <ul style="list-style-type: none"> • <i>To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change.</i> <p>The following policy and guidance are relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Greenhouse Gas Emissions Air Quality</i> (EPA 2020c). • <i>Background Paper on Greenhouse Gas Assessment Guidance</i> (EPA 2019). <p>In considering this objective, the Proponent will provide estimates for the construction and operation of the Proposal. The assessment will focus specifically on greenhouse gas emissions as the potential impacts of dust will be considered, where relevant, in other factors.</p>
3	Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts	<p>Consultation with decision-making authorities DWER; DBCA; DMIRS and other key stakeholders is ongoing.</p> <p>A pre-referral consultation with EPA Services in relation to the Proposal was held on 29 January 2021.</p> <p>Consultation with the Native Title claimants, the Njama! People, is ongoing. In addition, the Proponent has engaged with Bonney Downs pastoral station. The Proponent will continue to consult with relevant stakeholders during the environmental assessment process.</p>
4	Receiving environment – Describe the current condition of the receiving environment in relation to this factor.	<p>Existing mining operations in the Pilbara generate greenhouse gas (GHG) emissions from fuel combustion and electricity generation.</p> <p>The Proponent has well established procedures for the reporting of GHG emissions at its Pilbara operations in accordance with the <i>National Greenhouse and Energy Reporting Act 2007</i> and is committed to an ongoing program of reporting and review to identify opportunities to further reduce energy consumption and reduce GHG emissions.</p>
5	Proposal activities – Describe the proposal activities that have the potential to impact the environment	<p>Proposal activities (typical of iron ore mines) that have the potential to generate GHG emissions include:</p> <ul style="list-style-type: none"> • Production of greenhouse gases from electricity generation. • Diesel combustion by fixed and mobile equipment.
6	Mitigation – Describe the measures proposed to manage and mitigate the potential environmental impacts.	<p>The Proponent is committed to minimising GHG emissions as far as practicable, over the life of the project and to ensure that emissions are aligned with Australia's agreed GHG reduction targets.</p> <p>Mitigation measures will be identified during the impact assessment process.</p>
7	Impacts – Assess the impacts of the proposal and review the residual impacts against the EPA objective.	<p>The Proponent is currently modelling estimated peak annual Scope 1 GHG emissions and peak GHG intensity for the Proposal.</p> <p>Greenhouse gas emissions will be assessed in the impact assessment process.</p>
8	Assumptions - Describe any assumptions critical to your assessment e.g. particular mitigation measures or regulatory conditions.	<p>The Proposal will contribute to GHG emissions, primarily from transport diesel combustion, electricity consumption and stationary sources. The Proponent commits to minimise GHG emissions as far as reasonably practicable and is currently investigating the use of renewable energy supply options.</p>

Part C: Other approvals and regulation

State and Local Government approvals

Is rezoning of any land required before the proposal can be implemented?
If yes, please provide details.

Yes No

If this proposal has been referred by a decision-making authority, what approval(s) are required from you?

N/A

Please identify other approvals required for the proposal:

Proposal activities e.g. clearing, dewatering, mining, processing, dredging	Land tenure/access e.g. Crown land, Mining lease, specify legislation for access if relevant	Type of approval e.g. Native Vegetation Clearing Permit, licence, mining proposal,	Legislation regulating the activity e.g. <i>EP Act 1986 – Part V, RiWI Act 1914, Mining Act 1979</i>
Clearing and mining	The following tenure is relevant to the Proposal: <ul style="list-style-type: none"> • M45/1243-I • E46/1129-I 	Ministerial approval	EPBC Act 1999
Crushing plant		Works Approval and Licence	Part V of the EP Act 1986
Mining, including supporting activities and infrastructure		Mining Proposal and Mine Closure Plan	<i>Mining Act 1979</i>
Storage handling of dangerous goods		Licence to store fuel and chemicals on site	<i>Dangerous Goods Safety Act 2004</i>
Abstraction of groundwater		Water licence	<i>Rights in Water and Irrigation Act 1914</i>

Commonwealth Government approvals

Does the proposal involve an action that may be or is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)?

Yes No

Has the proposed action been referred? If yes, when was it referred and what is the reference number (EPBC No.)?

Yes No
 Date: 18 February 2021____
 EPBC No.: 8897____

If referred, has a decision been made on whether the proposed action is a controlled action? If 'yes', check the appropriate box and provide the decision in an attachment.

Yes No
 Decision – controlled action
 Decision – not a controlled action

If the proposal is determined to be a controlled action, do you request that this proposal be assessed under the bilateral agreement or as an accredited assessment?

Yes - Bilateral No
 Yes - Accredited

Is approval required from other Commonwealth Government/s for any part of the proposal?
If yes, describe.

Yes No
 Approval:

References

- Biologic 2020a. McPhee Creek Terrestrial Fauna Assessment and Survey, report prepared for Atlas Iron Limited.
- Biologic 2020b. McPhee Creek Project – Aquatic Ecology Assessment and Survey, report prepared for Atlas Iron Limited.
- Biologic 2020c. McPhee Creek Subterranean Fauna Assessment August 2020, report prepared for Atlas Iron Limited.
- Ecoscape 2020a. McPhee Creek Flora and Vegetation Survey, report prepared for Atlas Iron Limited.
- Ecoscape 2020b. McPhee Creek Flora and Vegetation Survey Addendum, report prepared for Atlas Iron Limited.
- EPA 2020a. EPA’s overarching Statement of Environmental Principles, Factors and Objectives.
- EPA 2020b. Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment.
- EPA 2020c. Environmental Factor Guideline: Greenhouse Gas Emissions Air Quality.
- EPA 2019. Background Paper on Greenhouse Gas Assessment Guidance.
- EPA 2018. Environmental Factor Guideline: Inland Waters.
- EPA 2016a. Environmental Factor Guideline: Flora and Vegetation.
- EPA 2016b. Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment.
- EPA 2016c. Environmental Factor Guideline: Terrestrial Fauna.
- EPA 2016d. Technical Guidance: Sampling Methods for Terrestrial Vertebrate Fauna.
- EPA 2016e. Technical Guidance: Sampling Methods for Short Range Endemic Invertebrate Fauna.
- EPA 2016f. Environmental Factor Guideline: Subterranean Fauna.
- EPA 2016g. Technical Guidance: Subterranean Fauna Surveys.
- EPA 2016h. Technical Guidance: Sampling Methods for Subterranean Fauna.
- EPA 2016i. Environmental Factor Guideline: Social Surroundings.
- GHD 2020a. McPhee Creek Iron Ore Project Water Management Studies H3 Groundwater Report.
- GHD 2020b. McPhee Creek Iron Ore Project – Water Management Studies Surface Water Assessment.

Attachments

- Attachment A - McPhee Creek Proposal Description
- Attachment B - McPhee Creek Referral Figures
- Attachment C - McPhee Creek Flora and Vegetation Survey Report
- Attachment D - McPhee Creek Fauna Survey Report