



**BHP Iron Ore**

**EPBC Act Strategic Environmental Assessment  
Annual Environmental Report**

**July 2020 – June 2021**



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## Abbreviations

Term	Meaning
AER	Annual Environmental Report
AWT	Above water table
BHP	BHP Iron Ore Pty Ltd
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DoEE	Department of Environment and Energy (now DAWE)
DWER	Department of Water and Environmental Regulation
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ELOR	Environmental Legal Obligations Register
FY	Financial Year
GIS	Geographical Information Systems
ha	Hectares
MAC	Mining Area C
MAR	Managed Aquifer Recharge
MEM	Mobile Equipment Maintenance
MS	Ministerial Statement
ng/g	Nanogram per gram
OB	Orebody
OSAs	Overburden Storage Areas
PC	Primary Crusher
PEAHR	Project Environmental and Aboriginal Heritage Review
SEA	Strategic Environmental Assessment
WA	Western Australian
WAIO	Western Australian Iron Ore

### Declaration of accuracy

In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.



Signed

Full name (please print)

Chris Serginson

Position (please print)

Manager Environment - WAIO

Organisation (please print including ABN/ACN if applicable) BHP Iron Ore

Date

30/09/2021

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Rev	Description of Amendment	Organisation	Name
Rev 0	Final Report	BHP Iron Ore Pty Ltd	Chris Serginson

# 1 Introduction

The BHP Iron Ore Pty Ltd (BHP) Pilbara Strategic Assessment Program (the Program) was endorsed by the Minister for the Environment and Energy on 11 May 2017 and an Approval Decision (the Approval) for taking actions in accordance with the Program was issued on 19 June 2017.

The Approval applies to the development of new iron ore mines and associated infrastructure and the expansion of existing iron ore mines and associated infrastructure within a defined Strategic Assessment Area in the Pilbara region of Western Australia (Figure 1.1). Key commitments of the Program and conditions of the Approval include preparation and Approval of an Assurance Plan and Offsets Plan, and undertaking a validation process including preparation of a Validation Notice for each Notifiable Action (Figure 1.2) and BHP internal Decision Reports for non-Notifiable Actions.

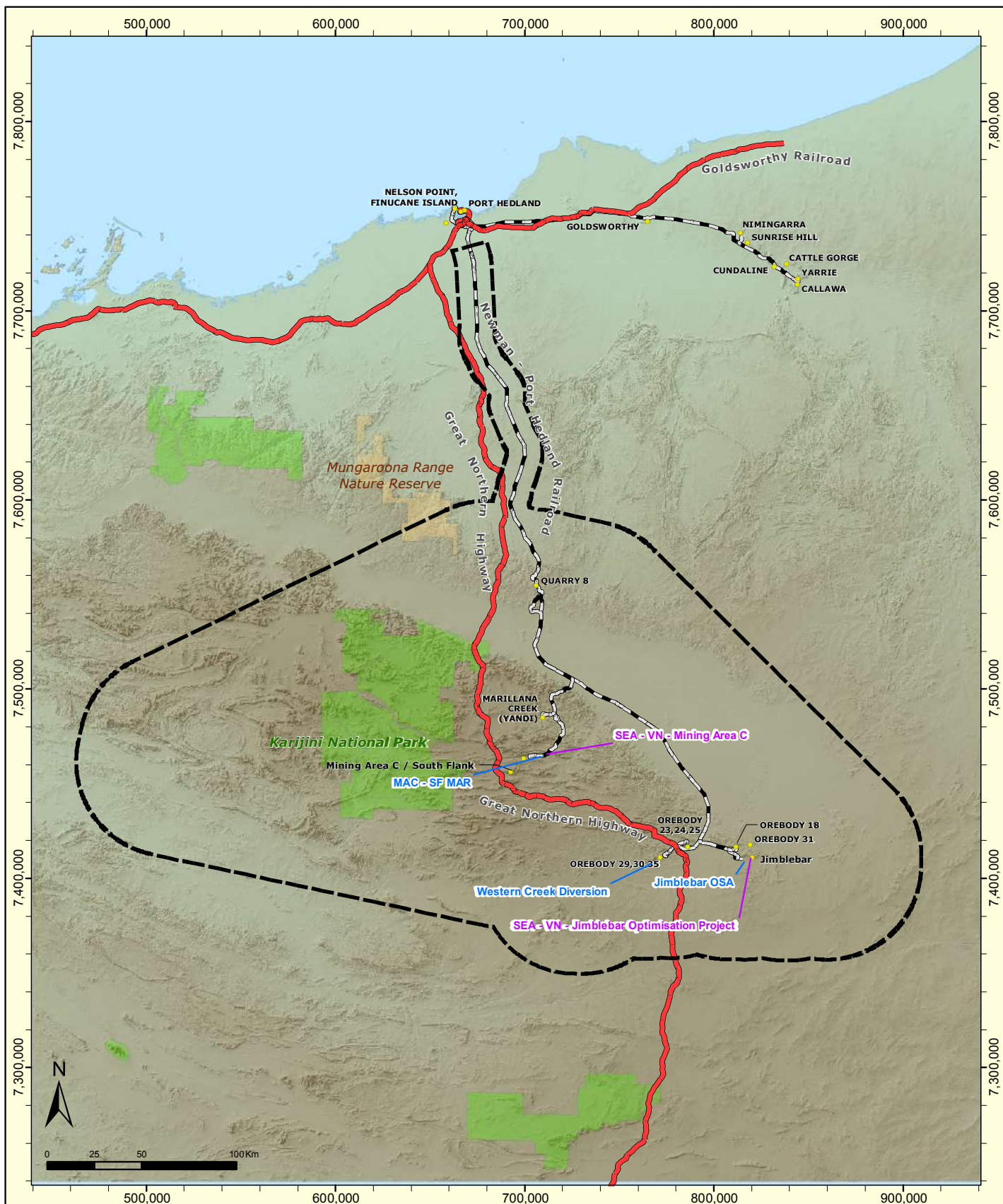
In accordance with the conditions of the approval decision relating to the Program, BHP is hereby submitting an annual report for the reporting period between 1 July 2020 and 30 June 2021. An outline of the content of the report is provided below:

- Section 1: Introduction – Provides the Approval background and key terminology.
- Section 2: Approval Decision - Outlines compliance with the conditions of the Approval.
- Section 3: Program - Addresses the requirements of an annual report outlined in Part B, Chapter 5 of the endorsed Program.
- Section 4: Assurance Plan - Addresses the reporting requirements outlined in the Assurance Plan.
- Section 5: Offsets Plan - Addresses the reporting requirements outlined in the Offsets Plan.
- Section 6: Validation Notices - Outlines compliance with obligations within the Validation Notices.
- Section 7: Disturbance - Details the disturbance undertaken during the reporting period.

Key milestones that have occurred during the reporting period include:

- There were no validation processes completed during the reporting period (see Section 6);
- Clearing commenced under the Jimblebar Optimisation Validation Notice (see Section 6 and 7.2);
- There were no non-notifiable action decisions during the reporting period (see Section 6); and
- There is one correction for OB30 Creek Diversion Decision Report (see Section 6).

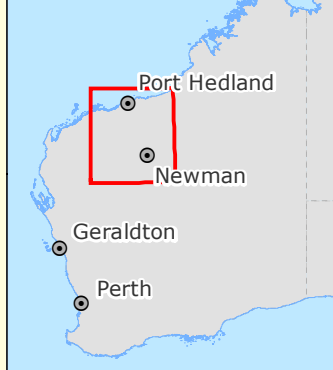




#### LEGEND

- BHP Operations
- Rail
- National Highway
- SEA Approval
- SEA Validation Notice
- Non-Notifiable Action

#### LOCALITY



**BHP**

Environment Approvals  
BHP IRON ORE

### SEA Disturbance Activities 2020/21

Not to scale	Prepared: P. Gant	Project No: A1033
Date: 31/08/2021	Checked: K. Flowerdew	
Datum: GDA 94	Projection: MGA Zone 50	

**Figure 1.1**

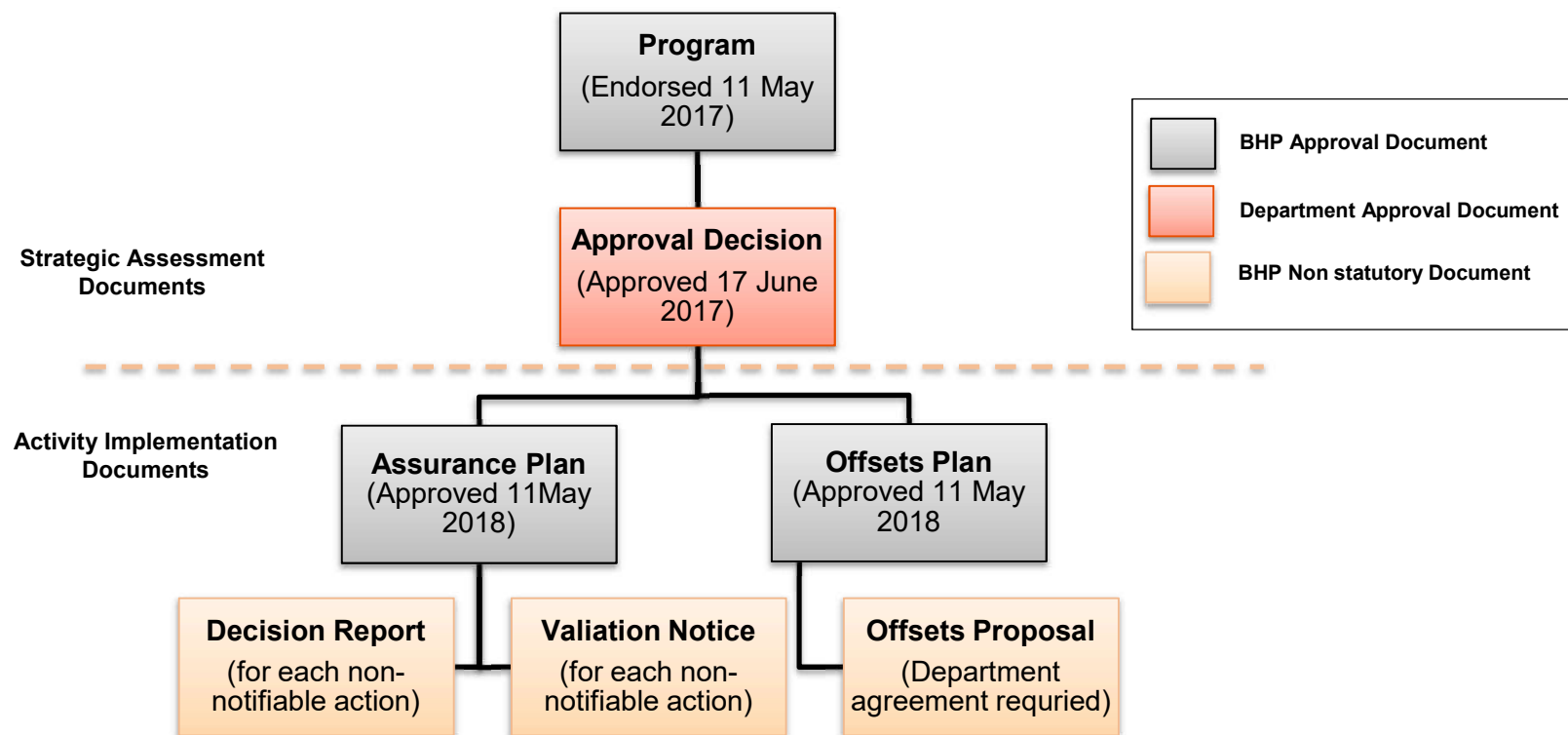


Figure 1.2: BHP Strategic Environmental Assessment – Approval Documents

## 2 EPBC SEA Approval Decision

Table 1 assesses compliance against the 10 conditions of the Approval.

**Table 1: Audit Table for the EPBC SEA Approval Decision (Approved: 19 June 2017)**

Condition/ Section	Requirement	How	Documentation	Evidence	Timeframe	Status
1	The approval holder must implement the endorsed Program.	Implement Assurance Plan, Offset Plan and Validation Notices in accordance with criteria in the Program.	Compliance reported annually in the BHP Iron Ore (BHP) Strategic Environmental Assessment (SEA) Annual Environmental Report (AER).	Activities have been implemented in accordance with the endorsed Program (see Conditions 3 and 7). Two deviations from the Jimblebar Optimisation Validation Notice commitments have been identified and are discussed in Section 7.2.1.	Life of Approval.	Partially Compliant.
2	The approval holder must not make any validation decisions as outlined in Part C of the endorsed Program after 70 years from the date of the Approval.	No validation decisions to be made after 19 June 2087.	Compliance reported annually in the BHP SEA AER.	The Approval commenced on the 19 June 2017. Validation decisions were permitted during the reporting period.	From 19 June 2087.	Not required during this reporting period.
3	Within 12 months of the date of Approval, the approval holder must prepare and submit for the Minister's written Approval an Assurance Plan and an Offsets Plan in accordance with Section 3 of the endorsed Program.	Prepare and submit an Assurance Plan and Offsets Plan to the satisfaction of the Minister of the Department of Environment and Energy (DoEE) (or delegate).	Submitted Assurance Plan and Offset Plan.	An Assurance Plan (dated 10 May 2018) and Offsets Plan (dated 10 May 2018) were prepared and submitted to the Department on 1 March 2018. The Assurance Plan and Offsets Plan were approved by the Department on behalf of the Minister on 11 May 2018 (Reference Letter from G. Manning – Assistant Secretary Assessments (WA, SA, NT) and Post Approvals Branch Environment Standards Division dated 11 May 2018).	Prior to 19 June 2018.	Closed.
	The approval holder must implement the approved Assurance Plan and Offsets Plan.	Implement Validation Notices and Decisions Reports in accordance with the requirements of the approved Assurance Plan and Offsets Plan.	Compliance reported annually in the BHP SEA AER.	The Assurance Plan (dated 10 May 2018) and Offsets Plan (dated 10 May 2018) have been implemented (see Condition 7 below and Section 6). Two deviations from the Jimblebar Optimisation Validation Notice commitments have been identified and are discussed in Section 7.2.1.	Annually for the duration of the Approval.	Partially Compliant.
	The approval holder must publish the approved Assurance Plan and Offsets Plan on its website within one (1) month of receiving written notice that the Assurance Plan and Offsets Plan are approved.	Publish the approved Assurance Plan and Offsets Plan on the BHP external website.	Submitted Assurance Plan and Offset Plan.	The Assurance Plan (dated 10 May 2018) and Offsets Plan (dated 10 May 2018) were published on the BHP website on 15 May 2018. Email sent to V. Cox (Senior Assessing Officer – Post Approvals) on 15 May 2018 advising the Plans were available on the website.	Within 1 month of Approval.	Complete.
4	<p>Unless otherwise agreed to in writing by the Minister, every five years from the date of Approval, the approval holder must review and revise the Assurance Plan and the Offsets Plan in accordance with Section 4.1 of the endorsed Program.</p> <p>The approval holder must submit the revised Plans for the Minister's Approval within 6 months of the five year anniversary of the date of Approval unless the Minister has agreed in writing that no revisions are necessary.</p> <p>If the approval holder does not submit the revised Plans for Approval, the approval holder may not give any further validation notices under Part C of the endorsed Program until the revised Plans have been submitted and approved.</p> <p>The Minister may, within 60 days of receipt by the Department of the revised Plans, advise the approval holder in writing that (a) the revised Plans are approved; or (b) additional revisions are required to be made to the Plans.</p> <p>If the Minister does not advise the approval holder within the 60 days, the revised Plans are taken to have been approved by the Minister and the approval holder must implement the revised Assurance Plan and Offsets Plan.</p> <p>If the Minister requires additional revisions to the Plans, the approval holder has to make the required revisions and resubmit the Plans for Approval.</p> <p>If the revised Plans are not submitted, no further validation notice may be given under Part C of the endorsed Program until the revised Plans have been submitted and approved.</p> <p>The Minister has 30 days to advise the approval holder in writing whether the revised Plans are approved. If the Minister does not advise the approval holder within the 30 days, the revised Plans are taken to have been approved and the approval holder must implement the revised Assurance Plan and Offsets Plan.</p>	Prepare and submit a review and revision of the Assurance Plan and Offsets Plan to the satisfaction of the Minister of the DoEE (or delegate).	Five-yearly review document and revised Assurance Plan and Offsets Plan.	<p>Five-yearly review document and revised Assurance Plan and Offsets Plan are not required during this reporting period.</p> <p>BHP and DAWE agreed the process and content of the five-yearly review via formal correspondence (BHP letter dated 4 March 2021 seeking agreement on timing for the five-yearly review and DAWE Response Letter Reference: SA017).</p>	First review due after 19 December 2021 but prior to 19 December 2022	Not required during this reporting period.



Condition/ Section	Requirement	How	Documentation	Evidence	Timeframe	Status
	<p>After receiving written notice from the Department that the revised Assurance Plan and Offsets Plan are approved, the approval holder must implement the revised Assurance Plan and Offsets Plan.</p> <p>The approval holder must publish and maintain the revised Assurance Plan and Offsets Plan on its website within one (1) month of receiving written notice from the Department that the plans have been approved.</p>					
5	<p>At any time the approval holder may choose to review and revise the Assurance Plan and/or the Offsets Plan without requiring the Minister's Approval of the revised Plans if the revision does not:</p> <p>(a) include changes to Program Matters Outcomes; (b) affect the achievement or monitoring of Program Matters Outcomes; or (c) include changes to environmental offsets for any Program Matters.</p> <p>If the approval holder makes this choice, the approval holder must notify the Department in writing that the current approved Assurance Plan and/or Offsets Plan has been revised and provide the Department with a copy of the revised Assurance Plan and/or Offsets Plan.</p> <p>The approval holder must implement the revised Assurance Plan and/or Offsets Plan from the date of the written notice to the Department.</p> <p>The approval holder must publish the revised Assurance Plan and Offsets Plan on their website within one (1) month of the written notice to the Department.</p>	Prepare and submit a review and revision of the Assurance Plan and Offsets Plan to the satisfaction of the Minister of the DoEE (or delegate).	Revised Assurance Plan and Offsets Plan.	Not required during this reporting period.	Anytime during the duration of the Approval.	Not required during this reporting period.
6	The approval holder must inform any person that they authorise, permit or request to undertake any activity of obligations under the endorsed Program and conditions attached to this Approval that restrict or regulate the undertaking of activities within the strategic assessment area.	Obligations are maintained in the legal obligations register and documented within the Project Environmental and Aboriginal Heritage Review (PEAHR) prior to undertaking activities.	Western Australian Iron Ore (WAIO) Environmental Legal Obligations Register (ELOR) and PEAHR documentation.	<p>Seventeen obligations from the Mining Area C (MAC) Validation Notice and thirteen obligations from the Jimblebar Optimisation Project Validation Notice have been incorporated into the WAIO ELOR. The Jimblebar Optimisation Project Validation Notice took effect on 8 June 2020. Obligations from MAC Validation Notice were incorporated into site specific PEAHRs for all activities related to the project. All personnel carrying out works associated with activities relating to the Validation Notice are required to comply with environmental approvals, the PEAHR requirements and conditions and any other relevant legislative requirements.</p> <p>Obligations from Jimblebar Optimisation Project Validation Notice were not include in the site specific PEAHRs for all activities related to the project see Section 7.2.1. The Greater Bilby pre disturbance clearance surveys requirements were not included in the PEAHRs.</p>	Prior to undertaking activities.	Partially Compliant.
7	An upper disturbance limit of 110,000 hectares applies to the approval holder. All activities that result in a direct disturbance will account towards the upper disturbance limit. The approval holder may undertake activities that result in a direct disturbance up to the maximum of 110,000 hectares less any direct disturbance permitted in a section 146B approval given in relation to assets divested by the approval holder and for which a validation notice has been given.	Maintain the program disturbance tracking register.	Program disturbance tracking register.	Table 5 details the current disturbance undertaken during the reporting period against the upper disturbance limit. A total of 19,710 ha of disturbance has been allocated via Validation Notices and Non-Notifiable actions since July 2018. The current total disturbance (3,299 ha), up to 30 June 2021, has not exceeded the upper disturbance limit. No individual activities exceeded their allocated disturbance limit.	Annually for the duration of the Approval.	Compliant.
8	By the first business day in October of each year after the commencement of this Approval, the approval holder must submit a report to the Department and publish the report on its website. The report must address the requirements of an annual report outlined in Part B of the endorsed Program.	Prepare and submit annual report and publish on BHP external website	BHP SEA AER.	<p>This document forms the annual report under the Approval for the 1 July 2020 to 30 June 2021 period.</p> <p>The FY 2020 report was submitted on 1 October 2020 and is available on the BHP website (<a href="https://www.bhp.com/-/media/bhp/regulatory-information-media/iron-ore/western-australia-iron-ore/0000/western-australia-iron-ore-pilbara-strategic-assessment-commonwealth/bhp-waio-epbc-sea-aer-2019_2020-v1.pdf">https://www.bhp.com/-/media/bhp/regulatory-information-media/iron-ore/western-australia-iron-ore/0000/western-australia-iron-ore-pilbara-strategic-assessment-commonwealth/bhp-waio-epbc-sea-aer-2019_2020-v1.pdf</a> )</p> <p>Table 2 documents the requirements of an annual report in accordance with Part B, Chapter 5 Reporting, of the Program.</p>	Annually for the duration of the Approval.	Compliant.

Condition/ Section	Requirement	How	Documentation	Evidence	Timeframe	Status
9	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions attached to this Approval, including measures taken to implement the endorsed Program, Assurance Plan and Offsets Plan and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions attached to this Approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	<p>Maintain the program disturbance tracking register.</p> <p>Document decisions regarding notifiable and non-notifiable actions</p> <p>Maintain the legal obligations register.</p>	<p>Program disturbance tracking register.</p> <p>Validation notices and decision reports.</p> <p>WAIO ELOR.</p>	<p>Table 5 provides an extract of the Program disturbance tracking register, which details the disturbance undertaken during the reporting period against the upper disturbance limit.</p> <p>There were no validation processes completed during the reporting period. There were no decision reports completed during the reporting period.</p> <p>In FY 2019 Orebody (OB) 30 Creek Diversion Project was reported as an action determined as not notifiable. In FY21 an additional review of the existing approvals for the Creek Diversion was completed. The review found that the existing approvals in place are satisfactory to govern the proposed disturbance associated with the proposed creek diversion. The OB 30 Creek Diversion Project is located in an area which is previously approved for these activities under four specific Native Vegetation Clearing Permits which all predate the SEA Approval Notice and have since been amalgamated as part of the Whaleback Strategic NVCP (CPS 5617/5). The OB 30 Creek Diversion Project is considered previously approved under Section 2.3 (Exclusions) of the Program and therefore is out of scope of the SEA. BHP is withdrawing the erroneous Decision Report and the 0.37 hectares of disturbance reported against the Decision Report in the FY20 AER (See Table 5 and Section 6).</p> <p>BHP has recently replaced the CMO online database, previously used to record legal obligations, with a purpose built WAIO ELOR database to administer and report against legal obligations. This section will be reviewed during the next revision of the Assurance Plan, to document this replacement.</p>	Duration of the Approval.	Compliant.
10	Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions attached to this Approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Appoint a Minister approved independent auditor to undertake an audit of compliance with conditions.	Independent auditors report.	Not required during this reporting period.	When requested by the Minister.	Not required during this reporting period.

### 3 EPBC SEA Program Part B

Table 2 assesses compliance against the seven requirements of the reporting section of the Program.

**Table 2: Audit Table for the EPBC SEA Program Part B**

Chapter	Condition/Section	Requirement	How	Documentation	Evidence	Timeframe	Status
<b>5 Reporting</b>	Item 1	Compliance with the Assurance Plan and Offsets Plan and Validation Notices.	Assess as part of the BHP annual reporting process.	BHP SEA AER.	No non-compliances with the Assurance Plan or the Offsets Plan were identified during the reporting period.  Two deviations from the Jimblebar Optimisation Validation Notice commitments have been identified during the reporting period. The biannual Ghost bat monitoring was not completed as described in the Validation Notice. Consultants have been engaged to implement the monitoring program during the next available monitoring trip to Jimblebar. Compliance workflows are also being developed to ensure Validation Notice commitments are implemented. The Greater Bilby pre disturbance clearance surveys were not complete during the reporting period.	Annually for the duration of the Approval.	Partially Compliant.
	Item 2	Actions determined not notifiable.	Assess activities against the Program and Assurance Plan.	Decision Report.	There were no actions determined to be not notifiable in the reporting period.	Duration of the Approval.	Compliant.
	Item 3	Activities determined to be a notifiable action.	Assess activities against the Program and Assurance Plan.	Decision Report and Validation Notice.	There were no actions determined to be notifiable in the reporting period.	Duration of the Approval.	Compliant.
	Item 4	Progress of notifiable actions, including when notifiable actions have commenced and completed.	Review progress of notifiable actions.	Program disturbance tracking register.	See Section 7: Validation Notices	Annually for the duration of the Approval.	Compliant.
	Item 5	Assets divested through the process described in Section 2.1, noting the status of environmental obligations under this Program at the time of divestment.	Review BHP divestment activities.	Asset database.	No assets, subject to the Program, were divested during the reporting period.	Annually for the duration of the Approval.	Not required during this reporting period.
	Item 6	An account of the upper disturbance limit for all activities taken within the Strategic Assessment Area. This will include any direct disturbance that has occurred in the twelve month period and as a cumulative total.	Maintain the program disturbance tracking register.	Program disturbance tracking register.	Details of disturbance undertaken during the reporting period and the cumulative disturbance is provided in Table 5.	Annually for the duration of the Approval.	Compliant.
	Item 7	Results of the five yearly review as described in Sections 4.1.1. and 4.1.2.	Prepare and submit a five early review to the satisfaction of the Minister.	Five yearly review document.	Five yearly review document and revised Assurance Plan and Offsets Plan are not required during this reporting period.  BHP and DAWE agreed on the process and content of the five-yearly reviews via formal correspondence (BHP letter dated 4 March 2021 seeking agreement on timing for the five-yearly review.	First review due after 19 December 2021 but prior to 19 December 2022.	Not required at this stage.

## 4 EPBC SEA Assurance Plan

Table 3 assesses compliance against the nine requirements of the Section 8 (Reporting) and five requirements of Section 10 (Data Management) of the Assurance Plan.

**Table 3: Audit Table for the EPBC SEA Assurance Plan**

Chapter	Condition/Section	Requirement	How	Documentation	Evidence	Timeframe	Status
<b>8 Reporting</b>	Item 1	Notifiable Actions identified under the Program during the period covered by the report.	Assess activities against the Program and Assurance Plan.	Validation Notice.	There were no actions determined to be notifiable in the reporting period.	Annually for the duration of the Approval.	Compliant.
	Item 2	Details of activities within the scope of the Program which were commenced during the period covered by the report but were determined not notifiable.	Review progress of non-notifiable actions and maintain the program disturbance tracking register.	BHP SEA AER. Program disturbance tracking register.	Details of disturbance undertaken during the reporting period are provided in Table 5, Figure 7.2 and Figure 7.8. Minor drilling activities were undertaken for Western Creek Diversion.	Annually for the duration of the Approval.	Compliant.
	Item 3	Status of implementation (planned start date, action commenced and planned completion date; and action completed) of all Notifiable Actions.	Review progress of notifiable actions and maintain the program disturbance tracking register.	BHP SEA AER. Program disturbance tracking register.	BHP commenced clearing under the Jimblebar Optimisation Validation Notice during the reporting period.  Construction of the MAC Surplus Water pipelines and re-injection borefield commenced during the reporting period. All clearing activities for this project are included in the MAC Validation Notice.  See Section 6 and Section 7.	Annually for the duration of the Approval.	Compliant.
	Item 4	Assets divested through the process described in Section 2.1 of the Program.	Review BHP divestment activities.	Asset database.	No assets, subject to the Program, were divested during the reporting period.	Annually for the duration of the Approval.	Not required during this reporting period.
	Item 5	Status of offsets implemented for each Notifiable Action.	Review progress of offset plans for notifiable actions.	BHP SEA AER.	No offsets were implemented during the reporting period. BHP submitted the Offsets Proposal for Mining Area C, in accordance with the Offsets Plan, on 14 December 2018. The Offsets Proposal is currently under review, and consultation with the Department is ongoing.  Jimblebar Optimisation Project did not require EPBC Act Offsets.	Annually for the duration of the Approval.	Not required during this reporting period.
	Item 6	Disturbance areas associated with all actions, whether material or non-material, implemented since the Approval. Both the annual disturbance and the total disturbance (since the Approval) will be included.	Maintain the program disturbance tracking register.	Program disturbance tracking register.	Details of disturbance undertaken during the reporting period and cumulative disturbance provided in Table 5.	Annually for the duration of the Approval.	Compliant.
	Item 7	The outcomes of compliance audits undertaken during the period covered by the report will be included.	Review outcomes of compliance audits completed during the reporting period.	Compliance audit reports.	No compliance audits were completed during the reporting period.	Annually for the duration of the Approval.	Compliant.
	Item 8	Summary of any exceedances of the Program Matter Outcomes relevant to each Notifiable Action and corrective actions taken.	Review decision reports, notifiable actions and compliance audits undertaken during the reporting period.	Monitoring reports.	No exceedances of the Program Matter Outcomes for Pilbara Olive Python, Northern Quoll, Pilbara Leaf nosed Bat and Greater Bilby were identified during the reporting period. The biannual Ghost Bat monitoring was not completed at Jimblebar during the reporting period, BHP has been unable to determine if the Validation Notice targets and therefore the Program Matter Outcome has been met at Jimblebar. See Section 7: Validation Notice.	Annually for the duration of the Approval.	Partially Compliant.
	Item 9	Deviation from the Program or from information and management commitments contained in a Validation Notice for a Notifiable Action.	Review decision reports, notifiable actions and compliance audits undertaken during the reporting period.	Compliance audit reports.	BHP identified two implementation non-compliance (deviation) with the Jimblebar Optimisation Validation Notice during the reporting period (Section 7.2.1). The biannual Ghost bat monitoring was not completed as described in the Validation Notice. Consultants have been engaged to implement the monitoring program during the next available monitoring trip to Jimblebar. Compliance workflows are also being developed to ensure Validation Notice Commitments are implemented. The pre-clearance surveys for Greater Bilby were not completed during the reporting period. Compliance workflows are also being developed to ensure Validation Notice Commitments are implemented.	Annually for the duration of the Approval.	Partially Compliant.
<b>10 Data Management</b>	Item 1	An annual review of the site monitoring register and the guideline trigger values to ensure the Program is efficient, risk based and meets compliance requirements.	Review site monitoring registers and compliance audits.	Site monitoring register and compliance audit reports.	The Mining Area C monitoring register is up to date and includes Validation Notice monitoring requirements and target values. The Jimblebar monitoring register does not include Validation Notice monitoring requirements and target values. Register has been updated to include Validation Notice monitoring requirements. See Section 7: Validation Notices.	Annually for the duration of the Approval.	Partially Compliant.
	Item 2	Environmental monitoring and measurement equipment is to be maintained/calibrated/verified in accordance with manufacturers specifications.	Review site monitoring registers and compliance audits.	Site monitoring register and compliance audit reports.	Groundwater level monitoring was undertaken during the reporting period. Calibration of water level monitors was undertaken in accordance with the manufacturers specifications, as per the Western Australian (WA) Department of Water and Environmental Regulation (DWER) Operating Licences.	Annually for the duration of the Approval.	Compliant.

Chapter	Condition/ Section	Requirement	How	Documentation	Evidence	Timeframe	Status
	Item 3	Verify source data integrity – determine if the data from a sampling point has been mapped against the correct data program, data type, test methods and units of measurement are accurate.	Review site monitoring registers and compliance audits.	Site monitoring register and compliance audit reports.	Verification of the groundwater level monitoring data was completed during the reporting period. Verification activities included confirming sampling locations, checking monitoring equipment and ensuring consistency with previous monitoring data.	Annually for the duration of the Approval.	Compliant.
	Item 4	Source monitoring data is analysed against trigger values, trends and outliers and in consideration of the target environmental outcomes.	Review site monitoring registers and compliance audits.	Site monitoring register and compliance audit reports.	Groundwater level monitoring data was compared against trigger values during the reporting period. No values from the Mining Area C - Validation Notice, exceeded triggers during the reporting period. See Section 7: Validation Notices.	Annually for the duration of the Approval.	Compliant.
	Item 5	An investigation is required for any values that are above triggers and thresholds.	Review site monitoring registers and compliance audits.	Site monitoring register and compliance audit reports.	No values from the Mining Area C - Validation Notice exceeded triggers and thresholds during the reporting period. See Section 7: Validation Notices.  Two implementation non-compliance (deviation) with the Jimblebar Optimisation Validation Notice were identified during the reporting period. More information is provided in Section 7.2.1	Annually for the duration of the Approval.	Compliant.



## 5 EPBC SEA Offsets Plan

Table 4 assesses compliance against the nine requirements of the Section 4.5 (Annual Environmental Report) and five requirements of Section 4.6 (Offsets Reconciliation) of the Offsets Plan.

**Table 4: Audit Table for the EPBC SEA Offsets Plan**

Chapter	Condition/Section	Requirement	How	Documentation	Evidence	Timeframe	Status
<b>4.5 Annual Environmental Report</b>	Item 1	Notifiable Actions identified under the Program during the period covered by the report.	Assess activities against the Program and Assurance Plan.	Validation Notice.	There were no actions determined to be notifiable in the reporting period.	Annually for the duration of the Approval.	Compliant.
	Item 2	Details of activities within the scope of the Program which commenced during the period covered by the report but were determined to not be notifiable.	Review progress of non-notifiable actions and maintain the program disturbance tracking register.	BHP SEA AER. Program disturbance tracking register.	Details of disturbance undertaken during the reporting period are provided in Table 5, Figure 7.2 and Figure 7.8.  Minor drilling activities were undertaken for Western Creek Diversion.	Annually for the duration of the Approval.	Compliant.
	Item 3	Status of implementation (planned start date, action commenced and planned completion date, and action completed) of all Notifiable Actions.	Review progress of notifiable actions and maintain the program disturbance tracking register.	BHP SEA AER. Program disturbance tracking register.	BHP commenced clearing under the Jimblebar Optimisation Validation Notice during the reporting period.  Construction of the MAC Surplus Water pipelines and re-injection borefield commenced during the reporting period. South Flank Valley MAR commenced commissioning on the 25 February 2021. To date, no water has been discharge Pebble Mouse Creek. All clearing activities for this project are included in the MAC Validation Notice.  See Section 7: Validation Notices.	Annually for the duration of the Approval.	Compliant.
	Item 4	Status of offsets implemented for each Notifiable Action including monitoring and continuous improvement outcomes where applicable.	Review progress of offset plans for notifiable actions.	BHP SEA AER.	No offsets were implemented during the reporting period. BHP submitted the Offsets Proposal for Mining Area C, in accordance with the Offsets Plan, on 14 December 2018. The Offsets Proposal is currently under review, and consultation with the Department is ongoing.  Jimblebar Optimisation Project did not require EPBC Act Offsets.	Annually for the duration of the Approval.	Not required during the reporting period.
	Item 5	Assets divested through the process described in Section 2.1 of the Program	Review BHP divestment activities.	Program asset divestment register.	No assets, subject to the Program, were divested during the reporting period.	Annually for the duration of the Approval.	Not required during this reporting period.
	Item 6	Disturbance areas associated with all actions, implemented since the Approval. Both the annual disturbance and the total disturbance (since Approval) will be included.	Maintain the program disturbance tracking register.	Program disturbance tracking register.	Details of disturbance undertaken during the reporting period and cumulative disturbance provided in Table 5 and. Figure 7.2 and Figure 7.8.	Annually for the duration of the Approval.	Compliant.
	Item 7	Details and outcomes of audits undertaken during the period covered by the report.	Review outcomes of compliance audits completed during the reporting period.	Compliance audit reports.	No compliance audits were completed during the reporting period.	Annually for the duration of the Approval.	Not required during this reporting period.
	Item 8	Summary of any impacts that have prejudiced attainment of the Program Matter Outcomes relevant to each Notifiable Action and corrective actions taken.	Review decision reports, notifiable actions and compliance audits undertaken during the reporting period.	Compliance audit reports.	No exceedances of the Program Matter Outcomes for Pilbara Olive Python, Northern Quoll, Pilbara Leaf nosed Bat and Greater Bilby were identified during the reporting period. The biannual Ghost Bat monitoring was not completed at Jimblebar during the reporting period, BHP has been unable to determine if the Validation Notice targets and therefore the Program Matter Outcome has been met at Jimblebar. See Section 7: Validation Notices.	Annually for the duration of the Approval.	Partially Compliant.
	Item 9	Deviation from the Program or from key management commitments contained in a Validation Notice.	Review decision reports, notifiable actions and compliance audits undertaken during the reporting period.	Compliance audit reports.	BHP identified one implementation non-compliance (deviation) with the Jimblebar Optimisation Project Validation Notice during the reporting period. The biannual Ghost bat monitoring was not completed as described in the Validation Notice. Consultants have been engaged to implement the monitoring program during the next available monitoring trip to Jimblebar. Compliance workflows are also being developed to ensure Validation Notice Commitments are implemented..	Annually for the duration of the Approval.	Partially Compliant.
<b>4.6 Offsets Reconciliation</b>	Step 1	Prior to ground disturbance an assessment of native vegetation condition, occurrence of Program Matters and/or habitat of conservation value to Program Matters is undertaken.	Review vegetation condition prior to ground disturbance.	PEAHR.	For MAC, a flora condition assessment was undertaken as part of the Flora and Vegetation Surveys (Onshore Environmental, 2011/2012) to support the assessment process and Approval of Ministerial Statement (MS) 1072. Habitat mapping was undertaken as part of Vertebrate Fauna Desktop Assessment (Biologic 2017) completed for the Approval of MS 1072. MAC utilises spatial buffers centred on Ghost Bat caves to assist in managing activities in close proximity to the caves.  For the Jimblebar Optimisation Project, the following flora and vegetation surveys were completed as part of the assessment process for the Approval of MS 1126:	Prior to commencing ground disturbance.	Compliant.

Chapter	Condition/Section	Requirement	How	Documentation	Evidence	Timeframe	Status
					<ul style="list-style-type: none"> <li>East Jimblebar and Caramulla Flora and Vegetation Survey (Biologic 2019)</li> <li>Caramulla Creek Flora and Vegetation Survey (Astron Environmental Services, 2018)</li> <li>Reconnaissance Flora and Vegetation Survey Caramulla (Onshore Environmental, 2018)</li> <li>Shears West Detailed Vegetation and Flora Survey (Onshore Environmental, 2018).</li> </ul> <p>Habitat mapping was undertaken as part of Jimblebar East and Caramulla Fauna Survey (GHD, 2019). There were not additional offsets proposed for the Jimblebar Optimisation Project.</p> <p>The PEHR process reviews proposed activities prior to disturbance to further assess the vegetation condition and occurrence of Program Matters.</p>		
	Step 2	The vegetation and topsoil is cleared in accordance with the relevant internal ground disturbance controls.	Conduct vegetation clearing in accordance with PEHR conditions.	PEHR.	Implementation of on ground activities are managed via the PEHR process. All ground disturbance activities will meet the requirements of the PEHR. Topsoil requirements are included within the conditions of PEHR. All personnel carrying out works associated with clearing activities are required to comply with environmental approvals, the PEHR requirements and conditions and any other relevant legislative requirements.	Prior to commencing ground disturbance.	Compliant.
	Step 3	Annual recording and mapping of new disturbance is undertaken.	Maintain disturbance tracking register and annual map disturbance completed during reporting period.	Program disturbance tracking register and BHP SEA AER.	Recording of annual disturbance is undertaken using onsite surveys, with confirmation through aerial photography from the end of the reporting period. Survey and aerial photography data is processed using ArcMAP, to generate maps for specific disturbance areas. Details of disturbance undertaken during the reporting period is provided in Table 5, Figure 7.2 and Figure 7.8.	Annually for the duration of the Approval.	Compliant.
	Step 4	The total area disturbed within the scope of the Program is calculated using a geographical information system (GIS).	Review annual disturbance.	Program disturbance tracking register and BHP SEA AER.	Disturbance is calculated using onsite surveys, with confirmation through the most recent aerial photography. Survey and aerial photography data is reviewed and the final disturbance areas are calculated using ArcMAP.	Annually for the duration of the Approval.	Compliant.
	Step 5	The total number of hectares disturbed over the reporting period and a cumulative period total against the Program, for each Validation Notice.	Maintain disturbance tracking register.	Program disturbance tracking register.	Details of disturbance undertaken during the reporting period and cumulative disturbance is provided in Table 5, Figure 7.2 and Figure 7.8.	Annually for the duration of the Approval.	Compliant.

## 6 Program Decisions and Disturbance

There were no validation notice or non-notifiable action processes completed during the reporting period. Table 5 shows the decision that have been made under the Program, the disturbance allocated to each decision and the disturbance completed during the reporting period. Table 6 shows the disturbance per habitat completed for all decisions.

In the FY20 AER, the OB30 Creek Diversion Project was reported as a non-notifiable action. On further review of the existing approvals that apply to the Project, it was identified that the activities are considered as out of scope of the Program as defined by Section 2.3 of the Program. Section 2.3 (Exclusions) of the Program states approval is not being sought for:

*‘activities associated with any existing BHP Billiton Iron Ore operations and infrastructure that have already been previously approved’.*

The OB30 Creek Diversion Project is located in an area which is previously approved for these activities under four specific Native Vegetation Clearing Permits which all predate the SEA Approval Notice (19 June 2017) and have been amalgamated as part of the Whaleback Strategic NVCP (CPS 5617/5):

- CPS 1018/1: strip between OB30 and Whaleback; and Whaleback Creek to the east of CPS 3297/1 (Granted 02 September 2010);
- CPS 1565/2: eastern side of Whaleback Creek from CPS 3297/1 (and overlaps 3297/1)
- (Granted 02 June 2011);
- CPS 2864/1: northern side of OB30 (Granted 28 March 2009); and
- CPS 3297/1: southern side of OB30 and Whaleback Creek (Granted 05 December 2009).

Furthermore, as at the date of the SEA Approval Notice the activities comprising the Proposed Project were already approved under the *Iron Ore (Mount Newman) Agreement Act 1964* (Newman Agreement) by virtue of an Additional Proposal for Below Water Table Mining at OB29/30/35 approved in 2014 (State Agreement Proposal). This proposal encompassed above water table (AWT) mining not previously approved and necessary to undertake below water table mining in the area..

BHP considers that Section 2.3 exclusion requirements have been met for this Project and has removed the 40 ha disturbance allocation and 0.37 ha of disturbance for geotechnical drilling reported in FY20. In Table 5, the decision type is amended to SEA exclusion.

**Table 5: Program Decisions and Disturbance undertaken during the 2020/21 reporting period**

Project Name	Activity completed during reporting period	Decision Rationale	Decision Made	Date Decision Documented	Proposed disturbance (ha)	Overall cumulative program disturbance remaining (ha)	Activity disturbance June 2018 to June 2020	Activity disturbance 2020/21 (ha)	Total activity disturbance to June 2021 (ha)	Overall cumulative activity disturbance remaining (ha)
MAC/South Flank	Continued construction of Primary Crushing (PC) 1, PC2, conveyors and Ore Handling Plant. Mining Continued at Mining Area C and South Flank. South Flank achieved its first ore milestone on the 20 May 2021.	Project fulfils the triggers of the Assurance Plan for Greater Bilby ( <i>Macrotis lagotis</i> ), Northern Quoll ( <i>Dasyurus hallucatus</i> ), Pilbara Leaf-Nosed Bat ( <i>Rhinonicterus aurantia</i> ), Ghost Bat ( <i>Macroderma gigas</i> ) and Pilbara Olive Python ( <i>Liasis olivaceus barroni</i> ).	Validation Notice	May 2018	16,000	94,000	2,277.55	701.48	2,979.03	107,021
Jimblebar OSA1 Stage 1	No activity completed during the reporting period. Disturbance allocation has been completed for this Not a Notifiable Action. This Not a Notifiable Notice has now been superseded by the Jimblebar Optimisation Project Validation Notice.	Project does not meet the triggers of the Assurance Plan for the Greater Bilby, Northern Quoll, Pilbara Leaf-Nosed Bat Ghost Bat and Pilbara Olive Python	Not a Notifiable Action	Aug 2018	95	93,905	94.7	0	94.7	106,926
Western Creek Diversion	Disturbance for access and drilling	Project does not meet the triggers of the Assurance Plan for the Greater Bilby, Northern Quoll, Pilbara Leaf-Nosed Bat Ghost Bat and Pilbara Olive Python.	Not a Notifiable Action	Feb 2020	15	93,890	0	5.20	5.20	106,921
MAC Surplus Water	Reinjection bores were installed and pipeline constructed.	Area for the Project is included within the MAC/South Flank Validation Notice. No additional ground disturbance or management required to the MAC Validation Notice for this activity.	Not a Notifiable Action	Apr 2020	0	93,890	0	0	0	106,921
Jimblebar Optimisation Project	Clearing of mine infrastructure and exploration drilling areas.	Project fulfils the triggers of the Assurance Plan for the Greater Bilby ( <i>Macrotis lagotis</i> ), Northern Quoll ( <i>Dasyurus hallucatus</i> ), Pilbara Leaf-Nosed Bat ( <i>Rhinonicterus aurantia</i> ), Ghost Bat ( <i>Macroderma gigas</i> ) and Pilbara Olive Python ( <i>Liasis olivaceus barroni</i> ).	Validation Notice	Jun 2020	2,000	91,890	1.9	217.89	219.79	106,701
OB30 Creek Diversion	Creek diversion to allow mining at OB30	Meets the requirements of previous approved under Section 2.3 of the Program. NVCP's and State Agreements were all predate the SEA Approval Notice of 19 June 2017	SEA Exclusion	April 2021	40 ha of disturbance removed from SEA	NA		NA	NA	NA

**Table 6: Total Clearing by Habitat Type**

	Total clearing from July 2018 to June 2020	Total clearing for this FY July 2020 to June 2021	Total clearing for the SEA from July 2018 to June 2021
Habitat Type	(ha)	(ha)	(ha)
Cleared - Disturbed	8.66	0.84	9.50
Drainage Area and Floodplain	127.57	77.86	205.43
Gorge and Gully	29.09	39.37	68.46
Hardpan Plain	6.18	0.00	6.18
Hillcrest and Hillslope	1752.84	516.68	2269.51
Major Drainage Line	0.35	0.40	0.74
Minor Drainage Line	268.47	95.82	364.30
Mulga Woodland	26.03	51.50	77.53
Sand Plain	86.71	58.94	145.65
Stony Plain	66.08	83.19	149.27
Unmapped	1.95	0.00	1.95
<b>TOTAL</b>	<b>2373.94</b>	<b>924.58</b>	<b>3298.52</b>



## 7 Validation Notices

### 7.1 Mining Area C

Mining Area C is located approximately 100 kilometres northwest of the town of Newman in the Pilbara region of Western Australia. The mine is situated within Mineral Lease 281SA (ML281SA) and Mineral Lease 249SA (ML249SA) and is operated by BHP in accordance with the *Iron Ore (Mount Goldsworthy) Agreement Act 1964*.

Mining Area C - Northern Flank Operations commenced in August 2003 under Ministerial Statement 491, issued 24 December 1998. In February 2018, Ministerial Statement 491 was superseded by Ministerial Statement 1072, which covers the existing Northern Flank Operations and the new Southern Flank development. In July 2018, the Mining Area C – South Flank Validation Notice became effective.

In March 2019, BHP submitted a section 45C application to amend MS1072 to allow the disposal of surplus water into a new MAR bore field at South Flank Valley and discharge to a drainage line that leads to Pebble Mouse Creek. This submission was approved on 15 January 2020. An EPBC non notifiable action Decision Report was finalised for the same project in May 2020. All ground disturbance for the project is included in the Mining Area C Validation Notice mentioned above.

Campaign mining continues through conventional open cut mining methods, including drilling, blasting, and categorisation of blasted material into iron ore or waste rock. Fixed and mobile ore crushing facilities are utilised through the operation. Ore is blended into stockpiles onsite and railed to BHP's shipping facilities at Port Hedland from where it is shipped to overseas customers.

Mine dewatering occurs at North Flank. Managed Aquifer Recharge (MAR) continues to be the main method of mine surplus water discharge. The A Deposit MAR ceased to operate in April 2019 to allow for mine expansion in this area. The Juna Downs MAR became operational in May 2019 as a replacement to the A Deposit MAR.

The South Flank Project broke ground in late July 2018 reaching a major milestone in FY2021 achieving first ore on the 20 May 2021. As of 30 June 2021 the South Flank Project was 99 percent complete.

The South Flank Valley MAR commenced commissioning on the 25 February 2021. To date, no water has been discharged to Pebble Mouse Creek

#### 7.1.1 Program Matter Monitoring and Outcomes for FY2021

The monitoring required to be completed during the reporting period is outline in Table 7. Monitoring results are discussed in the following sections.

**Table 7: VN Program Matter Monitoring Required in FY 2021 Reporting Period**

Species	Monitoring	Due Date	Performance Targets	Applicable Program Matter Outcome
<b>Ghost Bat</b>	Land disturbance reconciliation	Annually (See Section 7.1.2)	No land disturbance within 50 m of 'to be retained High value ghost bat caves' or 'artificial ghost bat roosts'.	NA
			No disturbance to any of the 'to be retained High value ghost bat caves' or 'artificial ghost bat roosts'.	
			No disturbance to any 'to be retained ghost bat cave' that renders it unsuitable ghost bat habitat.	
	Population monitoring	July 2023 - Every 5 years during operations.  BHP has implemented the annual Ghost Bat monitoring program (See Section 7.1.3)	Signs of ghost bat use in the 'to be retained' ghost bat caves or artificial roosts (if applicable) within the activity area, within 5 years of cessation of operations.	No loss of Ghost Bat population/s as a result of Program activities.
<b>Pilbara Olive Python</b>	Land disturbance reconciliation	Annually (See Section 7.1.2)	No unauthorised disturbance beyond the activity area	Program activities do not physically disturb, or result in adverse changes to the hydrological regimes and/or water quality of the following waterholes: Weeli Wolli Spring, Ben's Oasis;
	Population monitoring	July 2023 Opportunistic sightings of the Pilbara Olive Python were recorded (See Section 7.1.3.2)	Presence of species consistent with baseline data.	No loss of Pilbara Olive Pythons population/s as a result of Program activities.
	Hydrogeological monitoring	Annually (See Section 7.1.4)	Monitoring commenced 2 years prior to commencement of dewatering of the eastern deposits.	Program activities do not physically disturb, or result in adverse changes to the hydrological regimes and/or water quality of the following waterholes: Weeli Wolli Spring, Ben's Oasis.
<b>Greater Bilby</b>	Land disturbance reconciliation	Annually (See Section 7.1.2)	No unauthorised disturbance beyond the activity area	NA
	Population Monitoring	July 2028	NA	NA
<b>Pilbara Leaf-nosed Bat</b>	Land disturbance reconciliation	Annually (See Section 7.1.2)	No unauthorised disturbance beyond the activity area	NA
	Population Monitoring	July 2028	NA	NA
<b>Northern Quoll</b>	Land disturbance reconciliation	Annually (See Section 7.1.2)	No unauthorised disturbance beyond the activity area	No loss of Northern Quoll habitat that supports a high

Species	Monitoring	Due Date	Performance Targets	Applicable Program Matter Outcome
				density population as a result of Program activities
	Population Monitoring	July 2028	NA	NA

### 7.1.2 Land Disturbance Reconciliation

Disturbance undertaken during the reporting period under the Mining Area C Validation Notice is detailed in Table 5. The disturbance of habitats for all the Program Matters is shown in Table 8, Figure 7.1 and Figure 7.2.

No disturbance has been undertaken at Weeli Wolli Spring or Ben's Oasis by BHP. Based on the disturbance undertaken during the FY2021 reporting period, BHP consider that the Program Matter Outcome:

*Program activities do not physically disturb, or result in adverse changes to the hydrological regimes and/or water quality of the following waterholes: Weeli Wolli Spring, Ben's Oasis;*

has been achieved during the FY2021 reporting period.

The gorge and gully habitats do not support a high density population of Northern Quolls. BHP consider that the Program Matter Outcome:

*No loss of Northern Quoll habitat that supports a high density population as a result of Program activities;*

has been achieved during the FY2021 reporting period.

No land disturbance has occurred within 50m of the retained high value ghost bat caves or artificial ghost bat roosts during the reporting period (Figure 7.3). BHP considers that the performance target in the Validation Notice of:

*No land disturbance within 50 m of 'to be retained High value ghost bat caves' or 'artificial ghost bat roosts'.*

*No disturbance to any of the 'to be retained High value ghost bat caves' or 'artificial ghost bat roosts'.*

*No disturbance to any 'to be retained ghost bat cave' that renders it unsuitable ghost bat habitat.*

have been achieved for the FY2021 reporting period.

No land disturbance has occurred outside of the activity area (Figure 7.2) and disturbance to habitats for each Program Matter remains below the impacts described in the Mining Area C Validation Notice (Table 8). BHP considers that the performances target for the Greater Bilby, Pilbara Olive Python and Northern Quoll in the Validation Notice of:

*No unauthorised disturbance beyond the activity area*

have been achieved for the FY2021 reporting period. All disturbance of habitats for each Program Matter remain below the impacts predicted during the Validation Process (Table 8).

**Table 8: Mining Area C VN Disturbance**

Habitat	Activity disturbance July 2020 to June 2021 (ha)	Total Disturbance from July 2018 to June 2021 (ha)	Mining Area C Predicted Disturbance (ha)
<b>Ghost Bat</b>			
Foraging Habitat	701.48	2,978.78	14,502
Ghost Bat Caves	3	4	36 roosts (impact)
<b>Pilbara Olive Python</b>			
Gorge And Gully	39.37	68.48	1,123
Major drainage	0	0.35	2
Pools	0	0	4 pools
<b>Greater Bilby</b>			
Sand Plain	4.05	90.76	236
Mulga Woodland	2.56	17.40	637
Stony Plain	74.89	140.97	982
<b>Pilbara Leaf-nosed Bat</b>			
Gorge and Gully	39.37	68.48	1,123
Pools	0	0	4 pools
<b>Northern Quoll</b>			
Gorge an Gully	39.37	68.48	1,123

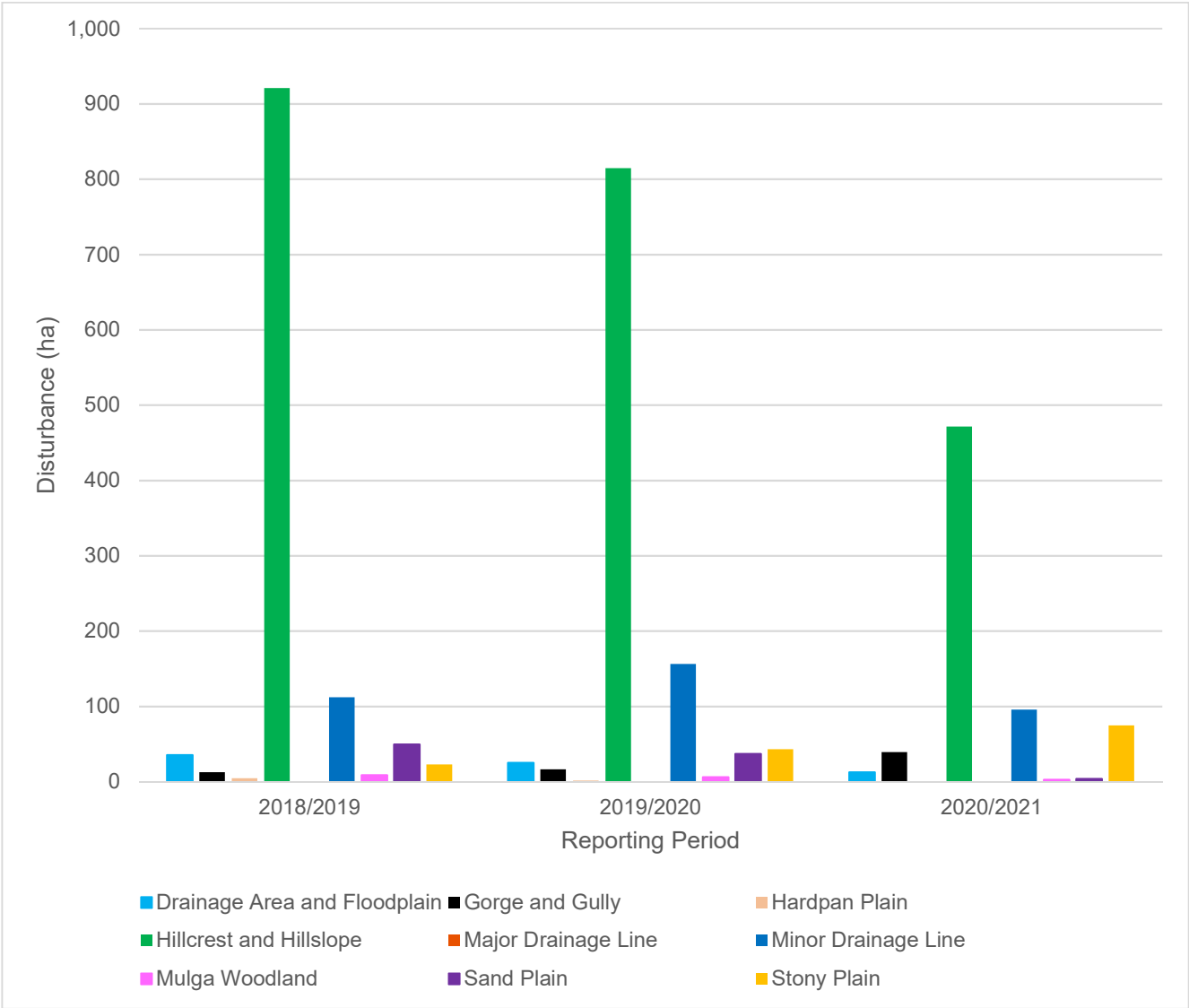
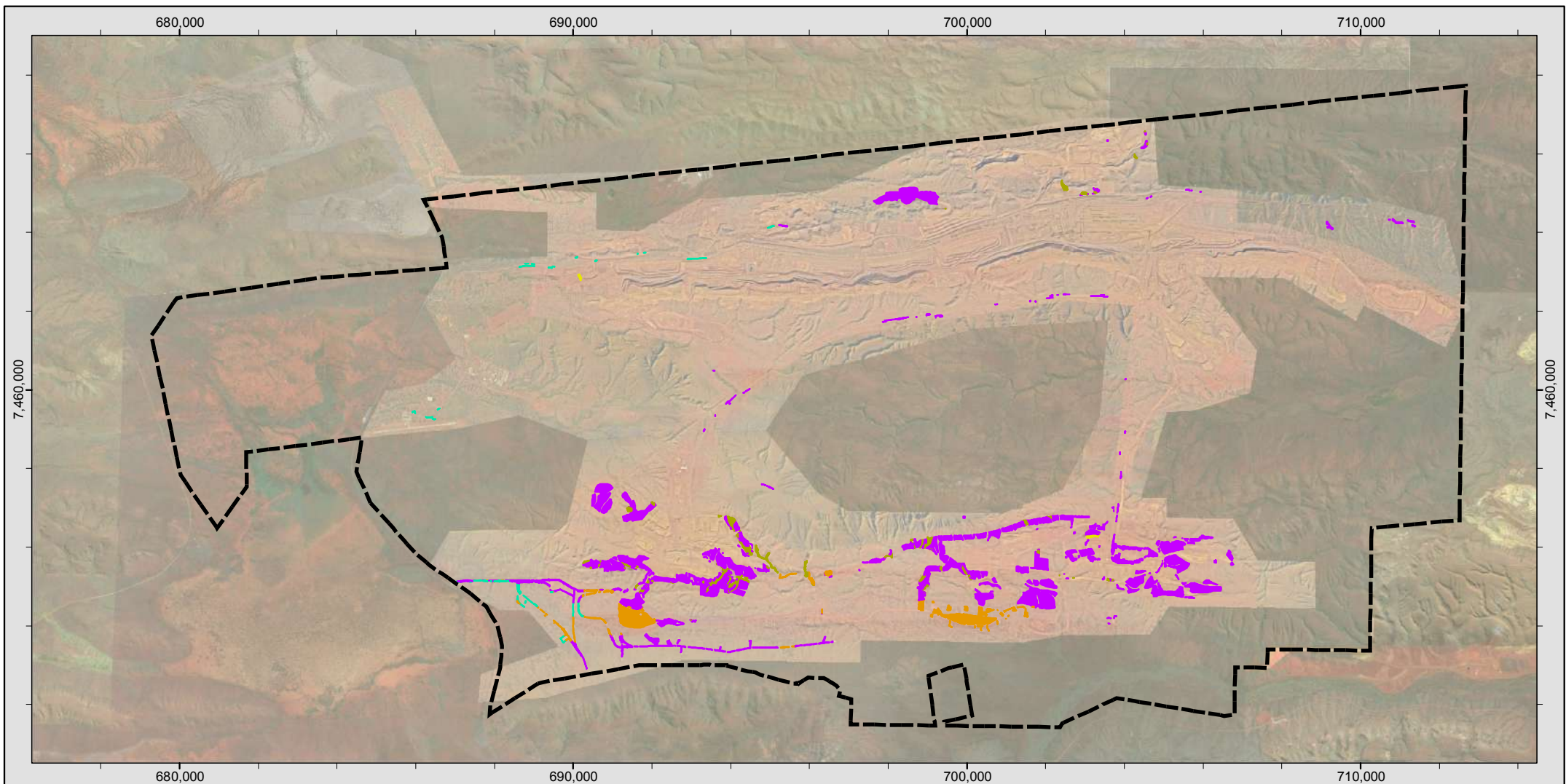


Figure 7.1: SEA Mining Area C Clearing by Habitat July 2018 to July 2021





**BHP**

**Spatial Data - Studies Planning & Access**  
BHP BILLITON IRON ORE

**MINING AREA C - VALIDATION NOTICE**  
Disturbance 2020/2021 Reporting Period

Scale @ A4: 1:140,000	Prepared: P. Gant	Project No: A1033/08 REV A
Date: 7/09/2021	Checked: K. Flowerdew	<b>Figure 7.2</b>
Revision: REV A		

**Legend**



Ministerial Statement 1072

**MAC Validation Notice Disturbance**

- Hillcrest/ Hillslope (FY 21 - 471.5 ha)
- Gorge/ Gully (FY 21 - 39.3 ha)
- Mulga Woodland (FY 21 - 2.6 ha)
- Sand Plain (FY 21 - 4.1 ha)
- Stony Plain (FY 21 - 74.9 ha)

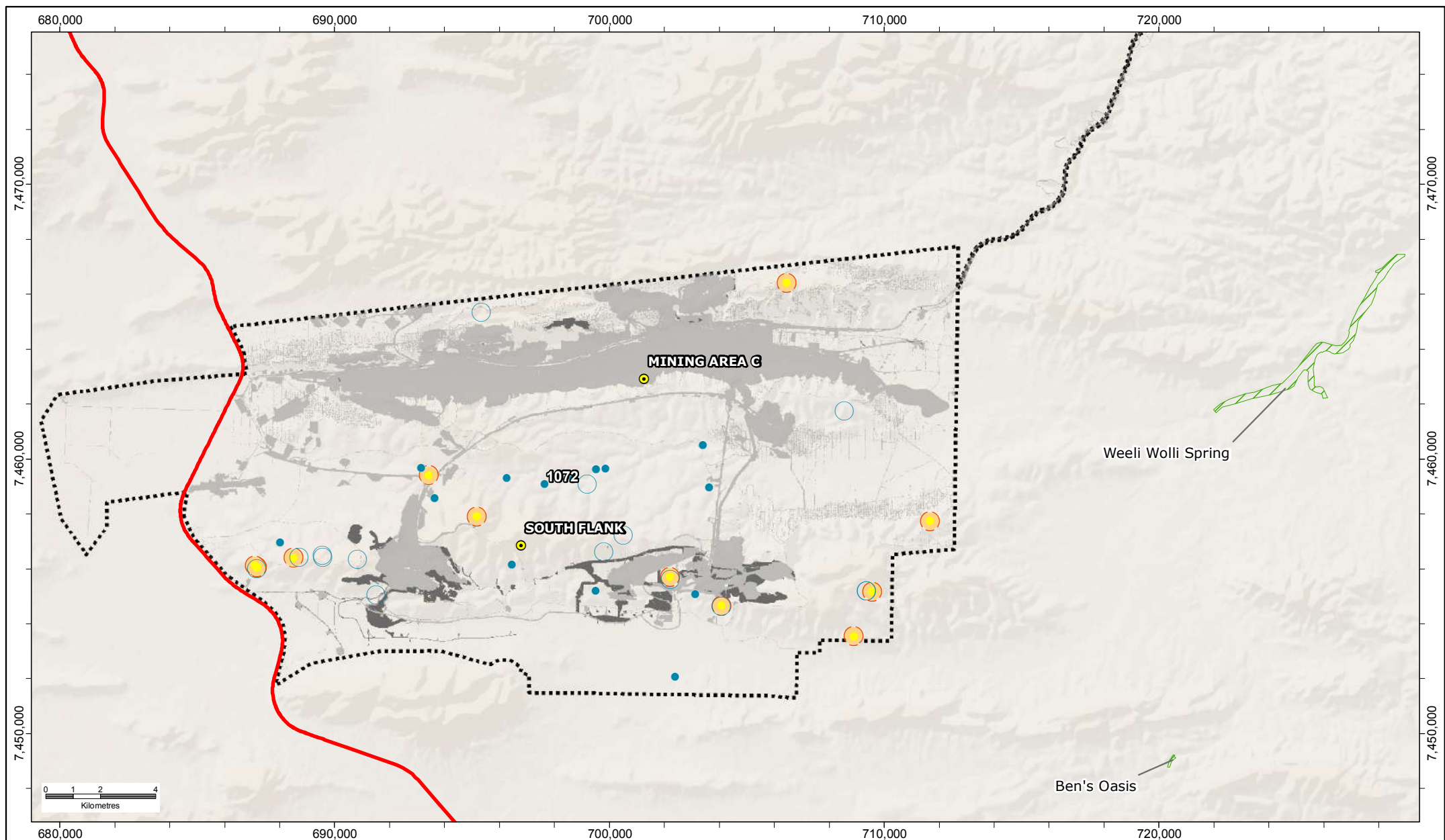
Liability  
BHPBIO does not warrant that this map is free from errors or omissions. BHPBIO shall not be in any way liable for loss, damage or injury to the user of this map or any other person or organisation consequent upon or incidental to the existence of errors or omissions on this map. This map has been compiled with data from numerous sources with different levels of reliability and is considered by the authors to be fit for its intended purpose at the time of publication. However, it should be noted that the information shown may be subject to change and ultimately, map users are required to determine the suitability of use for any particular purpose.



0 1 2 3  
Kilometres

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

**Figure 7.3: Mining Area C Ghost Bat Caves and Disturbance**



**BHP**

## Mining Area C - Validation Notice

South Flank  
Ghost Bat trigger

Date:	30/09/2021	Project No:	A1033	Figure:	7.3
Prepared:	P. Gant	Checked:	K. Flowerdew		

- Waterhole
- Ghost Bat Cave Threshold Areas
- Ghost Bat Cave Trigger Areas
- Ghost Bat Cave Early Indicator Areas
- Low value Ghost Bat Cave Locations to be retained

- VN disturbance FY21
- Previously disturbed footprint
- ⋯ Mining area/ South Flank activity
- ▨ PECBoundaries

### 7.1.3 Population Monitoring

Monitoring of Greater Bilby, Pilbara Olive Python, Pilbara Leaf-Nosed Bat and Northern Quoll populations was not required during the reporting period as per the Validation Notice.

In respect of the Ghost Bat, based on the results of monitoring conducted during the FY2021 reporting period, BHP considers that the Program Matter Outcome:

*No loss of Ghost Bat population/s as a result of program activities*

has been achieved for the FY2021 reporting period.

Based on the continued presence of Ghost Bats at Mining Area C during the reporting period, BHP considers that the performance target in the Validation Notice of:

*Signs of ghost bat use in the 'to be retained' ghost bat caves or artificial roosts (if applicable) within the activity area*

has been achieved for the FY2021 reporting period. Monitoring results are discussed in the following sections.

#### 7.1.3.1 Ghost Bat Monitoring

##### **Sampling**

In FY2021, three field trips were undertaken as part of the scat collection monitoring program to determine presence / absence of Ghost Bats from scat deposits. Targeted caves include; 19 high value retained or retained for minimum 5 years caves (AC13, AC14, AC17, AC18, SF4, SF5, SF8, SF14, SF18, SF26, SF27, AC1, AC2, AC5, AC6, AC8, AC9, SF6), the Mining Area C artificial roost (AGBC), and reference sites at Tandanya and Mt Truchanas (RTIO tenure) (Table 9).

Field trip summaries;

- October 2020, AC13, AC14 and AC18 were not surveyed due proximity of blast activity (less than 1km away within the last 24hrs), or access restricted due blast activity during survey. SF26 was not surveyed due to inaccessible terrain at time of survey. AC09 and SF08 were the only non-reference sites that recorded scats.

- February 2021, access to Mt Truchanas was not granted in time, therefore reference sites at Mt Truchanas were not surveyed. Additionally, heavy rainfall prevented access and survey of reference sites at Tandanya and Mudlark. Two Ghost Bat individuals were observed in SF08 and therefore not entered for scat collection. AC09 was the only non-reference cave that recorded scats.

- May 2021, AC06 and AC18 were not surveyed due to hazardous terrain preventing safe access. AC17 and SF18 were not surveyed due to proximity of blast activity (less than 1km away within the last 24hrs). SF5 was not entered due to evidence of a small rock fall at cave entrance. Reference sites at Mt Truchanas were not surveyed due to ongoing access negotiations. Two Ghost Bat individuals were observed in SF08 and therefore not entered for scat collection. AC09 was the only non-reference cave that recorded scats.

##### **Genotype Analysis**

Genetic and Hormone analysis from monitoring in 2019 was completed by DBCA during the reporting period. A total of 75 unique genotypes (unique individuals) were identified from the 595 successfully genotyped scat samples, including 73 unique genotypes identified within 19 of the Central Pilbara caves (inclusive of Mining Area C – South Flank) and two unique genotypes identified from one of the regional caves (OB3502) (Ottewell *et al.*, 2021). Table 10 shows the caves from which samples were collected.

Samples were genotyped at 44 single nucleotide polymorphism (SNP) loci using a new high-throughput SNP genotyping method. A total of 48 unique genotypes were recorded from 13 caves within the Mining Area C and Southern Flank activity area. The number of individuals recorded from each cave, including reference sites ranged from one to ten (Table 10 and Figure 7.4). The highest abundance of individuals was recorded at caves SF27 and M1 (n = 10), followed by SF08 (n = 9) and SF03 and SF05 (n=7). None of the individuals detected at M1 were recorded at any of the other caves during the monitoring period; whereas seven of the individuals recorded at SF27, SF03 and SF08 were recorded within other caves along the Southern Flank ridge. The highest numbers of individuals recorded within a cave occurred in May 2019 (seven unique genotypes detected at SF27) and August 2019 (10 unique genotypes detected at M1). Only small numbers of genotyped individuals were detected in the remaining sampling periods at these two caves (Table 10).



**Table 9: Scat collection monitoring.**

Cave	Location	Oct 20		Feb 21		May 21	
		No. of Scats present	No. of Bats Present	No. of Scats present	No. of Bats Present	No. of Scats present	No. of Bats Present
AC01	Northern Flank	-	-	0	0	0	0
AC02	Northern Flank	0	0	0	0	0	0
AC05	Northern Flank	-	-	0	0	0	0
AC06	Northern Flank	UA	UA	0	0	UA	UA
AC08	Northern Flank	0	0	0	0	0	0
AC09	Northern Flank	100	0	400	0	200	0
AC13	Northern Flank	UA	UA	0	0	0	0
AC14	Southern Flank	UA	UA	0	0	0	0
AC17	Southern Flank	-	--	0	0	UA	UA
AC18	Southern Flank	UA	UA	0	0	UA	UA
SF04	Southern Flank	-		0	0	0	0
SF05	Southern Flank	0	0	0	0	UA	UA
SF06	Southern Flank	0	0	0	0	0	0
SF08	Southern Flank	300	0	NE	2	NE	2
SF14	Southern Flank	0	0	0	0	0	0
SF26	Southern Flank	UA		0	0	0	0
SF27	Southern Flank	0	0	0	0	0	0
AGBC	Northern Flank	-	-	0	0	0	0
ACW01	Tandanya	120	0	UA	UA	30	0
ACW06	Tandanya	0	0	UA	UA	UA	UA
ACW08	Tandanya	30	0	UA	UA	150	0
ACW10	Tandanya	400	0	UA	UA	21	0
CATH09	Newman	-	-	0	0	0	0
M01	Mudlark	50	0	0	0	0	0
OB35-02	Newman	-	-	0	0	0	0

Note: NE= Not Entered; UA= Not entered due to unsafe access or conditions. '-' denotes not sampled.

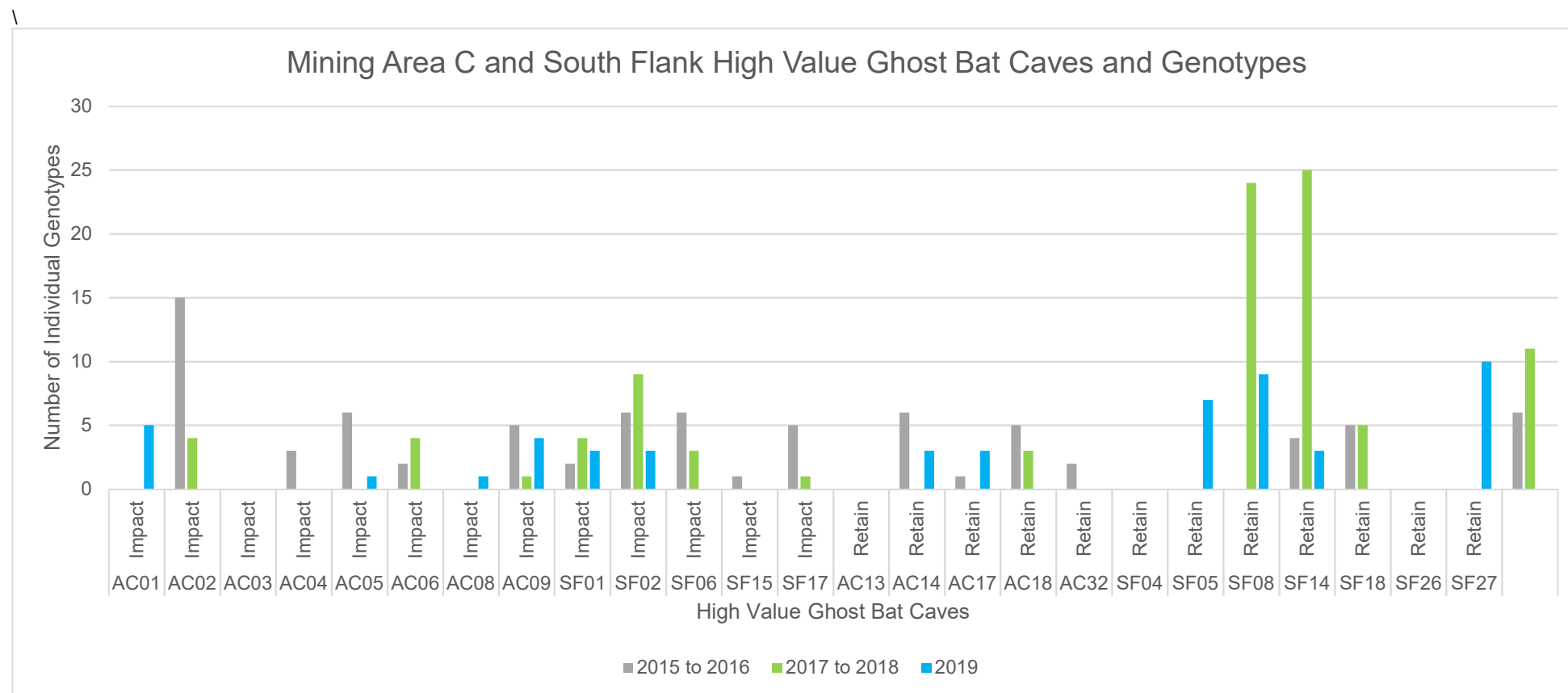
**Table 10: Number of genotyped individuals detected by cave during each monitoring trip (2019)**

Cave	Number of genotyped Individuals detected from each monitoring trip						Total individuals	Individual genotype number
	Feb 19	May 19	Aug 19	Oct 19	Nov 19	Dec 19		
Mining Area C								
SF01			3				3	308, 489, 687
SF02		3					3	467, 520, 671
SF03		6	1				7	473, 497, 527, 530, 672, 673, 674
SF05		3	5	2			7	358, 460, 519, 532, 675, 676, 688
SF06		#					#	
SF08			6	2	3		9	346, 358, 460, 489, 518, 527, 533, 674, 688
SF09		2*	1				3	343, 686, 701
SF14	-	1	1	3			3	343, 677, 690
SF17							-	
SF27		7	2	3*			10	358, 453, 460, 515, 518, 527, 674, 678, 679, 689
AC01		5	2				5	81, 83, 84, 430, 659
AC02							-	-
AC05		1					1	660



Cave	Number of genotyped Individuals detected from each monitoring trip						Total individuals	Individual genotype number
	Feb 19	May 19	Aug 19	Oct 19	Nov 19	Dec 19		
Mining Area C								
AC08	1					#	1	662
AC09	3		2	3	2	2	4	428, 660, 662, 699
AC10		2	2	2			4	84, 118, 431, 663
AC13							-	
AC17		2		1			3	664, 665, 700
Reference Sites								
ACW01	1	3	1	1	1	1	3	4, 412, 437
ACW06	1		3				3	667, 681, 682
ACW07							-	
ACW08		2	5	1			6	24, 26, 447, 669, 683, 684
ACW10	2	1	2	1			5	467, 668, 680, 685, 686
M1	1		10	1			10	272, 293, 691, 692, 693, 694, 695, 696, 697, 698
Eastern Pilbara								
CATH06							-	
CATH09	#						#	
OB3502	2	2				2	2	492, 508

Note: "67" refers to genotypes obtained from scats collected off sheet (age of these scats cannot be guaranteed), '#' entire sample set failed.



**Figure 7.4: Individual genotypes recorded in genetic analyses from high value caves at Mining Area C sampled in 2015 to 2019.**

### Hormone Analysis

Scats collected between February and December 2019 were analysed by the University of Queensland for faecal metabolites (hormones) to determine the occurrence of pregnant individuals within caves. Hormone concentrations were expressed as nanograms of hormone metabolites per gram of faeces (ng/g). Progesterone levels were considered to be elevated (i.e. progesterone levels indicating pregnancy of individual) for results of 970 ng/g or greater.

Of the scat samples analysed, 28.4% of scats contained elevated progesterone levels, indicating the presence of pregnant females. The scats were collected from 16 caves within the Central Pilbara and the regional cave OB35- (Table 11). Due to the timing of surveys 2018, collections made in February and May 2019 included the collection of scats that would have been deposited during the 2018 breeding season. In the Mining Area C activity area, nine caves contained scats with elevated progesterone in 2018, and seven in 2019.

Over the 24-month period between 2018 – 2019, 11 caves in the activity area contained scats with elevated progesterone.

**Table 11: High value caves at Mining Area C with records of presumed pregnant ghost bats as indicated by hormone analyses (Progesterone > 1000 ng/g) from 2014 to 2019**

	2014	2015	2016	2017	2018	2019
<b>Mining Area C</b>						
AC01	Yes		No	Yes	Yes	Yes
AC02			No			
AC03						
AC04						
AC05	No		No	Yes		
AC06						
AC08	Yes		No			
AC09	Yes		No	Yes	Yes	Yes
SF01	Yes	Yes			Yes	Yes
SF02			Yes	Yes	Yes	
SF06				Yes	Yes	
SF15						
SF17						
AC13	Yes		Yes			
AC14						
AC17	No	No	No	Yes	Yes	
AC18						
AC32						
SF04	No	No				
SF05		Yes			Yes	Yes
SF08	No	No		Yes		Yes
SF14	No	No		Yes	Yes	
SF18						
SF26						
SF27		No		No	Yes	Yes
<b>Regional Caves</b>						
ACW01				Yes	Yes	Yes
ACW06						Yes
ACW07				Yes		
ACW08				Yes	Yes	Yes
ACW09						

	2014	2015	2016	2017	2018	2019
<b>ACW10</b>	Yes			Yes	Yes	Yes
<b>M1</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>OB3502</b>			Yes	Yes	Yes	Yes

#### 7.1.3.2 Pilbara Olive Python Opportunistic Sighting

While scheduled targeted monitoring was not required during the reporting period, a Pilbara Olive Python was observed within the activity area by the construction team in May 2021. Photographs of the sightings confirmed the record as a Pilbara Olive Python.

#### 7.1.4 Hydrological Regimes

Based on the monitoring undertaken during the FY2021 reporting period, BHP consider that the Program Matter Outcome:

*Program activities do not physically disturb, or result in adverse changes to the hydrological regimes and/or water quality of the following waterholes: Weeli Wolli Spring, Ben's Oasis;*

has been achieved during the reporting period.

Dewatering of R Deposit and South Flank deposits is not scheduled to commence within the next two years. Baseline groundwater level monitoring continued during the reporting period at the pathway and receptor bores for Weeli Wolli Spring (Table 12 and Figure 7.5) and Ben's Oasis (Table 13 and Figure 7.6).

**Table 12: Groundwater levels for baseline understanding – Weeli Wolli Spring**

Sample Point ID	Weeli Wolli Spring											
	FY21 (mRL)											
	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21
<b>Early Warning</b>												
<b>GWB0013M</b>	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
<b>GWB0014BM</b>	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
<b>GWB0015M</b>	554.95	555.07	-	-	-	554.65	-	-	555.55	555.97	555.47	555.43
<b>GWB0021SM</b>	*	*	*	*	*	*	*	*	*	*	*	*
<b>HEPX0001M</b>	534.2	533.2	532.68	532.18	531.75	531.50	531.21	533.81	534.92	535.21	534.41	533.36
<b>At Receptor</b>												
<b>GWB0016DM</b>	563.81	563.41	563.64	563.59	563.39	562.93	563.89	565.33	564.51	564.89	564.41	564.24
<b>GWB0016SM</b>	564.32	563.54	563.75	563.71	563.53	563.24	563.71	565.11	564.34	564.7	564.24	564.08
<b>GWB0017DM</b>	557.78	557.73	557.73	557.74	557.7	557.69	-	-	556.48	556.55	556.51	556.55
<b>GWB0017SM</b>	556.19	556.14	556.15	556.16	556.15	556.14	-	-	556.28	556.4	556.35	556.41
<b>GWB0018DM</b>	559.43	559.36	559.33	559.3	559.22	559.16	559.78	560.48	560.27	560.51	560.36	560.34
<b>GWB0018SM</b>	559.5	559.34	559.3	559.26	559.21	559.17	560.06	560.77	560.59	560.81	560.79	560.91
<b>GWB0032DM</b>	550.01	-	-	550.01	549.96	550.02	-	-	551.16	551.19	551.16	551.21

- Denotes that no reading was taken.

\* No data available – Bore in RTIO Operations.

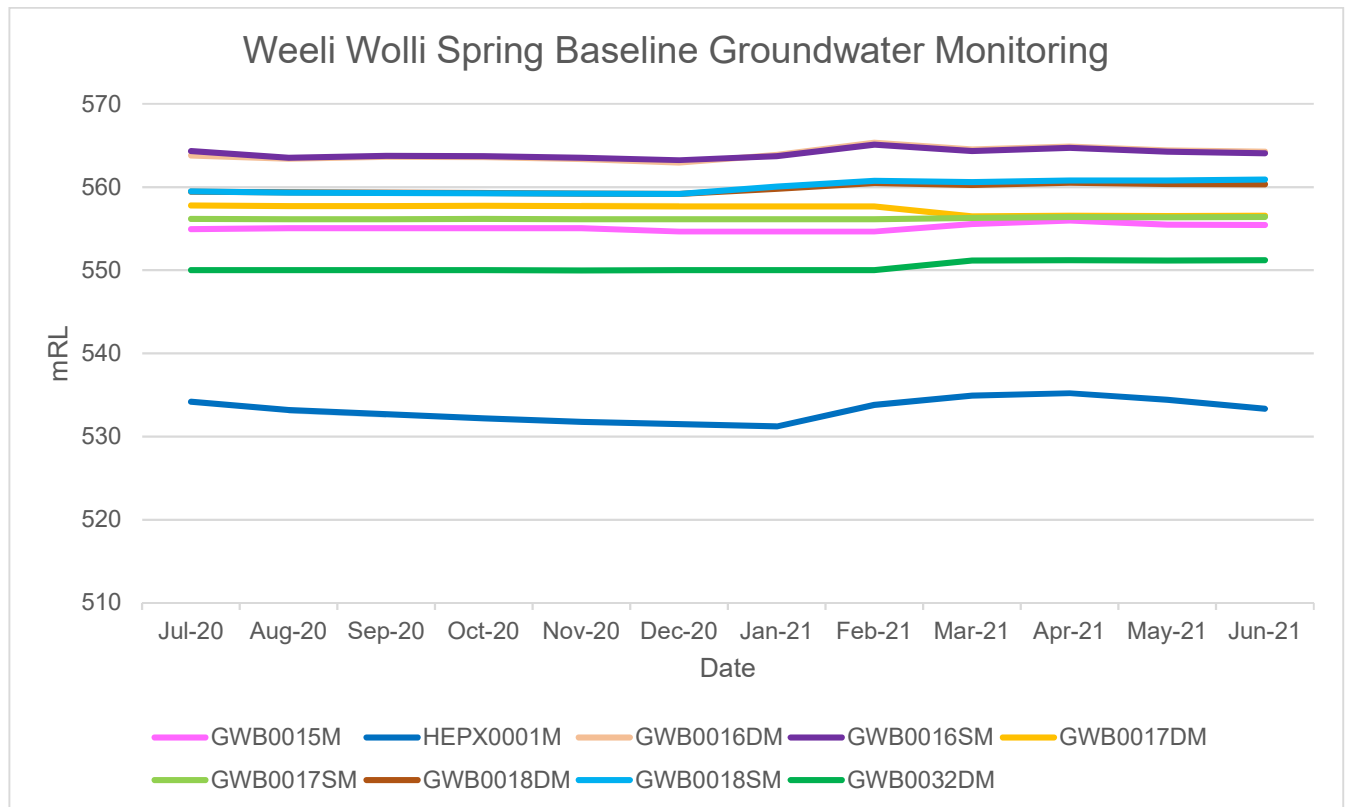
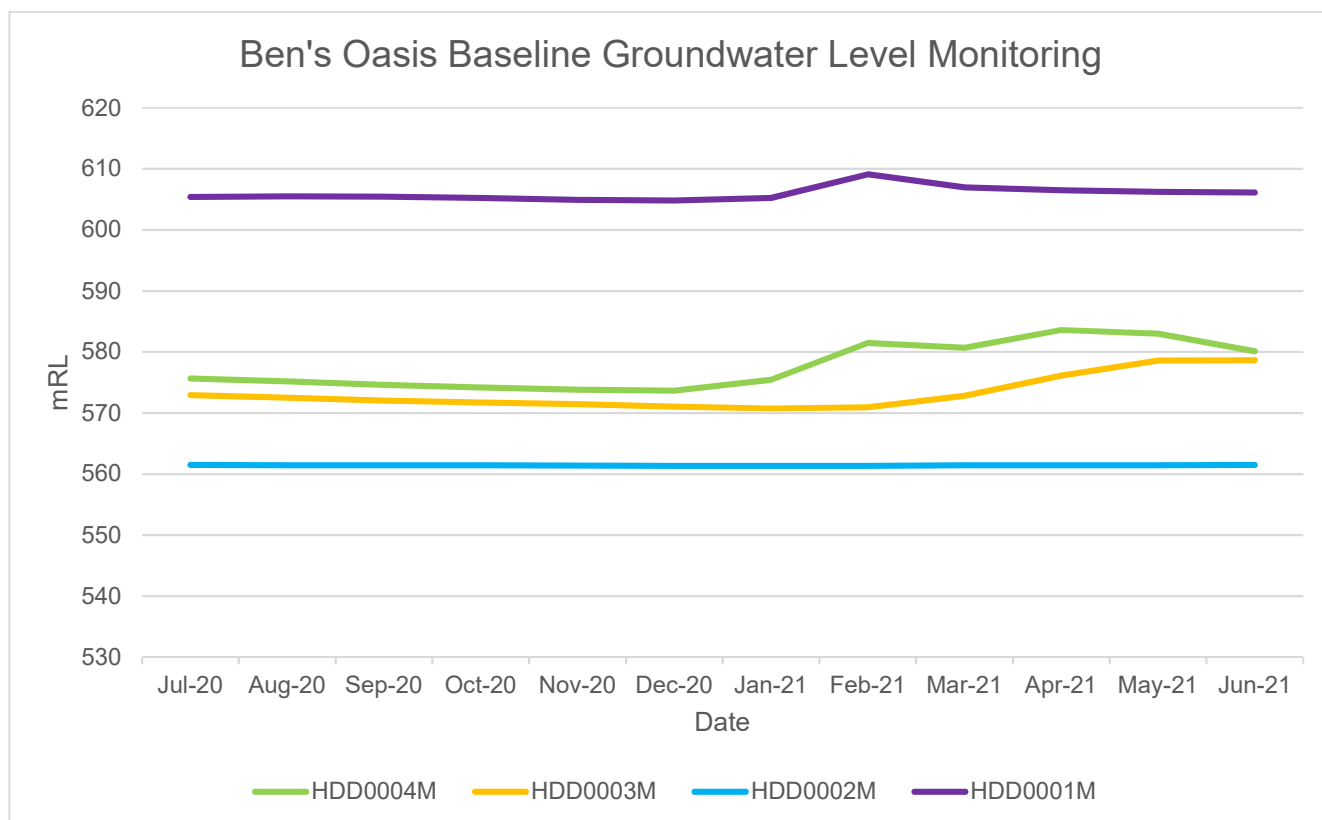


Figure 7.5: Weeli Wolli Spring Groundwater Levels

Table 13: Groundwater levels for baseline understanding – Ben's Oasis

Sample Point ID	Ben's Oasis											
	FY21 (mRL)											
	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21
<b>Early Warning</b>												
HDD0004M	575.65	575.19	574.63	574.19	573.85	573.68	575.47	581.49	580.69	583.61	582.99	580.13
HDD0003M	572.92	572.49	572.04	571.74	571.45	571.05	570.76	570.93	572.82	576.14	578.62	578.66
<b>At Receptor</b>												
HDD0002M	561.49	561.47	561.43	561.47	561.4	561.36	561.33	561.35	561.44	561.45	561.42	561.48
HDD0001M	605.43	605.52	605.48	605.27	604.92	604.83	605.26	609.12	606.97	606.49	606.24	606.15



**Figure 7.6: Ben's Oasis Groundwater Monitoring**

### 7.1.5 Management Commitments

No barbed wire fencing (within 50 km of the activity area) was removed or replaced during the reporting period. Metal bat deflectors were installed on security fences where barbed wire is a statutory design requirement, including the South Flank Security Storage Ammonium Nitrate (SSAN) and the 33kV substation. Planning and stakeholder identification is ongoing to identify areas of barbed wire fencing that can be removed or replaced.

### 7.1.6 Offsets

The MAC Offsets Proposal was submitted 14 December 2018 and is currently under assessment.

## 7.2 Jimblebar Optimisation Project

Mining operations at Jimblebar are located approximately 40 kilometres east of the town of Newman.

Existing mining operations include above and below water table mining of open iron ore pits, overburden storage areas and the operation of associated mine, processing and rail infrastructure. Groundwater is abstracted for water supply and to dewater the orebodies. Surplus water management includes transfer to Ophthalmia Dam, controlled creek discharge and MAR. New overburden storage areas to the south of the existing operation and additional water management options in the Caramulla area include MAR and Caramulla Creek discharge.

The Jimblebar Optimisation Project Validation Notice came into effect on the 8 June 2020.

### 7.2.1 Validation Notice Deviations

Two non-compliances (deviations) with the Jimblebar Optimisation Validation Notice were identified during the reporting period. These are summarised in Table 14.

**Table 14: Non Compliance Summary**

Event Description	Type of non compliance	Cause	Remediation Actions	Further Information
Ghost Bat Monitoring not undertaken as per required schedule	Deviation from management commitment	No formal work routine was in place to trigger six monthly monitoring.	Consultants have now been engaged to complete six monthly monitoring. Work management process confirmations are being added into the system.	Section 7.2.2 and 7.2.3
Bilby pre-clearing surveys not completed	Deviation from management commitment	There were no triggers in place to initiate a survey in areas that were applicable to the Validation Notice.	These areas are now being identified and marked as survey required.	Section 7.2.5

### 7.2.2 Program Matter Monitoring and Outcomes for FY21

Monitoring of Greater Bilby, Pilbara Olive Python, Pilbara Leaf-Nosed Bat and Northern Quoll populations was determined as not required in the Validation Notice. Ghost Bat monitoring required during the reporting period is outlined in Table 15.

**Table 15: VN Program Matter Monitoring Required in FY 2021 Reporting Period**

Monitoring	Required this FY Reporting Period	Minimum Frequency	Performance Targets	Applicable Program Matter Outcome
Monitoring Ghost Bat presence and usage of the activity area.	Yes	Six monthly	Presence or evidence of presence of Ghost Bat at all seven Ghost Bat caves during one monitoring event.	No loss of Ghost Bat population/s as a result of Program activities.

### 7.2.3 Population Monitoring

Ghost Bat monitoring was not completed during the reporting period. BHP is unable to determine if the

*No loss of Ghost Bat population/s as a result of Program activities;*



Was met at Jimblebar for the reporting period.

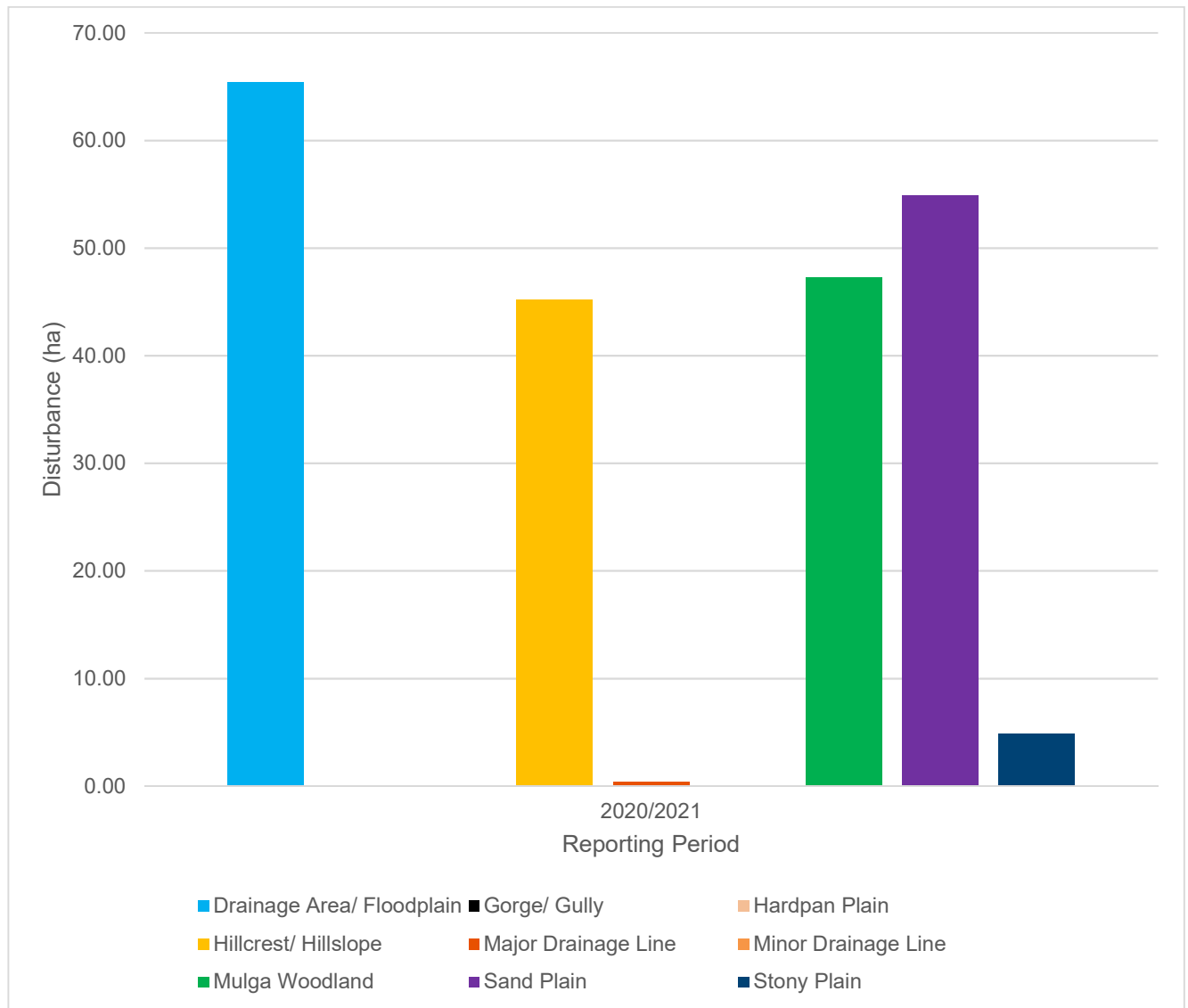
The non compliance was identified during compilation of the annual environmental report. Consultants have been engaged to undertake the FY22 monitoring is being scheduled. Work flows are being created to ensure regular compliance routines for Validation Notices are implemented.

## 7.2.4 Land Disturbance Reconciliation

Disturbance undertaken during the reporting period under the Jimblebar Optimisation Validation Notice is detailed in Table 7. The disturbance of habitats for all the Program Matters is shown in Table 16, Figure 7.7 and Figure 7.8.

**Table 16: Jimblebar Optimisation VN Disturbance**

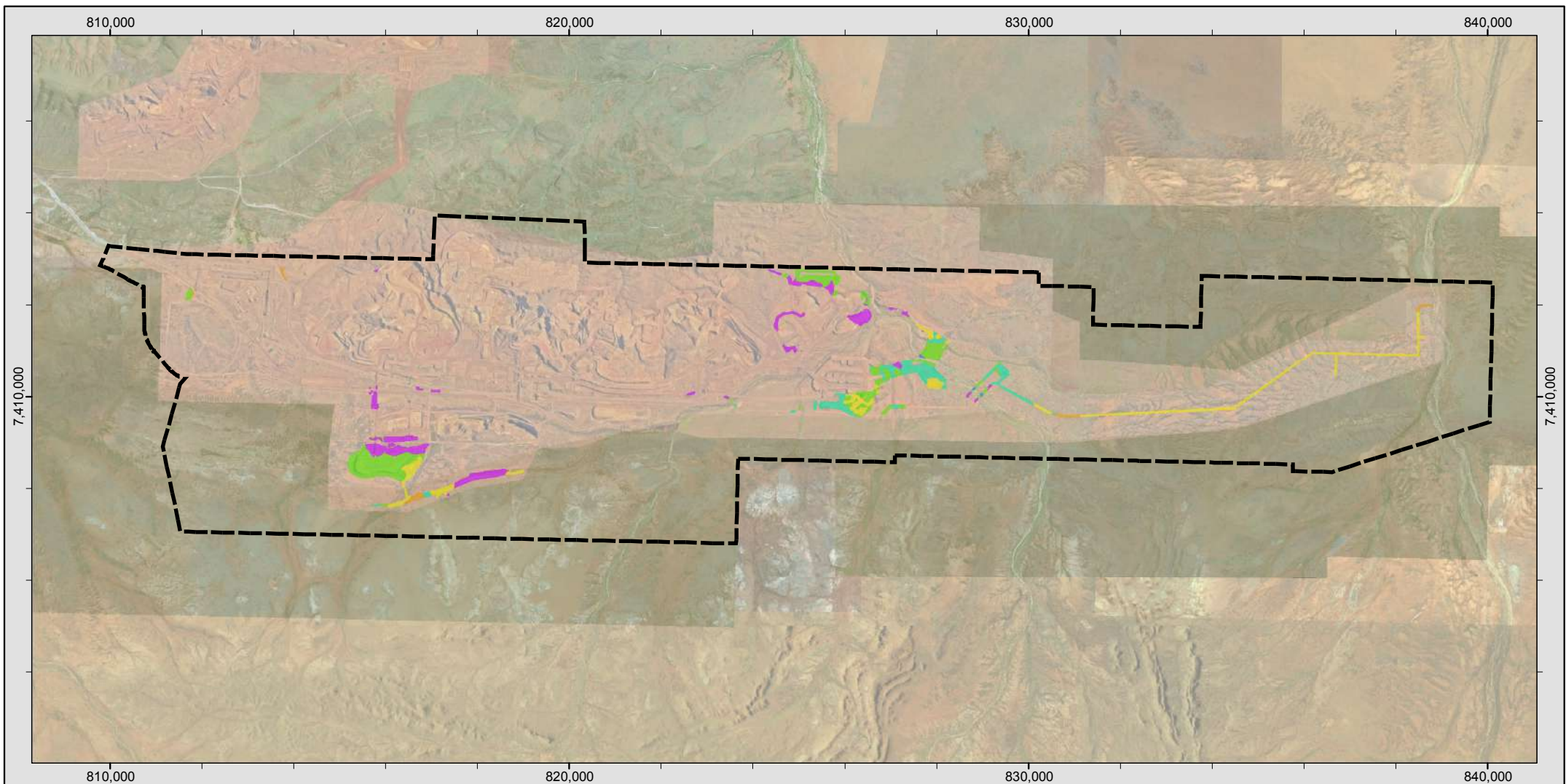
Habitat	Activity disturbance 2020/21 (ha)	Total Disturbance up to June 2021 (ha)	Jimblebar Predicted Disturbance (ha)
<b>Ghost Bat</b>			
Gorge and Gully	0	0	1
Major drainage line	0.4	0.4	33
<b>Pilbara Olive Python</b>			
Gorge and Gully	0	0	1
Major drainage line	0.4	0.4	33
Pools	0	0	0
<b>Greater Bilby</b>			
Sandplain	54.89	54.89	261
Mulga Woodland	47.23	47.23	447
<b>Pilbara Lead-nosed bat</b>			
Gorge and Gully	0	0	1
Major drainage line	0.4	0.4	33
Pools	0	0	0
<b>Northern Quoll</b>			
Gorge and Gully	0	0	1
Major drainage line	0.4	0.4	33



**Figure 7.7: SEA Jimblebar Optimisation VN Clearing by Habitat June 2020 to July 2021**

### 7.2.5 Management Commitments

Pre-clearing surveys will be undertaken to avoid any Greater Bilby's that may move into the activity area. Approximately 54.89 hectares of sandplain and 47.23 hectares of mulga habitat were cleared this reporting period without a pre-clearing survey being completed.



**BHP**

Spatial Data - Studies Planning & Access  
BHP IRON ORE

**JIMBLEBAR OPTIMISATION PROJECT**  
Disturbance 2020/2021 Reporting Period

Scale @ A4: 1:120,000	Prepared: P. Gant	Project No: A1033 REV A
Date: 20/09/2021	Checked: K. Flowerdew	<b>Figure 7.8</b>
Revision: REV A		

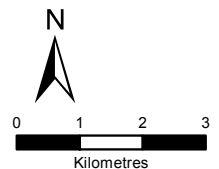
**Legend**

Ministerial Statement 1126

**Jimblebar Optimisation Validation Notice Disturbance**

- Major Drainage Line (FY 21 - 0.4 ha)
- Drainage Area/ Floodplain (FY 21 - 65.4 ha)
- Hillcrest/ Hillslope (FY 21 - 45.2 ha)
- Mulga Woodland (FY 21 - 47.2 ha)
- Sand Plain (FY 21 - 54.9 ha)
- Stony Plain (FY 21 - 4.8 ha)

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Datum: GDA 1994