



Impact Reconciliation Procedure

Miralga Creek DSO Project

180-LAH-EN-PLN-0004

Revision 3



Authorisation

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Signatures are required for Revision 0 and above

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Abbreviations

ALRE	Abydos Link Road East
AUD	Australian Dollar
CPI	Consumer Price Index
DSO	Direct Shipping Ore
DWER	Department of Water and Environmental Regulation
EH&A	Environment, Heritage & Approvals
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Authority
GDP	Ground Disturbance Permit
GIS	Geographic Information System
GST	Goods and Services Tax
IBRA	Interim Biogeographical Regionalisation for Australia
IRP	Impact Reconciliation Procedure
IRR	Impact Reconciliation Report
PEOF	Pilbara Environmental Offset Fund
(the) Proposal	(the) Miralga Creek DSO Project
ROM	Run-of-mine
TBC	To be confirmed
WA	Western Australia



1. Introduction

Atlas Iron Pty Ltd (Atlas Iron) is seeking approval to develop the Miralga Creek Direct Shipping Ore (DSO) Project (the Proposal). The Proposal is an iron ore mine located in the Pilbara region of Western Australia (WA), approximately 100 km southeast of Port Hedland.

1.1 Assessment Process

Atlas Iron referred the Proposal to the Environmental Protection Authority (EPA) under section 38 of the *Environmental Protection Act 1986* (EP Act) on 7 April 2020. The Proposal was referred due to potentially significant impacts from clearing.

On 11 May 2020, the EPA decided under section 39A of the EP Act to formally assess the Proposal based on referral information with additional information required (EPA Assessment No. 2246). The EPA considered the Proposal has potential for significant impacts on two environmental factors:

- Flora and Vegetation – from clearing of vegetation.
- Terrestrial Fauna – from clearing of habitat and disturbance of bat roosts.

Atlas Iron anticipates that any approval to implement this proposal will require contributions to the Pilbara Environmental Offset Fund (PEOF) to counterbalance the significant residual impacts of the Proposal from clearing.

1.2 Offsets

Atlas Iron's proposed offsets model involves the payment of contributions to the PEOF to counterbalance the significant impacts of clearing. Contributions will be made progressively as clearing occurs, proportional to the area cleared and the environmental values being cleared. This model enables indexation of the value of offset contributions over time while providing an incentive for proponents to further minimise clearing below approved limits.

To ensure clearing can be determined and offset contributions reconciled, Atlas Iron is required to prepare:

- An Impact Reconciliation Procedure (IRP) setting out how the area of vegetation and terrestrial fauna habitat cleared will be calculated.
- One or more Impact Reconciliation Reports (IRR) documenting clearing undertaken. IRRs will be provided to enable DWER to determine the contributions payable.

1.3 Document Purpose

This document is an IRP in accordance with the above model. It has been prepared in accordance with the EPA's guidance on preparing IRPs and IRRs (EPA, 2018a, b). Its primary purpose is to advise DWER of the method that will be used to calculate the area of vegetation and terrestrial fauna habitat cleared, or otherwise as required by approval conditions.



2. The Proposal

Atlas Iron is proposing to develop the Miralga Creek DSO Project. The Proposal is an iron ore mine located in the Pilbara region of WA, approximately 100 km south-east of Port Hedland, along the Marble Bar Road. The Proposal is located nearby to Atlas Iron's existing Abydos mine, which closed in 2016.

The Proposal comprises the mining of iron ore using conventional drill and blast, load and haul methods from five satellite pits within three discrete mining areas, spread over 30 km, as follows:

- **Miralga East** (3 pits), 35 km northeast of the now closed Abydos mine, with the three pits located on a ridge trending east-to-west.
- **Miralga West** (1 pit), 22 km northeast of Abydos, with the pit on a ridge trending southwest to northeast.
- **Sandtrax** (1 pit), 7 km northeast of Abydos, with the pit along an east–west ridge.

The pits will be mined in a staged manner by a small, mobile mining fleet. The crushing and screening plant will be established at a run-of-mine (ROM) pad at Miralga West. Other support infrastructure typical for iron ore mining projects will be installed where needed, e.g. laydown areas, fuel storage and administration. A new haul road will be constructed between Miralga West and Miralga East. The existing Abydos Link Road East (ALRE) will be used, along with Abydos's existing licensed borefields and camp facilities.

It is expected that approximately 8 Mt of iron ore will be mined above the groundwater table over approximately 4 to 5 years.

The key proposal characteristics are summarised in Table 1 and Table 2.

Table 1 – Summary of the Proposal

Proposal Title	Miralga Creek DSO Project
Proponent Name	Atlas Iron Pty Ltd
Short Description	<p>The proposal is to develop above water table mining of iron ore from three areas referred to as Sandtrax, Miralga West and Miralga East, approximately 100 km south-east of Port Hedland, along the Marble Bar Road.</p> <p>The proposal includes the development of mine pits and associated infrastructure including but not limited to processing facilities, waste landforms and access roads. The proposal will include an accommodation camp and utilise some existing ancillary infrastructure from the nearby Abydos DSO Project.</p>

Source: Atlas Iron (2020a, b)



Table 2 – Location and Proposed Extent of Physical and Operational Elements

Element	Location	Proposed Extent
Physical Elements		
Pits	<ul style="list-style-type: none"> • Three at Miralga East • One at Miralga West • One at Sandtrax 	Clearing of no more than 219.8 ha of native vegetation within the 556.8 ha Development Envelope.
Waste dumps	<ul style="list-style-type: none"> • Miralga East • Miralga West • Sandtrax 	
Supporting infrastructure: <ul style="list-style-type: none"> • Access roads • Mine Operation Centre • Laydown areas • Administration areas • Explosives magazine • Fuel storage area • Haulage route • ROM stockyard 	Various locations	
<ul style="list-style-type: none"> • Accommodation camp • Wastewater treatment plant • Irrigation sprayfield • Landfill 	Within tenement L45/562	
Operational Elements		
Groundwater abstraction	Existing borefields	Abstraction of no more than 0.9 GLpa of groundwater.
Processing of ore (mobile crushing and screening plant)	Within the Development Envelope	Crushing and screening throughput of 2 Mtpa.

Source: Atlas Iron (2020a, b)



The Proposal's indicative schedule is shown in Table 3 for information only.

Table 3 – Indicative Development Schedule

Development Stage	Indicative Timing
Obtain key environmental and mining approvals	Q3 2020
Commence site construction	Q1 2021
Commence mining	Q3 2021
Commence shipping	Q2 2022
Mining ceases	Q3 2026
Decommissioning and closure	Q3 2027

Source: Atlas Iron (2020a)



3. Impact Reconciliation Procedure

3.1 Identification of Biodiversity Values Requiring Offsets

Table 4 identifies the biodiversity values that require offsets.

Table 4 – Biodiversity Values Requiring Offsets

Environmental Value to be Cleared ¹	IBRA Region and Subregion	Offset Rate ²
Critical habitat for Northern Quoll Critical habitat for Ghost Bat Riparian vegetation	Pilbara, Chichester	\$1,562 per hectare
Vegetation in good to excellent condition	Pilbara, Chichester	\$781 per hectare

(1) See also Appendix A.

(2) Rates currently indicated are latest available as per DWER (2020). Rates shown are in Australian dollars and do not include GST. Refer to the relevant approval conditions for any indexation requirements.

The values requiring offsetting are shown as mapped from surveys on Figure 1.



3.2 Method to Determine Clearing

This section:

- Provides the clearing baseline against which future clearing will be measured.
- Provides context on Atlas Iron's Ground Disturbance Permit (GDP) Procedure, an internal process established to approve, control and verify ground disturbance.
- Describes how the extent of clearing will be determined for the purpose of reporting.

3.2.1 Baseline Data

Vegetation

Vegetation was mapped by Woodman Environmental following field surveys undertaken in 2019 (Woodman Environmental, 2019). Vegetation mapping includes a 'cleared' mapping unit, which represents areas that were recorded as already cleared. The other 12 mapping units represent native vegetation in Excellent to Degraded condition and cover the vast majority of the Development Envelope.

Following a change to the Proposal under section 43A of the EP Act, the Proposal is entirely within the Chichester subregion of the Pilbara IBRA region.

Vegetation type and condition mapping has previously been provided in Figures 5.3 and 5.4 of the Referral Document (Atlas Iron, 2020a) and Figure 5 of the section 43A request to change the Proposal during assessment (Atlas Iron, 2020b).

Fauna Habitat

Vertebrate fauna habitat was mapped predominantly by Biologic Environmental Survey following field surveys undertaken in 2019 (Biologic, 2020). Fauna habitat at the camp area was mapped by Outback Ecology (2012). The fauna habitat mapping does not distinguish existing cleared areas.

Fauna habitat mapping has previously been provided in Figure 6.1 of the Referral Document (Atlas Iron, 2020a) and Figure 6 of the section 43A request to change the Proposal during assessment (Atlas Iron, 2020b).

Existing Cleared Areas

Atlas Iron is aware of some areas that are cleared but are not mapped as such in Woodman Environmental's vegetation mapping. These areas were either not marked as cleared by Woodman Environmental (e.g. due to survey limitations) or have been cleared since the survey was undertaken (but not as part of this Proposal). For the purposes of defining baseline data, Atlas Iron considers both of these areas as already cleared. Areas considered cleared will be captured in IRRs.

As the fauna habitat mapping does not map cleared areas, the areas considered cleared of vegetation are also considered cleared of fauna habitat.



3.2.2 Ground Disturbance Permits

Atlas Iron's GDP Procedure (950-HSE-EN-PRO-0001) will apply for all ground disturbance undertaken for the Proposal. The GDP Procedure document does not itself form part of this IRP, however the following is an outline of how it operates:

1. The need for ground disturbance (including the clearing of native vegetation) is identified.
2. A GDP application is made to the Environment, Heritage & Approvals (EH&A) team identifying the clearing to be undertaken, including the boundary of the area required to be cleared.
3. The GDP application is assessed to ensure it complies with relevant approval boundaries, limits and conditions.
4. A GDP is approved and issued to a GDP owner, a person designated as responsible for the clearing.
5. When clearing is finished, the GDP owner arranges for a surveyor to map the actual extent of ground disturbance and clearing via an on-ground survey ('survey pick-up').
6. The completed GDP and survey pick-up is returned to the EH&A team. The EH&A team follows up any overdue GDPs.
7. The master ground disturbance layer in Atlas Iron's Geographic Information System (GIS) is updated to capture clearing undertaken, including details such as the clearing date, purpose and relevant approval instruments.

The purpose of the on-ground survey mentioned in step 5 is to accurately determine and map the edge of areas that have been cleared. The resulting product is spatial data polygons representing cleared areas. While this is the primary and most common method Atlas Iron uses to determine clearing extents, Atlas Iron also regularly acquires high resolution aerial imagery of active project sites, which is used as part of suite of mapping tools to accurately capture on-ground conditions including ground disturbance. Aerial imagery is used to help verify the extent of ground disturbance as mapped and reported by surveyors. The extent of recent ground disturbance can also be determined from recent aerial imagery where survey pick-up has not yet been completed. Once survey pick-up is complete, the master ground disturbance layer is amended accordingly.

3.2.3 Determining the Extent of Clearing

The extent of clearing to be reported in each IRR will be determined using spatial analysis. Given each successive IRR relates to a specific reporting period, new clearing can be determined using the following approach (terms are defined in Table 5):

$$\text{New Clearing} = \text{Total Clearing} - \text{Previously Reported Clearing} - \text{Other Clearing}$$

Table 5 – Definitions of Clearing Terms

Term	Definition
New Clearing	Extent of clearing to be reported in the IRR.
Total Clearing	Extent of the master ground disturbance layer within the Development Envelope, as at the end of the reporting period. Survey pick-up must be completed and captured in GIS for all clearing undertaken during the reporting period.



Term	Definition
Previously Reported Clearing	Total extent of clearing reported in all IRRs previously submitted. If no IRRs have been submitted, this value is zero.
Other Clearing	<p>Extent of clearing that is not part of this Proposal, i.e. clearing that is not attributable to the Proposal. Examples include:</p> <ul style="list-style-type: none"> • Clearing that had already existed prior to the implementation of the Proposal, e.g. existing roads and tracks. • Clearing undertaken inside the Development Envelope by others, e.g. pastoralist activities. • Other clearing undertaken by Atlas Iron in a lawful manner, e.g. clearing exempted by the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 such as for exploration work. <p>Future amendments to Other Clearing – e.g. to account for new areas of Other Clearing – will be accounted for in IRRs.</p>

Note: Only native vegetation is included in calculations. Refer to the baseline described in Section 3.2.1.

Figure 2 shows the offset rates applicable within the Development Envelope based on the biodiversity values identified in Table 4 (as shown on Figure 1) and existing clearing (i.e. Other Clearing in the formula above).

To determine the extent of clearing subject to each offset rate identified in Table 4, areas of New Clearing are compared to Figure 2.

Note that the areas subject to the base and higher rates shown on Figure 2 have been determined in accordance with the published guidance for IRPs (DWER, 2020). The method for allocating particular values to one value or another using spatial data is provided in Appendix A. The areas within the Development Envelope currently subject to each offset rate as shown on Figure 2 are:

- Base rate – 425.29 ha.
- Higher rate – 85.64 ha.
- No offset applicable – 45.82 ha.



4. Reporting

Atlas Iron will prepare one or more IRRs to document the clearing undertaken. IRRs will be provided to DWER to enable DWER to determine the contributions payable.

4.1 Frequency and Timing

IRRs will be prepared biennially (i.e., every two years). The first reporting period will commence on the day clearing commences, ending on the second 30 June following. Each successive reporting period runs from 1 July until the second 30 June following.

Table 6 outlines the timeframes and frequency of impact reconciliation activities under this IRP.

Table 6 – Impact Reconciliation Reporting Periods

Reporting Period ¹	Action	Timing
–	Ministerial Statement issued	(September 2020) ²
–	Clearing commences	(October 2020) ²
Period 1	Clearing undertaken during period	(October 2020)² – 30 June 2022
	Survey pick-up	August 2022
	IRR submitted to DWER	31 October 2022
Period 2	Clearing undertaken during period	1 July 2022 – 30 June 2024
	Survey pick-up	August 2024
	IRR submitted to DWER	31 October 2024
Period 3	Clearing undertaken during period	1 July 2024 – 30 June 2026
	Survey pick-up	August 2026
	IRR submitted to DWER	31 October 2026
Period 4	Clearing undertaken during period	1 July 2026 – 30 June 2028
	Survey pick-up	August 2028
	IRR submitted to DWER	31 October 2028

(1) No further clearing is anticipated beyond the end of the last reporting period identified.

(2) Timings for the Ministerial Statement and commencement of clearing are estimates.

In accordance with the indicative development schedule set out in Table 3, no clearing is expected after the end of the last reporting period identified in Table 6. However, Atlas Iron will continue to prepare and submit IRRs according to the reporting frequency established by Table 6 until DWER advises in writing that Atlas Iron is no longer required to implement this IRP.



4.2 Content of the IRR

Each IRR will include:

- Identification of the relevant Ministerial Statement, applicable conditions, the Proposal and the reporting period.
- Quantification of clearing undertaken during the reporting period, broken down into the environmental values identified in Table 4 of this IRP.
- Information from surveys supporting the quantification of clearing undertaken, including spatial data representing areas of ground disturbance and supporting reports.
- A quantitative estimate of clearing expected in future.



5. Review and Implementation

No scheduled review of this IRP is required. However, DWER at its discretion may direct Atlas Iron to revise this IRP.

Irrespective of the schedule set out in Table 6, Atlas Iron will continue to implement this IRP until any of the following occurs:

- DWER approves a revised version of this IRP, at which time the revised IRP will be implemented instead.
- DWER advises in writing that this IRP no longer needs to be implemented.



6. References

Atlas Iron. 2020a. EPA Referral Document. April. Rev 0. Prepared by Atlas Iron Pty Ltd, Perth, Western Australia.

Atlas Iron. 2020b. Request to change proposal during assessment under section 43A of the Environmental Protection Act 1986 – Miralga Creek DSO Project (EPA Assessment No. 2246). June. Memorandum. Prepared for EPA Services by Atlas Iron Pty Ltd, Perth, Western Australia.

Biologic. 2020. Miralga Creek Level 2 Terrestrial Fauna and SRE Survey, Perth.

DWER. 2020. The Pilbara Environmental Offsets Fund. Accessed at <https://www.dwer.wa.gov.au/peof>. Department of Water and Environmental Regulation, Joondalup, WA.

EPA. 2018. Instructions on how to prepare *Environmental Protection Act 1986* Part IV Impact Reconciliation Procedures and Impact Reconciliation Reports. Accessed at <http://www.epa.wa.gov.au/forms-templates/instructions-preparing-impact-reconciliation-procedures-and-impact-reconciliation>. Environmental Protection Authority, Joondalup, WA.

Outback Ecology. 2012. Terrestrial Fauna Impact Assessment, September. Prepared for Atlas Iron Limited by Outback Ecology Services, Jolimont.

Woodman Environmental. 2019. Miralga Creek Iron Ore Project: Detailed Flora and Vegetation Survey 2019. Report prepared for Atlas Iron Pty Ltd by Woodman Environmental Consulting, Applecross, Western Australia.

Appendix A Derivation of Applicable Offset Rates Using Spatial Data

The Department of Water and Environmental Regulation (DWER) has published guidance on contributions to the Pilbara Environmental Offsets Fund (PEOF). For each region (DWER, 2020):

- A **base rate** applies for impacts to native vegetation in good to excellent condition.
- A **higher rate** may apply for impacts to some types of specialised environmental values, including but not limited to riparian vegetation, threatened or priority ecological communities, important vegetation types and specialised fauna habitat.
- A **negotiated rate** or alternative approach may be applied in special circumstances.

For the Miralga Creek DSO Project, Atlas Iron has applied the base rate and higher rates as shown in Table A.1.

Table A.1 – Biodiversity Values Assigned to Each Offset Rate

PEOF Offset Rate	Biodiversity Values Assigned to Offset Rate	Mapping Units Corresponding to Biodiversity Values ¹
Base rate	Native vegetation in good to excellent condition	Native vegetation in Good, Very Good and Excellent condition
Higher rate	Critical habitat for Northern Quoll	Hillcrest/Hillslope, Gorge/Gully and Major Drainage habitats
	Critical habitat for Ghost Bat	Hillcrest/Hillslope and Gorge/Gully habitats
	Riparian vegetation	Vegetation type VT 5 ²

(1) The third column lists which mapping units correspond to the environmental values described in the second column. Refer to the original referral documentation for the full description of each vegetation community and fauna habitat.

(2) Vegetation type VT 5 is encoded in the spatial data as vegetation where the value in the CommunityCode field is 5.

If a particular value meets the criteria for both rates, the higher rate will be applied.

Table A.2 shows the construction of the base rate and higher rate areas from spatial data as shown in Figure 2 in the main document. The rules in Table A.2 give effect to the assignments in Table A.1, ensuring that the higher rate takes precedence where the criteria for both rates are met and that neither rate is applied to cleared areas.

Note that the information in Table A.1 and Table A.2 is provided for reference only and may be superseded or made redundant by conditions of approval.



Table A.2 – Derivation of Applicable Offset Rates Using Vegetation and Fauna Habitat Spatial Data

		Fauna Habitat		
		Sand Plain Stony Plain Low Stony Hills Spinifex Sandplain	Hillcrest/Hillslope Gorge/Gully Major Drainage	
	<i>Vegetation Type</i>	<i>Vegetation Condition</i>		
Vegetation	VT 5	Any	Higher rate	Higher rate
	All other VTs	Excellent Very Good Good	Base rate	Higher rate
		Poor Degraded Completely Degraded	No offset applicable	Higher rate
		Cleared	Completely Degraded	No offset applicable

This table assumes the Proposal is entirely within IBRA subregions covered by the PEOF.