BHP

Impact Reconciliation Procedure

Orebody 32 Below Water Table

October 2022
Version 1.0 DRAFT

Authorisation

Version	Name	Position	Date
1.0 DRAFT	Chris Serginson	Manager Environment WA Iron Ore	24/10/2022

Document amendment record

Version	Section/page	Version description	Key changes	Date
1.0 DRAFT	All	Submitted to Office of the EPA to meet Condition 16-6 of Ministerial Statement 1105	New document	24/10/2022

Abbreviations

Term	Meaning
BHP	BHP Iron Ore Pty Ltd
CEO	Chief Executive Officer
ECW	Enhanced Compressed Wavelet
EPA	Environmental Protection Authority
ESRI	Environmental Systems Research Institution
GDA2020	Geocentric Datum of Australia 2020
GeoTIFF	Geographic Tagged Image File Format
ha	Hectares
IBRA	Interim Biogeographic Regionalisation for Australia
the Instructions	*Instructions on how to prepare Environmental Protection Act 1986 Part IV Impact Reconciliation Procedures and Impact Reconciliation Reports* (EPA 2021)
IRP	Impact Reconciliation Procedure
IRR	Impact Reconciliation Report
m	metres
MRF	Mining Rehabilitation Fund
MS	Ministerial Statement
NVCP	Native Vegetation Clearing Permit
OB32 BWT	Orebody 32 Below Water Table

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1 The proposal and condition requirements

1.1 The proposal

This Impact Reconciliation Procedure (IRP) has been prepared by BHP Iron Ore Pty Ltd (BHP) to satisfy Condition 16 of Ministerial Statement 1105 (MS 1105) for the Pilbara Expansion Strategic Proposal, to support the request that the Orebody 32 Below Water Table referred proposal (OB32 BWT Proposal) be declared a Derived Proposal. The IRP has been developed in accordance with the *Instructions on how to prepare Environmental Protection Act 1986 Part IV Impact Reconciliation Procedures and Impact Reconciliation Reports* (EPA 2021) (the Instructions).

The purpose of this IRP is to outline the methods to calculate the area of vegetation or environmental value/s impacted within the Hamersley Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the Pilbara bioregion, in relation to the OB32 BWT Proposal. This IRP does not apply to clearing undertaken under the authority of other existing approvals for existing operations at the Newman Hub (i.e. other Ministerial Statements or Native Vegetation Clearing Permits (NVCPs)) that intersect the vegetation or environmental value/s requiring offset.

1.2 Ministerial Statement condition requirements

BHP is required to prepare and submit an IRP to the Chief Executive Officer (CEO) prior to ground-disturbance as per Conditions 16-6 and 16-7 of MS1105 for the Pilbara Expansion Strategic Proposal (Table 1).

Table 1: Ministerial Statement 1105 condition requirements

Condition number	Condition requirements
16-6	Prior to ground-disturbing activities, the proponent shall prepare and submit an Impact Reconciliation Procedure to the CEO.
16-7	The Impact Reconciliation Procedure required pursuant to condition 16-6 shall: (1) state that clearing calculations for each biennial reporting period will commence on 1 July of the required reporting period, unless otherwise agreed by the CEO; (2) include a methodology to calculate the amount of clearing undertaken during each year of the biennial reporting period for each of the significant residual impacts identified in condition 16-2; and (3) indicate the timing and content of the Impact Reconciliation Reports.

2 Procedure

2.1 Identification of the environmental values requiring offsets

The environmental values required to be offset have been identified through the environmental impact assessment for the OB32 BWT Proposal and/or by MS1105 Condition 16 (Table 2).

The environmental impact assessment for the OB32 BWT Proposal found that following mitigation, there will not be any significant impacts on vegetation or other environment values. However during the assessment of the Pilbara Expansion Strategic Proposal, the Environmental Protection Authority (EPA) considered that the clearing of native vegetation in Good to Excellent condition is a significant residual impact due to the cumulative impacts of clearing in the Pilbara (EPA 2018) (Table 2).

Table 2: Environmental values from MS1105 relevant to the OB32 BWT Proposal that require offset

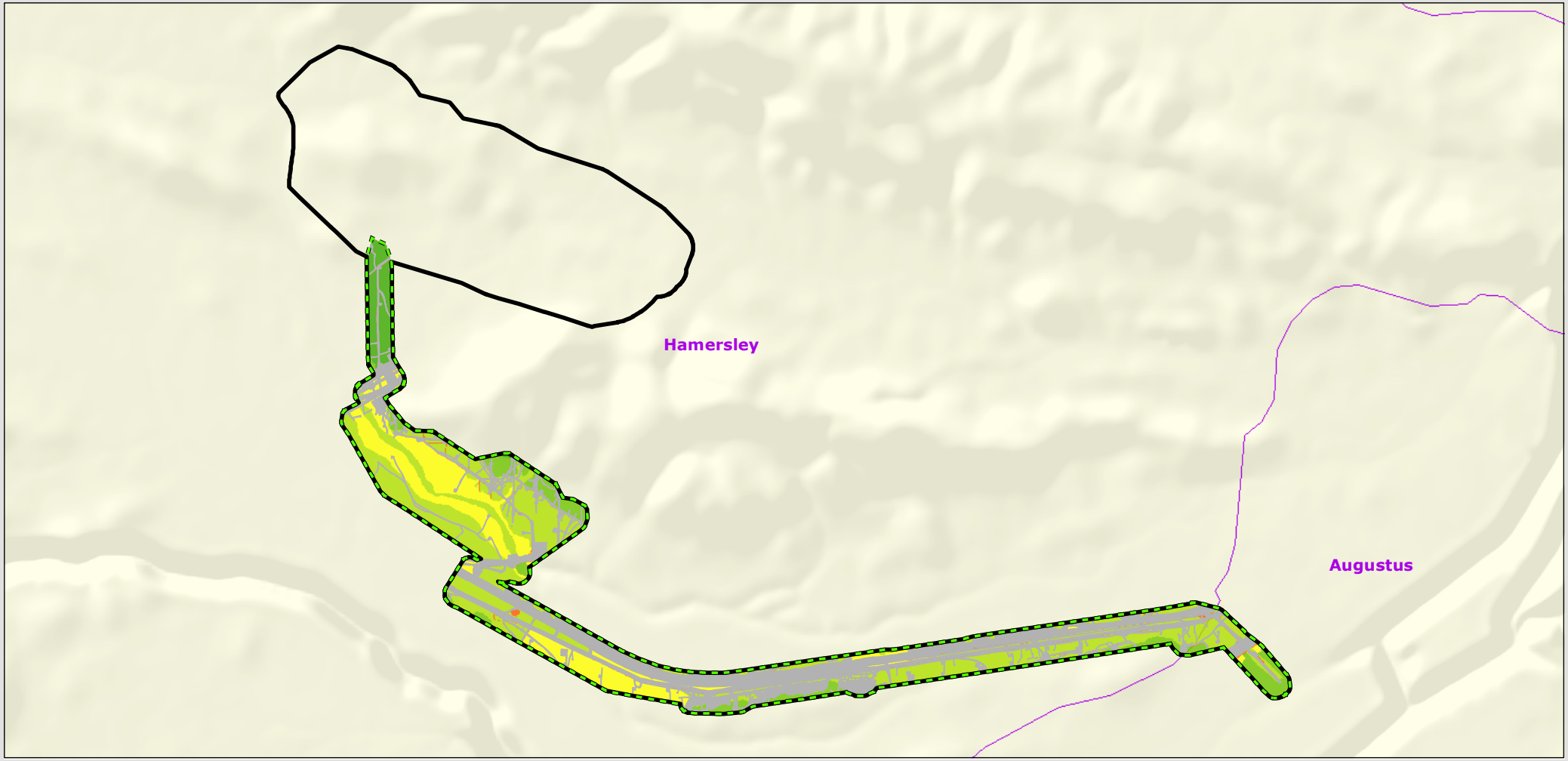
Condition	Environmental value	IBRA Region	Offset rate documented in Statement ($/ha)
16-2(1)	Clearing native vegetation in Good to Excellent condition within the Development Envelope - Pipeline	Hamersley	Base contribution rate for the 2022/2023 financial year as published for the Pilbara Environmental Offsets Fund (as per Condition 16-4 of MS1105)

As discussed in Section 1.1, this IRP does not apply to clearing undertaken under the authority of other existing approvals for existing operations at the Newman Hub. This IRP applies only to clearing within the pipeline corridor of the OB32 BWT Proposal Development Envelope (Development Envelope - Pipeline) (Figure 1). Specifically, it relates to clearing for the construction, operation and decommissioning of the surplus water discharge pipeline for the OB32 BWT Proposal. This IRP does not apply to clearing associated with the Orebody 32 mine pit (clearing approved for above water table mining of Orebody 32 under MS1037) or existing roads and infrastructure within the Development Envelope - Pipeline (approved under NVCPs).

The OB32 BWT Proposal is seeking authorisation for the clearing of up to 224 ha of native vegetation, all of which occurs within the Development Envelope - Pipeline. Most of this clearing is located in the Hamersley IBRA subregion of the Pilbara bioregion (210 ha), with a small portion located within the Augustus IBRA subregion of the Gascoyne bioregion (14 ha) (Figure 1). As per Condition 16-2(1) of MS1105, offsets will only apply to the clearing within the Hamersley IBRA subregion of the Pilbara bioregion.

Vegetation condition mapping of the Development Envelope - Pipeline was undertaken in 2021 and 2022 in accordance with the EPA Technical Guidance (EPA 2016; Spectrum 2022). Most (38%) of the Development Envelope - Pipeline was rated as being in Good condition, with approximately 4.7% and 8.6% in Excellent and Very Good condition, respectively (Figure 1). The remaining area is considered to be in Poor (17.4%), Degraded (<0.1%) or Completely Degraded (31.2%) condition (Figure 1). Areas of vegetation rated as of Poor condition or lower are associated with existing disturbance and infrastructure for the existing Newman Hub rail.

Of the 210 ha of clearing within the Hamersley IBRA subregion of the Pilbara bioregion, up to 144 ha of native vegetation is in Good to Excellent condition and will require offset.



BHP

BHP
Spatial Data Team

IMPACT RECONCILIATION PROCEDURE
OREBODY 32 BELOW WATER TABLE

Scale @ A4: 1:50,000	Prepared: P. Gant	
Date: 13/07/2022	Prepared: Env Approvals	

- IBRA Subregions
- Development Envelope - Pipeline
- Proposed Development Envelope

Vegetation Condition

- Excellent
- Very Good
- Good
- Poor
- Degraded
- Completely Degraded
- Indicative Cleared Area as at 15 February 2022

N

0 500 1,000 1,500

Meters

Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Document Path: Y:\Jobs\A501_A1000\A881\3Project\A881_032_ImpactReconciliationProcedure_OB32_RevA.mxd

2.2 Method to determine impacts

As discussed in Section 2.1, Spectrum completed flora and vegetation surveying (including vegetation condition assessment and mapping) of the OB32 BWT Development Envelope - Pipeline in 2021 and 2022 in accordance with the EPA Technical Guidance (EPA 2016). This mapping is considered to form the baseline state of vegetation condition for this IRP for the OB32 BWT Proposal (described further in Appendix 1).

If vegetation within the Development Envelope - Pipeline is impacted (via a different approval) in the period between the completion of the baseline survey and the Notice given by the Minister under Section 45B(2) that the Strategic Proposal Statement takes effect (i.e. the 'approval') for the OB32 BWT Proposal, the condition of the vegetation in BHP's internal database system will be updated to capture the new altered condition (e.g. cleared or Completely Degraded).

2.2.1 Impacts

BHP will use the methodology detailed in Steps 1-3 of Appendix 2 to calculate the amount of land disturbance (i.e. clearing of native vegetation) within the Development Envelope - Pipeline from the OB32 BWT Proposal.

The resulting Land Disturbance dataset will then be overlaid with the baseline vegetation condition dataset and the IBRA subregion boundaries, to calculate the amount of clearing of vegetation in Good to Excellent condition within the Hamersley IBRA subregion of the Pilbara bioregion (as per Step 4 of Appendix 2). This will result in the amount of clearing (ha) that is required to be offset.

The verified Land Disturbance dataset is also used to update the baseline dataset for the condition of vegetation that is to be used for the next financial year reconciliation.

This process will be repeated annually to determine the amount of clearing in each financial year, as is required to be reported in the Impact Reconciliation Report (IRR) (see Section 3.2).

3 Reporting

3.1 Frequency and timing

The first biennial reporting period shall commence at the beginning of the financial year that ground-disturbing activities are undertaken, as per Condition 16-5 of MS1105. For the OB32 BWT Proposal, clearing is estimated to commence in May 2023 (Table 3).

As per the Instructions, the IRR will be submitted no later than four months after the conclusion of the biennial reporting period. As specified in Table 3, BHP propose to submit the IRR on the last business day in September following the end of the reporting period.

Table 3: Reporting period and frequency of the Impact Reconciliation Reports

Biennial period	Action	Timing
	Ministerial Statement 1105 issued	11 July 2019
	Notice given that the Strategic Proposal Statement takes effect for the OB32 BWT Proposal	TBC
	OB32 BWT pipeline clearing commences	Estimated to commence May 2023
Period 1	First biennial reporting period	1 July 2022 to 30 June 2024
	IRR submitted to DWER	30 September 2024
Period 2	Second biennial reporting period	1 July 2024 to 30 June 2026
	IRR submitted to DWER	30 September 2026

3.2 Impacts and reconciliation

Ground-disturbing activities for the OB32 BWT Proposal will wholly occur within the Development Envelope - Pipeline and are expected to commence in May 2023. As per Condition 16-8 of MS1105, ground-disturbing activities will not commence, unless otherwise agreed by the CEO, until the CEO has confirmed in writing that the IRP satisfies the requirements of Condition 16-7 (Table 1).

As discussed in Section 2.1, clearing of vegetation in Good to Excellent condition within the Hamersley IBRA subregion of the Pilbara bioregion will be up to 144 ha. The majority of clearing is expected to occur within the first biennial reporting period, associated with the construction of the surplus water pipeline. All remaining clearing will occur within the second biennial reporting period, with clearing for construction and installation of the pipeline not expected to occur beyond 2026. As detailed in Section 2.2, the clearing of vegetation will be captured spatially and reconciled against the baseline data for vegetation condition within the Development Envelope - Pipeline.

As per Condition 16-10 of MS1105, the IRR will provide the location and spatial extent of the clearing undertaken within each biennial reporting period. More specifically, the following information will be submitted in each IRR:

- amount of clearing (ha) of vegetation in Good to Excellent condition within the Hamersley IBRA subregion of the Pilbara bioregion that has occurred during each financial year of the reporting period, including the offset rate

- information used to validate amount of clearing (e.g. aerial imagery, remote sensing data, digitised polygons and/or ground-truthing surveys) in each financial year
- information regarding any exemptions, other clearing approvals or reductions to contributions to the fund (e.g. where impacts have occurred that are applied to a different Ministerial Statement or NVCP)
- forward estimate of impacts expected to be reported in subsequent reporting periods.

4 References

BHP Iron Ore Pty Ltd (BHP) (2020) Biodiversity Survey Spatial Data Requirements Procedure. Document number SPR-IEN-EMS-015. Version 11.0. Published January 2020.

Environmental Protection Authority (EPA) (2016) *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Environmental Protection Authority. Western Australia. Published 13 December 2016.

Environmental Protection Authority (EPA) (2018) *Pilbara Expansion Strategic Proposal*. Report and recommendations of the Environmental Protection Authority. Report 1619. Perth, Western Australia. Published 9 July 2018.

Environmental Protection Authority (EPA) (2021) *Instructions on how to prepare Environmental Protection Act 1986 Part IV Impact Reconciliation Procedures and Impact Reconciliation Reports*. Environmental Protection Authority. Western Australia. Published March 2021.

Spectrum Ecology and Spatial (Spectrum) (2022) *OB32 Surplus Water and Homestead Creek Wetting Front Detailed Flora and Vegetation Assessment*. Report prepared for BHP, April 2022.

Appendices

Appendix 1 Baseline spatial data associated with the environmental value requiring offset

Spectrum completed flora and vegetation surveying of the OB32 BWT Proposal Development Envelope - Pipeline in 2021 and 2022 (Spectrum 2022). The surveying was undertaken in accordance with the EPA Technical Guidance (EPA 2016) and included the assessment and mapping of vegetation condition. The condition of vegetation was mapped using the Vegetation Condition Scale for the Eremaean and Northern Botanical Provinces as per Table 2 in the EPA Technical Guidance (EPA 2016).

All baseline environmental survey data captured by Spectrum during the survey was supplied to BHP in accordance with BHP Data Standards (document SPR-IEN-EMS-015, BHP 2020). The BHP Data Standards ensure a consistent and repeatable method of capturing environmental survey data. The survey data is stored on BHP's internal database system following review for technical and spatial accuracy.

This baseline environmental survey data and existing land disturbance data is considered to form the pre-clearing extent and baseline state of vegetation condition for this IRP for the OB32 BWT Proposal.

The following spatial data is provided to support this IRP, as per the Instructions:

- **boundary**: the OB32 BWT Proposal Development Envelope - Pipeline
- **baseline**: vegetation condition mapping (Spectrum baseline survey data), clearing/ land disturbance up to the date the Notice is given for the OB32 BWT Proposal (the 'approval'), and IBRA subregions
- **imagery**: aerial imagery for the extent of the OB32 BWT Proposal Development Envelope - Pipeline.

All spatial data is provided in a format that complies with the requirements of the Instructions, and as per the following parameters:

- **data type**: closed polygons for boundary and baseline data attributes as per Table 6 of the Instructions
- **format**: shapefile or Environmental Systems Research Institution (ESRI) geodatabase format
- **coordinate system**: Geocentric Datum of Australia 2020 (GDA2020) datum, projected into the appropriate Map Grid of Australia zone
- **imagery**: Enhanced Compressed Wavelet (ECW) format or Geographic Tagged Image File Format (GeoTIFF), at a minimum 1 m resolution.

Appendix 2 Methodology used to capture land disturbance and environmental value/s datasets

The methodology BHP will use to calculate the amount of land disturbance (i.e. clearing of native vegetation) is detailed below (Steps 1-3). This will result in a verified Land Disturbance dataset that is used to determine the amount of clearing that is required to be offset against the environmental value/s (Step 4).

Step 1 - Remotely Sensed data

BHP sources appropriate remotely sensed data (i.e. aerial photography or satellite imagery) for the area of the Impact Reconciliation Report (IRR). The remotely sensed data may come from a variety of sources and where appropriate, it will be mosaicked together. The mosaicked remotely sensed data is then re-sampled to 1 m resolution. This remotely sensed data set is used for the capture of the land clearing that is to be supplied as an end deliverable dataset.

Step 2 - Land Disturbance data

Direct land disturbance (i.e. clearing) is captured on a periodic basis throughout the financial year. The data is captured via digitising the land disturbance visible in the Remotely Sensed data, at a scale of 1:1,000. This scale is consistent with the precision of all BHP internal datasets. The data is ground-truthed by site surveyors in mining areas and geoscience technicians in resource definition drilling areas (where required).

All land disturbance data is then attributed with the reporting year, responsible operational entity, the underlying approval and the proposed or actual land-use (using the Department of Mines, Industry Regulation and Safety Mining Rehabilitation Fund (MRF) classifications). Where there are multiple approvals within the same area, the site responsible person is accountable for allocating the land disturbance to the appropriate approval.

Step 3 - Data review

Following the capture of the Land Disturbance data, the dataset is reviewed at the end of each financial year to ensure:

- all land disturbance activities for the financial year period have been identified
- accurate and clean boundaries (removal of overlaps and correction of anomalies)
- data attribute completeness and correctness.

As BHP captures land disturbance/clearing at a scale of 1:1,000 (i.e. +/- 0.5 m on the ground), any polygon slivers or gaps in the dataset under one square metre are ignored and are considered acceptable in the context of analysing datasets at vastly different scales.

Step 4 - Processing of environmental value/s datasets

BHP have developed a methodology which automates the process of combining Land Disturbance, IBRA subregions and environmental value/s (e.g. vegetation condition) datasets to ensure the process of deriving the final offset calculation is consistent and repeatable. The process manipulates the datasets (e.g. clips inputs to the project Development Envelope, cleans any overlaps) to match the requirements of the Instructions, resulting in a final area calculation.