



NT DEPARTMENT OF LANDS, PLANNING AND ENVIRONMENT

# McArthur River Mine Independent Monitor

## Mine Rehabilitation Audit



03 December 2025

Level 23, 123 Albert Street

Brisbane QLD 4000

PO Box 15081, City East QLD 4002

Australia

T: +61 7 3377 7000

Worley Consulting Pty Ltd

ABN 50 098 008 818

© Copyright 2025 Worley ACN 096 090 158. No part of this document or the information it contains may be reproduced or transmitted in any form or by any means electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from Worley.

[worley.com](http://worley.com)



## Disclaimer

This report has been prepared on behalf of and for the exclusive use of Northern Territory Government Department of Lands, Planning and Environment (DLPE) , and is subject to and issued in accordance with the agreement between Customer name and Worley Consulting Pty Ltd. Worley Consulting Pty Ltd accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this report by any third party. Copying this report without the permission of DLPE or Worley Consulting Pty Ltd is not permitted.

Details on how personal information provided to Worley is processed can be found at <https://www.worley.com/site-services/privacy>.

## Table of contents

|     |  |    |
|-----|--|----|
| 1.  | Introduction .....                                 | 3  |
| 1.1 | Audit Objectives.....                              | 3  |
| 1.2 | Scope – Rehabilitation Management Plan .....       | 3  |
| 1.3 | Regulatory Framework .....                         | 4  |
| 1.4 | Context.....                                       | 5  |
| 2.  | Methodology .....                                  | 6  |
| 2.1 | Approach .....                                     | 6  |
| 2.2 | Process .....                                      | 7  |
| 2.3 | Reference Documents .....                          | 8  |
| 2.4 | Audit Team.....                                    | 8  |
| 3.  | Key Findings .....                                 | 10 |
| 3.1 | Overview.....                                      | 10 |
| 3.2 | Audit Observations .....                           | 10 |
| 3.3 | Rehabilitation Management Plan Key Objectives..... | 32 |
| 4.  | Opportunities for Improvement .....                | 36 |
| 5.  | Conclusion .....                                   | 39 |

## Appendices

No table of contents entries found.

## List of tables

|  |    |
|--|----|
| Table 2-1: Objectives identified as relative to rehabilitation at McArthur River Mine..... | 6  |
| Table 2-2: Guidelines for implementation rating .....                                      | 7  |
| Table 2-3: Key Reference Documents.....  | 8  |
| Table 3 -1: Audit observations and opportunities for improvement.....                      | 11 |
| Table 3-2: Rehabilitation objectives, audit findings and corresponding audit ratings.....  | 32 |
| Table 4-1: Opportunities for improvement.....  | 37 |

## Acronyms and abbreviations

| Acronym/abbreviation | Definition   |
|----------------------|--|
| BGM                  | Bituminous Geomembrane   |
| DLPE                 | Northern Territory Department of Lands, Planning and Environment |
| DML                  | Deemed Mining Licence  |
| ISO                  | International Organisation for Standardisation                   |
| LWD                  | Large Woody Debris   |
| MMA                  | Mining Management Act  |
| MRM                  | McArthur River Mine  |
| NOEF                 | North Overburden Emplacement Facility                            |
| OBS                  | Observations   |
| OFI                  | Opportunity for Improvement                                      |
| RMP                  | Rehabilitation Management Plan                                   |
| TARP                 | Trigger Action Response Plan                                     |
| The Mine             | McArthur River Mine  |

## Executive Summary

Worley Consulting was commissioned by the Northern Territory Government Department of Lands Planning and Environment (DLPE) to undertake Independent Monitor services for the McArthur River Mine (the Mine), as required under the Deemed Mining Licence (DML) conditions. This report presents the findings of the rehabilitation audit conducted between 04 June and 05 June 2025 assessing the implementation of the Rehabilitation Management Plan (RMP), revegetation strategy, monitoring programs, and completion criteria.

### Audit Scope and Objectives

The audit assessed the Mine's performance against the RMP's key environmental objectives, which include:

- Facilitating the development of the ecosystem and its functions for terrestrial and aquatic flora and fauna
- Minimising impacts on the surrounding terrestrial and aquatic environments
- Managing the geomorphological status of revegetated areas (e.g. reduce erosion and improve stability)
- Improving visual amenity

The audit also evaluated the effectiveness of revegetation efforts and monitoring programs, with a view to identifying performance gaps and opportunities for improvement.

### Rehabilitation Progress

Rehabilitation efforts have been ongoing for over 15 years, particularly along the McArthur River and Barney Creek Diversion Channels. The upper and lower reaches of these channels demonstrate encouraging signs of ecological recovery, including canopy cover and/or structural complexity, supported by irrigation and erosion control measures. However, the upper reaches of the McArthur River Diversion Channel exhibit low species diversity, dominated by a monoculture of *Melaleuca* trees, which may slow long-term ecological resilience.

The middle section of the McArthur River Diversion Channel shows limited revegetation success due to steep slopes, rocky substrates, and high-velocity wet season flood flows that erode topsoil and displace seedlings. These physical constraints present ongoing challenges to achieving stable and diverse vegetation cover. This is also apparent at the Barney Creek Diversion Channel, but to a lesser degree, likely from reduced duration of water flow.

Landform construction and/or cover rehabilitation activities aimed at reducing erosion and improving stability have been implemented on the North Overburden Emplacement Facility (NOEF) and the Mine Levee. However, revegetation trials scheduled for these areas under the 2021–2023 RMP have not yet commenced. This delay risks meeting closure objectives and limits opportunities for adaptive management and learning.

### Nursery Operations

MRM's nursery facilities are well-equipped and capable of producing over 100,000 tube stock annually. The nursery includes climate-controlled seed storage, propagation areas, greenhouses, and automated irrigation systems. Approximately 80% of seeds used for revegetation are locally sourced, enhancing plant adaptability and survival rates. Involving the Rehabilitation Team in propagation and planting activities fosters ownership and accountability, contributing to improved rehabilitation outcomes.

## Performance Assessment

The audit evaluated performance against 11 specific objectives derived from the RMP. Performance against one objective was rated “good,” two were rated “very poor,” and the remainder ranged from “good” to “poor.” Areas of relatively high performance include:

- Progressive rehabilitation of mine landforms, particularly diversion channels and exploration drill pads
- Implementation of thorough and regular rehabilitation monitoring, which supports issue detection, trend analysis, adaptive management, and regulatory compliance
- Demonstrated habitat connectivity along diversion channels for aquatic fauna
- Progress of effective erosion control measures on exposed batters of the NOEF

## Performance Gaps

While the Operator has demonstrated positive progress in some areas, the audit identified gaps that remain in planning, implementation and documentation. Opportunities for improvement to address these gaps include:

- Revise the RMP to reflect current site conditions, regulatory expectations, and best-practice guidelines. Incorporate lessons learned and redefine completion criteria to ensure they are achievable, measurable, and focused on rehabilitation outcomes
- Enhance monitoring and data analysis to support year-on-year comparative assessments and track trends in progressive rehabilitation
- Develop a centralised revegetation data management system to improve information capture and accessibility
- Accelerate revegetation trials on the NOEF, using phased approaches to inform effective techniques and support closure planning
- Allocate resources to strengthen internal capacity and ensure rehabilitation is integrated into broader mine operations

## Conclusion

The audit found that the Mine has adopted a generally positive approach to meeting RMP objectives, with varying levels of success across different areas of the site. While some rehabilitation activities demonstrate strong planning and implementation, others lag behind scheduled progress. Addressing the identified gaps and implementing the opportunities for improvement will enhance the resilience of the rehabilitation program, progressively improve environmental outcomes, and ensure alignment with regulatory expectations.

## 1. Introduction

---

Worley Consulting was engaged by the Northern Territory Government Department of Lands, Planning and Environment (DLPE) to undertake Independent Monitor services for the McArthur River Mine (the Mine), in accordance with the Independent Monitoring Assessment Conditions of Authorisation 0059.

As part of the Independent Monitor's environmental performance assessment, an audit was undertaken of the McArthur River Mine Operator's (the Operator's) rehabilitation activities. This audit report aims to provide the local community transparency regarding:

- Actions taken by the Operator to support continuous improvement in the Mine's environmental performance, particularly in protecting the health of McArthur River from mine-related impacts
- The adequacy and implementation of rehabilitation monitoring and management to support progress towards mine closure objectives

### 1.1 Audit Objectives

This audit assessed implementation of the vegetation rehabilitation strategy, monitoring program, performance indicators, management measures and completion criteria at the Mine. The audit considered performance of the Operator against the Rehabilitation Management Plan 2021-2023, Version 1, March 2021 (RMP), noting the overarching objectives of the RMP to:

- Facilitate the development of the ecosystem and its functions for terrestrial and aquatic flora and fauna.
- Minimise impacts on the surrounding terrestrial and aquatic environments.
- Manage the geomorphological status of revegetation areas (e.g. reduce erosion and improve stability).
- Improve visual amenity.

Performance was evaluated considering time-relevant objectives set out in the RMP.

### 1.2 Scope – Rehabilitation Management Plan

The RMP covers revegetation of the McArthur River and Barney Creek Diversion Channels, in addition to progressive revegetation of the North Overburden Emplacement Facility (NOEF). The RMP does not address rehabilitation of other mine domains in detail, and as such, rehabilitation of other mine domains was only considered generally in the audit. The RMP states that rehabilitation of other mine domains will be developed further in future versions of the RMP.

The audit examined:

- Regulatory requirements
- Existing environmental conditions in the Mine's vicinity
- Rehabilitation works undertaken to date

- Rehabilitation planning processes (strategy)
- Methods and implementation of rehabilitation activities
- Revegetation actions completed during the RMP period
- Objectives, performance indicators and completion criteria to evaluate progress
- The monitoring program
- Contingency/adaptive management measures

Relevant supporting management plans that were reviewed include the Pest Management Plan, Cattle Management Plan, Weed Management Plan, and Bushfire Management Plan.

As part of the audit of the Operator's performance against the RMP, consideration was given to current rehabilitation management planning requirements for large-scale mining operations in other jurisdictions. This included:

- Western Australia – Guidelines and frameworks for developing mine closure plans and completion criteria under the *Mining Act 1978* and *Mining Regulations 1981*
- Queensland – Progressive Rehabilitation and Closure Plan (PRCP) requirements and the Mined Land Rehabilitation Policy under the *Environmental Protection (Rehabilitation Reform) Amendment Regulation 2019*
- New South Wales – Operational Rehabilitation Reforms, *Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2020*

The audit did not consider rehabilitation performance at Bing Bong Loading Facility. Also, it did not consider compliance with regulatory approval conditions or assessment of the following topics:

- Cultural heritage and socio-economics
- Freshwater ecology

This audit has assessed the Operator's performance at a point in time (04-05 June 2025), with consideration of performance over the preceding four years. Findings are based on samples of information, as complete review of all data was not feasible.

## 1.3 Regulatory Framework

The Mine's regulatory requirements in relation to rehabilitation are covered in the Deemed Mining Licence (DML0059-01) issued 23 July 2024 on the basis of no changes from the previous Authorisation 0059 issued under the Mining Management Act 2001 (MMA).

The DML requires that the Operator must undertake monitoring in accordance with the Rehabilitation Management Plan approved in the Mine Management Plan.

The DML also prescribes the roles and responsibilities of the Independent Monitor, including independent assessment of the environmental performance of the Mine. This rehabilitation audit undertaken by the Independent Monitor is in addition to the environmental performance audit completed annually.

## 1.4 Context

The diversion of McArthur River and Barney Creek has caused extensive disturbance to terrestrial ecosystems through vegetation clearing, soil disruption, and the construction of engineered landforms. These modifications have fragmented native habitats, reduced vegetation cover, and altered natural surface hydrology, affecting habitat quality for both terrestrial and aquatic fauna. The removal of riparian vegetation has disrupted ecological corridors, limiting species movement—particularly for small mammals, reptiles, and ground-dwelling birds that depend on continuous habitat for shelter and foraging.

A key challenge for rehabilitation lies in the re-establishment of native vegetation communities along the diversion channels. Successful rehabilitation requires restoring soil structure, managing erosion, and implementing effective weed control to support natural regeneration. Invasive species, altered fire regimes, and unmanaged grazing pressure can continue to threaten the recovery of disturbed areas, potentially limiting biodiversity and long-term ecological function. The replacement of natural riparian systems with engineered forms, i.e. trapezoidal shaped diversion channel, also reduces habitat complexity and hinders recolonisation by native species, further affecting ecosystem resilience.

Ongoing monitoring is essential to track progress in vegetation establishment, faunal return, and restoration of ecological processes such as pollination, nutrient cycling, and recruitment. Rehabilitation success depends on the use of locally sourced native species, adaptive management, and alignment with control ecosystem conditions. The goal for rehabilitation is to establish self-sustaining, structurally diverse plant communities that support native fauna and reflect pre-disturbance or target ecosystem characteristics.

Revegetation monitoring has found revegetation efforts over more than 15 years have been largely successful within the upper and lower reaches of the McArthur River Diversion Channel and the lower reaches of the Barney Creek Diversion Channel, where a canopy and/or diverse vegetation has been established. Conversely, in the middle-section of the McArthur River Diversion Channel and the middle reaches of the Barney Creek Diversion Channel, the survivability of plantings has been challenged. Unfavourable rocky outcrops and the adverse impact of flooding upon topsoil and seedlings is linked to the limited establishment of vegetation in these sections. Further, while the upper reaches of the McArthur River Diversion Channel have adequate canopy cover and vegetation stability, they lack species and structural diversity. Revegetation trials in other key areas of the Mine namely, the NOEF or on the Mine Levee have not yet commenced.

## 2. Methodology

---

### 2.1 Approach

An audit site visit and interviews were conducted on 04 and 05 June 2025. The audit approach involved a series of coordinated steps, including:

- Audit framework
- Audit schedule
- Audit plan
- Pre-audit scoping meetings
- Request for Information (RFI)
- Document review
- Site visit opening meeting
- Interviews
- Site inspection
- Site visit closing meeting
- Discussions on matters identified during interviews and document review
- Audit report (draft and final).

The RMP (Section 6.3.1) defines rehabilitation objectives for the Mine across three timeframes: short-term (within 10 years), medium-term (10 to 50 years), and long-term (beyond 50 years), covering two main areas - diversion channels (McArthur River and Barney Creek) and the North Overburden Emplacement Facility. These objectives largely mirror those established in a previous version of the Rehabilitation Management Plan (2018), positioning the current audit within the final period of the short-term objectives. Consequently, the audit focussed on evaluating activities and planning related to the short-term objectives. The audit also reviewed progress made toward the medium and long-term objectives outlined in the RMP, where these differed in goal and were not captured by the short-term objectives. Further, additional objectives relevant to the audit were identified through detailed review of the RMP. Rehabilitation objectives considered as part of the audit are detailed in Table 2-1.

*Table 2-1: Objectives identified as relevant to rehabilitation at McArthur River Mine*

| No.                | Key Objectives  | Source                      |
|--------------------|---|-----------------------------|
| Diversion Channels |   |                             |
| 1                  | Vegetation communities similar to control areas of McArthur River and Barney Creek are in the process of being progressively established along the McArthur River and Barney Creek Diversion Channels | RMP – Short-term objectives |
| 2                  | The river systems have been stabilised through the reduction of water velocity and implementation of appropriate erosion control methods  | RMP – Short-term objectives |
| 3                  | Rehabilitation success has been assessed along the McArthur River and Barney Creek Diversion Channels through the continued monitoring of riparian birds, aquatic fauna and vegetation                | RMP – Short-term objectives |

| No.  | Key Objectives   | Source  |
|--|--|---|
| 4  | Habitat connectivity has been developed/improved as indicated by aquatic fauna and riparian bird monitoring.   | RMP – Medium-term objectives                                |
| <b>North Overburden Emplacement Facility</b> |  |   |
| 5  | Vegetation communities similar to desired grassland ecosystem are in the process of being progressively established, including species diversity and natural recruitment                   | RMP – Short-term objectives                                 |
| 6  | The batters have stabilised through the implementation of appropriate erosion control methods and design   | RMP – Short-term objectives                                 |
| <b>General</b>                               |  |   |
| 7  | The adaptive management process and continual learning loop have been used to refine rehabilitation practices  | RMP – Short-term objectives                                 |
| 8  | Undertake rehabilitation and revegetation trials as required   | RMP – Future Programs and Considerations (Section 6.7)      |
| 9  | Progressive rehabilitation of mine landforms and other disturbances will be undertaken as infrastructure becomes redundant and is decommissioned   | RMP – Progressive Rehabilitation (Section 6.11)             |
| 10   | Rehabilitation monitoring results will be assessed annually to identify if rehabilitation is trending towards the completion criteria  | RMP – Adaptive Management and Closure Planning (Section 10) |
| 11   | RMP will be reviewed annually, revised following planning and/or legislative amendments, as a result of trials and monitoring recommendations, or as per the adaptive management framework | RMP – Review and Reporting (Section 11)                     |

## 2.2 Process

The audit was undertaken in alignment with the approach and principles of the International Organisation for Standardisation (ISO) 19011 (2018) Guidelines for auditing management systems. The key principles underpinning the audit included: integrity; fair presentation; due professional care; confidentiality; independence; and use of an objective evidence-based and risk-based approach.

The level of implementation of each RMP objective (refer Section 3.3) was evaluated and assigned a qualitative rating of 'very good', 'good', 'satisfactory', 'poor', or 'very poor' according to the guidelines in Table 2-2. When multiple ratings could apply, the most conservative (lowest) score was selected.

Table 2-2: Guidelines for implementation rating

| Rating       | Guidelines  |
|--------------|---|
| Very Poor    | Very low level of implementation based on sample evidence<br>Negligible/no evidence of action<br>Lack of plan to address requirement                      |
| Poor         | Low level of implementation based on sample evidence<br>Limited evidence of action<br>Limited plan to address requirement                                 |
| Satisfactory | Adequate level of implementation based on sample evidence<br>Medium level of evidence of action<br>Plan to address requirement, but not fully implemented |
| Good         | High level of implementation based on sample evidence   |

| Rating    | Guidelines   |
|-----------|--|
|           | High level of evidence of action<br>Implemented a plan to address requirement  |
| Very Good | Very high level of implementation based on sample evidence<br>Very high level of evidence of action<br>Implemented a plan to address requirement |

## 2.3 Reference Documents

The main reference documents considered during the audit are listed in Table 2-3.

Table 2-3: Key Reference Documents

| No. | Reference Document   | Document Source |
|-----|--|-----------------|
| 1   | Rehabilitation Management Plan McArthur River Mine 2021-2023                           | Operator        |
| 2   | Rehabilitation Management Plan McArthur River Mine 2018-2020                           | Operator        |
| 3   | Revegetation Monitoring Report 2023  | Operator        |
| 4   | Revegetation Monitoring Report, July 2025  | Operator        |
| 5   | Adaptive Management Plan October 2021  | Operator        |
| 6   | Mining Management Plan McArthur River Mine 2024  | Operator        |
| 7   | Cattle Management Plan, McArthur River Mine, March 2022                                | Operator        |
| 8   | Weed Management Plan, McArthur River Mine, September 2023                              | Operator        |
| 9   | Fire (Bushfire) Management Plan., McArthur River Mine, 2018                            | Operator        |
| 10  | Unplanned Closure Plan, McArthur River Mine, May 2024                                  | Operator        |
| 11  | Trial Feral Cat Monitoring and Management, McArthur River Mine, October 2023,          | Operator        |
| 12  | MRM Site-Wide Weed Assessment, September 2024  | Operator        |
| 13  | Independent Monitoring Assessment Conditions, Schedule C of Variation of Authorisation | DLPE            |

## 2.4 Audit Team

The Audit Team who conducted the site audit and prepared the audit report consisted of staff from Worley Consulting and a Terrestrial Ecology specialist from Biodiversity Assessment and Management Pty Ltd with relevant experience and qualifications listed in (Table 2-4).

Table 2-4: Audit Team Members

| Role   | Qualifications  | Number of Years' Experience |
|--|---|-----------------------------|
| Lead Environmental Auditor   | B. Eng., Master of Env. Mgmt.<br><br>Internationally Certified Master Environmental Auditor | 34                          |
| Mine Rehabilitation Specialist,<br>Assistant Environmental Auditor | B. Sci (Honours), PhD (Restoration Ecology)   | 23                          |

## 3. Key Findings

---

### 3.1 Overview

Findings of the audit are presented as narratives in the following sections:

- Section 3.2 – Audit Observations
- Section 3.3 – Rehabilitation Management Plan Key Objectives.

These sections also include identified Opportunities for Improvement (OFIs) and notable successes. All OFIs have been consolidated in Section 4 for clarity and reference.

### 3.2 Audit Observations


This section focuses on revegetation and habitat, as well as associated environmental issues and potential opportunities for improvement. Observations were informed by the following sources:


- Review of mine documentation including the RMP
- Interviews with key site personnel:
  - Superintendent – Environment
  - Lead Environmental Advisor
  - Senior Environmental Advisor – Rehabilitation
  - Environmental Officer - Compliance, Reporting and Approvals
  - Rehabilitation Supervisor
  - Senior Environmental Advisor, Monitoring Team
- Audit opening and closing meetings with key site personnel (above) and Mine Senior Managers:
  - Mine Manager
  - Manager - Health Safety and Environment

Audit observations (OBS) are summarised in Table 3 -1. Some observations reflect good practice and serve to document effective current site management. Where practices were assessed as good or satisfactory and no further action is recommended, 'nil' is recorded in the Opportunity column. Opportunities for improvement (OFI) identified during the audit have also been summarised in the Opportunity column.


Table 3 -1: Audit observations


| Aspect        | Item | Observation   | Opportunity |
|---------------|------|---|-------------|
| Plant Nursery | 1    | <p>The Mine nursery had excellent facilities, appeared organised and effective for the needs of providing local, acclimatised plants for revegetation activities, refer photos 1 and 2. This included:</p> <ul style="list-style-type: none"> <li>• A climate-controlled seed storeroom,</li> <li>• Soil mixing bays,</li> <li>• Dedicated propagation and potting-up areas,</li> <li>• Multiple greenhouses with variable shade-cloth covers (providing different light conditions),</li> <li>• Unshaded hardening-off areas,</li> <li>• Automated irrigation and drainage systems, and</li> <li>• Effective plant, pest and disease procedures.</li> </ul> <p>The nursery has achieved annual production volumes of more than 100,000 tube stock.</p> <p>80% of the nursery tube stock is produced from seed collected by the Mine's Rehabilitation Team harvested from the local area.</p> | Nil         |


| Aspect | Item | Observation  | Opportunity |
|--------|------|--|-------------|
|        |      |  <p data-bbox="504 1093 1310 1125">Photo 1: Plants and tube stock seedlings growing in one of the nursery greenhouses</p> |             |


| Aspect        | Item | Observation  | Opportunity |
|---------------|------|--|-------------|
|               |      |  <p data-bbox="504 1109 996 1133">Photo 2: 'Hardening-off' area at the Mine's nursery</p>   |             |
| Plant Nursery | 2    | <p>Approximately 80% seed used for propagation and revegetation activities are sourced from on or adjacent to the Mine and is led by local Indigenous community staff member (Mine employee for 10 years and Rehabilitation Team member for 5 years) due to her expert knowledge on timing and location for sourcing.</p>  | Nil         |
| Plant Nursery | 3    | <p>Revegetation success is more likely when using locally sourced and propagated seed, as these plants are adapted to local climate, soils and growing conditions. Furthermore, involving the Rehabilitation Team in both propagation and planting fosters greater ownership and accountability, promoting better revegetation practices and improving plant establishment outcomes.</p> | Nil         |

| Aspect  | Item | Observation   | Opportunity   |
|---|------|---|---|
| Plant Nursery   | 4    | Procedures for effectively collecting, storing and germinating local seeds in the mine's nursery are well documented, albeit mainly in hard-copy form.  | OFI: Transcribe hard-copy nursery records and procedures into electronic form, to improve accessibility, longevity and to enable easier data analysis.  |
| Revegetation – McArthur River Diversion Channel (Lower section) | 5    | <p>Staged revegetation in the downstream section of the McArthur River Diversion Channel is progressing well (e.g., SW16 and SW17). High plant diversity, structural complexity and establishment success (maintained over multiple wet seasons) are evident. This area has relatively gentle-sloping sides, which likely reduces water velocity and erosion, supporting improved substrate conditions for growth and establishment, as well as the retention of plantings during the wet season, refer photos 3 and 4. An irrigation system is used to support establishment of recently planted areas during the extreme dry season conditions.</p> <p>In a typical year around 80,000 plants are planted by the Mine Rehabilitation Team. Unfortunately, survivability success is poor due to annual river flooding that strip the seedlings and topsoil in erosion-prone locations, such as rocky outcrops and near-vertical sides. In past years, the focus of revegetation has been on achieving high numbers of plantings.</p> | OFI: Shift the focus of revegetation activities from high numbers of plantings to targeted planting in specific areas with higher likelihood of survival success, such as high banks and adjacent flats, and areas with more gradual slopes and soil retention. |


| Aspect | Item | Observation  | Opportunity |
|--------|------|--|-------------|
|        |      |  <p data-bbox="504 1109 1473 1136">Photo 3: McArthur River Diversion Channel, lower section, lower bank plantings and irrigation pipeline</p> |             |

| Aspect   | Item | Observation   | Opportunity   |
|--|------|---|---|
|  |      |  <p data-bbox="504 1141 1444 1197">Photo 4: McArthur River Diversion Channel, lower bank 2024 plantings that survived the wet season flooding.</p>   |   |
| Revegetation – McArthur River Diversion Channel (Middle Section) | 6    | The middle section area of the McArthur River Diversion Channel, around SW14 and SW15, is steep sided with limited vegetation and soil substrate due to the high volume and velocity of water during the wet season (up to 26 m above dry season river height), refer photos 5 and 6. | OBS: Given the challenges associated with the diversion design at the middle section location – particularly high water volume and velocity during the wet season, which hinder riparian vegetation establishment – it is recommended that revegetation efforts focus on the upper banks and adjacent flats. This approach would help achieve connectivity for fauna and establish source plant |


| Aspect  | Item | Observation   | Opportunity   |
|---|------|---|---|
|   |      |  <p data-bbox="504 1114 1456 1165">Photo 5: McArthur River Diversion Channel, trapezoidal middle section, rocky outcrops and annual high velocity river flows that strip topsoil and seedlings make middle bank revegetation unattainable.</p> | <p data-bbox="1505 308 2016 387">populations (i.e., seeds banks) to support natural regeneration as the river channel evolves over coming decades and centuries.</p> <p data-bbox="1505 411 2027 550">OFI: In the middle section area of the McArthur River Diversion Channel, revegetation efforts should focus on the upper banks and adjacent flats to help achieve connectivity for fauna and establish source plant populations.</p> <p data-bbox="1505 574 2049 798">While additional earthworks (recontouring and realignment of the channel) to the rock structure in this area were considered, such intervention is likely to negatively impact aquatic fauna and flora throughout the diversion. Potential consequences include altered downstream flow conditions and quality, and restricted upstream fish movement, which could undermine the ecological improvements observed in recent years.</p> |
| Revegetation – McArthur River Diversion Channel (Middle Sections) | 7    | Both up- and down-stream of the steep-sided channel area, limited vegetation has established on the more gently sloped exposed rock middle banks due to water erosion during the wet season scalping soil and planted vegetation, refer photo 6.  | OBS: Similar to the approach recommended in the middle section area, revegetation should focus on the upper banks, as well as continue to establish vegetation along the waterline margins. Establishing vegetation at these locations will enhance ecological connectivity and support the development of sustainable, self-regenerating plant populations. This strategy also reduces continued plant losses along the more erosion-prone middle bank.  |


| Aspect  | Item | Observation  | Opportunity  |
|---|------|--|--|
|   |      |  <p data-bbox="504 1098 1460 1181">Photo 6: McArthur River Diversion, middle section, more gently sloped wider middle bank with exposed rock and no ability to retain topsoil or plantings due to flow volumes and velocity of annual river flooding</p>  |  |
| Revegetation – McArthur River Diversion Channel (Upper Section) | 8    | <p data-bbox="504 1204 1460 1348">The upstream section of the McArthur River Diversion Channel (e.g., SW13) demonstrates progressing revegetation, with evident improvements in soil stability, bank integrity and vegetation connectivity, refer photo 8. However, flora species diversity and vertical structural complexity remain lower (predominantly Melaleuca) than adjacent control sites, potentially compromising long-term ecological resilience.</p> <p data-bbox="504 1364 1460 1396">In addition, several areas exhibit dense ground cover weeds, which appear to be suppressing the</p> | OBS: Targeted weed control and strategic planting may be required if future monitoring indicates completion criteria will not be met; however, the high risk of water erosion should be considered during planning and implementation. |


| Aspect  | Item | Observation  | Opportunity |
|---|------|--|-------------|
|   |      | <p>natural spread of cane grass – a key habitat component for Purple-crowned Fairy-wrens.</p>  <p>Photo 7: McArthur River Diversion Channel, upper section, at SW13 Crossing, with predominantly Melaleuca vegetation on both banks</p>   |             |
| Revegetation – McArthur River Diversion Channel – Control Sites | 9    | <p>One upstream and one downstream control site were inspected during the site visit and appeared appropriate comparison with the McArthur River Diversion Channel. Their proximity to the diversion and presence of remnant vegetation and representative ecosystems supports their use as appropriate reference conditions for assessing rehabilitation success, refer photo10. However, further evaluation of suitability was not undertaken due to the brevity of inspection and no additional analysis of potential</p> | Nil         |

| Aspect  | Item | Observation   | Opportunity   |
|---|------|---|---|
|   |      | <p>control sites and conditions.</p>  <p>Photo 8: McArthur River, control site, upstream of SW10, characterised by diverse species and vertical structural complexity.</p>   |   |
| Revegetation – McArthur River Diversion Channel- Bird Habitat | 10   | <p>Short bird surveys undertaken during the audit inspection, along with reviewed riparian bird monitoring reports, indicate that species richness and composition at control sites differs notably from that along the diversion – particularly in relation to target species. This suggests that current revegetation is not yet providing the structural or floristic habitat features required to support the target riparian bird communities.</p> | <p>OBS: Further refinement of revegetation species selection, proportions used and additional plantings may be required to address this gap. Weed management is likely also a factor and should be given further consideration.</p> |


| Aspect  | Item | Observation   | Opportunity |
|---|------|---|-------------|
| Large Woody Debris                            | 11   | <p>Excluding the steep-sided middle section of the McArthur River Diversion Channel, the Large Woody Debris (LWD) program has been effective at creating near shore pockets of lower water velocity, retaining small debris and riverbed substrates, stabilising the river edge, and providing habitat for fish and other aquatic fauna. Soil banks and associated substrates that have formed at and near large woody debris piles show the establishment of naturally recruited plants, including Pandanus and native trees. Refer LWD example photo 7.</p> <p>A designated area for the stockpiling of cleared large trees was sighted adjacent to the McArthur River Diversion Channel during the audit. Large woody debris is sourced from this stockpile area and placed in suitable locations along the river diversion.</p> | Nil         |
| Revegetation – Barney Creek Diversion Channel | 12   | <p>The revegetation in the Barney Creek Diversion Channel is advancing well, with improvements in both flora species diversity and vertical structure development. This diversion appears to be more ecologically progressed than the McArthur River Diversion Channel middle section, likely due to several factors: minimal native vegetation clearing during construction, more stable bank gradients and substrate composition, and limited high water flow duration – typically around two weeks annually – reducing erosion risk and allowing vegetation to establish for most of the year, refer photo 9. These conditions collectively create a more favourable environment for long-term revegetation success.</p>   | Nil -       |

| Aspect                                | Item | Observation  | Opportunity   |
|---------------------------------------|------|--|---|
|                                       |      |  <p data-bbox="504 1125 1422 1204">Photo 9: Barney Creek Diversion Channel, middle section (upstream of haul bridge), revegetation established along the upper bank, with approximately 15-year-old eucalypts, but some limitations relating to revegetation on the rocky middle and lower bank</p> |   |
| North Overburden Emplacement Facility | 13   | A bituminous geomembrane (BGM) has been used to cover areas of the outer face of the NOEF where final profile is complete. The BGM is aimed at excluding air and water filtration into non-benign waste rock materials, to avoid potential adverse reactions between materials, and has an estimated design life-span of 1000 years.   | Nil -   |
| North Overburden                      | 14   | An area approximately 10 hectares in size on the southern side of the NOEF has been designated for revegetation trials, using species composition and methods aligned with those applied successfully in   | OFI: Revegetation trials should be initiated on the NOEF as soon as possible, with recognition that they will need to |

| Aspect               | Item | Observation   | Opportunity  |
|----------------------|------|---|--|
| Emplacement Facility |      | <p>the Northern Clean Water Drain, refer photo 11. Although such trials have been proposed for several years (e.g., outlined in the RMP), implementation has not commenced, refer photo 10.</p> <p>An irrigation trial for the NOEF was planned for 2021 but has not commenced.</p> <p>Given the extensive area requiring rehabilitation (total footprint area &gt;400 ha) and the variability in substrate, slope and site conditions across the NOEF and compared to the Northern Clean Water Drain, further delays in trial initiation increase the risk of inefficiencies in identifying and implementing effective revegetation techniques.</p> <div data-bbox="524 576 1469 1299" data-label="Image">  </div> <p>Photo 10: NOEF southern face with BGM liner visible in the upper sections. Rock has been positioned (dark coloured material) on top of the BGM awaiting placement of a final growth media top layer</p> | <p>occur in phases over multiple years, and that unsuccessful outcomes are an expected and valuable part of developing robust, site-specific rehabilitation solutions.</p> |

| Aspect                                    | Item | Observation  | Opportunity   |
|---|------|--|---|
| Revegetation – Northern Clean Water Drain | 15   | <p>(topsoil with hydroseeding) to commence NOEF revegetation trials.</p> <p>Revegetation of the Northern Clean Water Drain, hydro-seeded in late 2022, has been successful, with multiple mature grass species effectively stabilising the banks, refer photo 11. Additionally, natural encroachment of shrubs species is contributing to further structural stability and ecological development of the area.</p>  <p>Photo 11: Northern Clean Water Drain view east from the top bank, note natural encroachment of shrub species</p> | Nil   |
| Revegetation – Mine Levee                 | 16   | Interviews with Mine staff indicated that revegetation of the Mine Levee is deferred until completion of mining operations, due to uncertainty regarding which areas of the Mine Levee will be retained. This  | OFI: Progressive revegetation of the Mine Levee, in targeted locations that will not be re-worked, should |

| Aspect                                      | Item | Observation   | Opportunity   |
|---|------|---|---|
|   |      | <p>approach presents a risk to achieving a sustainable post-mining landform, as delayed rehabilitation will limit revegetation establishment and maturity prior to closure.</p>   | <p>commence in the near term, independent of the final design. Early establishment will facilitate vegetation maturity, improve landscape stability and enhance ecological function, likely leading to a more rapid achievement of completion criteria.</p> <p>OBS: Additionally, the Mine Levee area presents an opportunity for testing alternative rehabilitation strategies and once established, could serve as a valuable seed source for broader natural regeneration.</p>   |
| Weed and Pest Animal Management - Livestock | 17   | <p>Livestock management practices continue to improve at the Mine, to minimise adverse impacts on revegetation from grazing and/or habitat degradation. Notably, several pivoting cattle floodgates have been installed at key waterway entry and exit points, typically access track fords across the waterway. These structures restrict cattle access while allowing unimpeded water, fish passage and debris flow during high-flow events, refer photo 12.</p> <p>The cattle floodgate in Barney Creek was first trialled in 2023 and since that time, a further five (5 installed and 2 more planned ) have been installed at selected waterways across the mining lease. The floodgate appeared effective during inspection, with no cattle observed within operational or rehabilitation areas of the Mine, although some cattle tracks were present in the Northern Clean Water Drain and along the McArthur River Diversion Channel, indicating occasional incursion.</p> <p>Under MRM Cattle Management Plan , any cattle observed within the lease area must be removed through a muster within four days of detection. These measures ensure proactive management of grazing pressure and protection of sensitive revegetation areas, particularly those supporting cane grass and Purple-crowned Fairy-wren habitat.</p> | <p>OBS: Ongoing maintenance, monitoring and targeted improvements are essential to enhance the effectiveness of cattle management measures. Given the higher palatability and ecological sensitivity of cane grass, areas supporting or intended to support this species should be prioritised for the continuation of regular inspections-to help detect early signs of grazing pressure and allow for timely intervention to protect critical habitat for target riparian fauna.</p> <p>OFI: Continue regular inspection, weekly during the dry season, to help detect early signs of grazing pressure and allow for timely intervention to protect critical habitat for target bird species, namely Purple-crowned Fairy-wren.</p> |

| Aspect                                  | Item | Observation   | Opportunity   |
|---|------|---|---|
|   |      |  <p data-bbox="504 1109 1249 1133">Photo 12: Cattle floodgate on Barney Creek, located near Carpentaria Highway</p>  |   |
| Weed and Pest Animal Management - Weeds | 18   | <p data-bbox="504 1161 1473 1273">Previously, weed mapping was primarily focussed on operational areas, with limited coverage of revegetation zones. However, the <i>2024 MRM Site-Wide Weed Assessment</i> (Indo-Pacific Environmental Pty Ltd, 2024) provided a good understanding of the location and weed species present within the revegetation areas.</p> <p data-bbox="504 1297 1473 1353">During the site inspection, the presence of weeds – some forming dense ground cover – were noted in revegetation areas, particularly along the McArthur River Channel Diversion.</p> | <p data-bbox="1503 1161 2063 1385">OBS: The 2024 weed assessment should be used to determine weed management activities in revegetation areas, with ongoing monitoring, management and reporting from this baseline document. However, given the critical role of vegetation in maintaining soil and bank stability along the diversion channels, any weed control measures must be carefully planned to avoid compromising stabilisation outcomes.</p> <p data-bbox="1503 1409 2063 1433">OFI: Prioritise integrated approaches to weed management</p> |

| Aspect  | Item | Observation   | Opportunity   |
|---|------|---|---|
| Weed and Pest Animal Management- Predators          | 19   | <p>Limited predator (e.g., feral cat, fox) monitoring and management is undertaken, despite predation of Purple-crowned Fairy-wren nests a known threat to the species<sup>1</sup>. Predation risk for birds in grass- and shrubland habitats is highest during and following drought, fire, or other conditions that reduce the vegetation cover required for shelter and concealment during feeding and/or drinking.</p> <p>A feral cat monitoring trial was undertaken in 2022 that included the upper and middle areas of the McArthur River Diversion Channel (EcOz, 2023), which found that feral cat density was higher than other estimates in the NT. Various recommendations from the report included suggested control methods, and ongoing monitoring and evaluation.</p> | <p>in revegetation areas that balance weed suppression with the need for erosion control.</p> <p>OBS: No monitoring or maintenance of pest animals that can predate on target bird species is regularly undertaken, which introduces a risk to objectives and completion criteria. Baseline data would assist to better inform feral animal control planning and management for sensitive bird habitat area as previously recommended in a feral cat monitoring report (2023).</p> <p>OFI: Install trail cameras in key bird habitat (Purple-crowned Fairy-wren and Gouldian Finch) with regular monitoring to provide information on temporal patterns in feral animal (particularly cats) density and inform management requirements.</p> |
| Progressive Rehabilitation – Exploration Drill Pads | 20   | <p>Progressive rehabilitation of exploration drill pads in the western areas of the Mine has been effective. Post-exploration in 2023, the ‘Teena’ exploration drill pads No.1 and No. 2 sites were capped, and stock-piled topsoil respread, enabling natural regeneration from the existing seedbank. Site inspection confirmed that within two years, these two rehabilitated pads exhibited successful revegetation establishment, with no significant erosion and diverse grass and shrub species present and actively seeding, refer photo13. This demonstrates the viability of natural regeneration when appropriate soil handling and site closure practices are implemented.</p>  | Nil   |

<sup>1</sup> Conservation Advice Purple-crowned Fairy-wren (western). <http://www.environment.gov.au/biodiversity/threatened/species/pubs/64442-conservation-advice-31102015.pdf>; NT Government Species Profile Purple-crowned Fairy-wren (western subspecies) [https://nt.gov.au/\\_data/assets/pdf\\_file/0003/206364/purple-crowned-fairy-wren.pdf](https://nt.gov.au/_data/assets/pdf_file/0003/206364/purple-crowned-fairy-wren.pdf); Woinarski, J. C. Z., Stobo-Wilson, A. M., Crawford, et al. (2022). Compounding and complementary carnivores: Australian bird species eaten by the introduced European red fox *Vulpes vulpes* and domestic cat *Felis catus*. *Bird Conservation International*, 32(3), 506–522. doi:10.1017/S0959270921000460

| Aspect              | Item | Observation   | Opportunity   |
|---------------------|------|---|---|
|                     |      |  <p data-bbox="504 1099 1473 1155">Photo 13: 'Teena' No.1 exploration drill pad (drilled in 2023), successful progressive rehabilitation. with a variety of grass and shrub species self-regenerating.</p>   |   |
| Documentation - RMP | 21   | The previous and most recent RMPs applied to the periods 2018 to 2021 and 2021 to 2023. No RMP has been updated since 2021 and for continuity should have been produced in 2023 for the next three-year period. The RMP is the principal document to guide progressive rehabilitation strategy by providing rehabilitation objectives, implementation plans/timeframes, completion criteria, assessment of rehabilitation performance and examining the effectiveness of revegetation activities. | OFI: Prepare a revised RMP as a high priority.  |
| Documentation - RMP | 22   | The most recent RMP outlined activities and goals for the 2021-2023 period but has not been revised since its finalisation in 2021. Several components of the document are now outdated or irrelevant (e.g., Carpentaria Highway Vegetation Enhancement Trial), and it is unclear whether the triggers for revision   | OFI: Undertake a comprehensive review and update of the RMP to align with current site conditions, regulatory |

| Aspect                                 | Item | Observation   | Opportunity  |
|--|------|---|--|
|  |      | <p>– such as monitoring outcomes, legislative changes, or updates to the Mine Management Plan – have occurred or been assessed.</p> <p>The completion criteria in the RMP Table 20 are poorly defined, do not provide measurable indicators, and often rely on binary yes/no outcomes without specifying which constitute success. The Mine personnel/section responsible for each indicator, methods to be used for monitoring and timing/frequency are also absent from the criteria or are not directly evident in Table 20. Several performance indicators and completion criteria also appear misaligned with rehabilitation objectives, instead reflecting operational or value-based targets (e.g., nursery capacity usage) rather than ecological or landform outcomes.</p>   | <p>expectations, and best-practice rehabilitation standards.</p> <p>OFl: Revise the RMP to guide the next phase of rehabilitation activities, incorporating outcomes, constraints, and lessons learned over the past four years. Redefine completion criteria to ensure they are achievable, measurable, and rehabilitation focused.</p> <p>OFl: Develop Revegetation Completion Criteria using the SMART principle and informed by established guidance documents, including <i>A Framework for Developing Mine-site Completion Criteria in Western Australia</i>, the <i>Queensland Rehabilitation: EIS Information Guideline</i>, and the <i>Queensland Statutory Guideline: Progressive Rehabilitation and Closure Plan</i>.</p> |
| Documentation -Monitoring              | 23   | <p>Vegetation rehabilitation monitoring is comprehensive and conducted at regular, prescribed intervals, resulting in a robust long-term dataset that supports thorough evaluation of rehabilitation progress. This consistent monitoring allows for early detection of issues such as poor plant establishment, invasive weed incursions, or erosion impacts, enabling timely adaptive management responses.</p> <p>Longitudinal data also facilitates trend analysis, helping to assess whether rehabilitation objectives and completion criteria are being met over time. Furthermore, such extensive monitoring improves transparency and accountability, supports regulatory compliance, and provides valuable insights to refine rehabilitation techniques and improve future project outcomes. Overall, this systematic approach enhances the likelihood of successful, sustainable ecosystem restoration.</p> | Nil  |
| Documentation- Monitoring              | 24   | <p>The most recent Revegetation Monitoring Report (2023-2024) provides useful insights through its focus on adaptive management (TARP) principles. However, it does not clearly evaluate progress against the established Key Performance Indicators (KPIs) and completion criteria within the executive summary or recommendations. This limits its effectiveness in tracking performance against defined targets.</p> <p>Additionally, the recommendations section is presented as a large block of text, making key actions difficult to identify and prioritise.</p>  | OFl: Align future annual Revegetation Monitoring Reports with completion criteria, integrate figures with relevant text, and provide concise and actionable recommendations.   |
| Documentation – Information Management | 25   | The absence of formal documentation for revegetation activities, trial outcomes, and site-specific conditions presents a significant risk to the continuity and effectiveness of rehabilitation efforts. At present, critical knowledge—such as which species were planted, under what conditions, how they   | OFl: Develop a structured and centralised revegetation data management system to capture and store all relevant information.   |

| Aspect                            | Item | Observation   | Opportunity  |
|-----------------------------------|------|---|--|
|                                   |      | <p>performed, erosion rates and any adaptations made—is retained largely in hard copy or informally through individual staff members. This introduces vulnerability, as staff turnover, role changes, or time gaps between activities can result in valuable insights being lost, misremembered, or inconsistently applied.</p>   | <p>This system should include:</p> <ul style="list-style-type: none"> <li>• Detailed records of all revegetation and trial activities (e.g., species lists, planting numbers and densities, soil preparation methods, timing, rainfall events).</li> <li>• Site condition data (e.g., soil characteristics, slope, aspect, hydrology) at the time of planting and over time.</li> <li>• Monitoring results and reports, where applicable (e.g., establishment success, survival rates, erosion risk, weed incursions, erosion impacts).</li> <li>• Adaptive changes or lessons learned during implementation.</li> <li>• Photographic evidence and geospatial references for mapping and tracking.</li> </ul> <p>A centralised system will enable evidence-based decision-making, support consistent methodology across time and personnel, quantify year-to-year success, facilitate reporting and regulatory compliance, and provide a foundation for iterative improvement.</p> |
| Resourcing – External Consultants | 26   | <p>External consultants are frequently engaged to undertake key activities related to vegetation rehabilitation, including monitoring, reporting, and development of management plans. While outsourcing enables access to technical expertise, it can create gaps in whole-of-system understanding if consultant work is detached from Mine staff day-to-day site operations.</p> <p>Reliance on external parties may also limit internal ownership, reduce continuity of knowledge, and hinder effective integration of rehabilitation objectives into broader site planning and management.</p> <p>Without strong internal coordination and oversight, there is a risk that critical context, operational constraints, and site-specific learnings are not fully captured or reflected in rehabilitation strategies.</p> <p>Responsibility for progressive vegetation rehabilitation remains with Mine staff. Ownership, strategic</p> |  |

| Aspect              | Item | Observation  | Opportunity   |
|---------------------|------|--|---|
|                     |      | <p>direction setting and regular review of the revegetation program should be led by Mine staff, with support, rather than reliance on, specialist consultants.</p>  |   |
| Bushfire Management | 27   | <p>The 'current' Fire Management Plan is from 2018, and states that review and updating is to be completed at 5 years, if not before. Based on the documentation provided in the RFI, the Fire Management Plan is out-of-date.</p> <p>There is no information in the 2018 MRM Fire Management Plan relating to the risk of fire to habitat of Purple-crowned Fairy-wren, and limited information on impacts to and management of rehabilitation areas.</p> | <p>OFI: Revise the Fire Management Plan as a priority as fire is a primary threat to revegetation success</p> <p>OFI: Information on fire risks to revegetated areas, particularly for Purple-crowned Fairy-wren habitat, along with management actions and responsibilities should be incorporated into the revised RMP and Fire Management Plans.</p> |

### 3.3 Rehabilitation Management Plan Key Objectives

As described in Section 2.1, specific objectives set out in the RMP were used to assess rehabilitation performance at the Mine. The extent to which these objectives are achieved is dependent on the adequacy and consistency of procedural and progressive implementation. Each RMP objective has been assessed and assigned a qualitative rating – ‘very good’, ‘good’, ‘satisfactory’, ‘poor’, or ‘very poor’ as defined in Table 2-2 – to reflect the current level of performance. Ratings are presented in *Table 3-2*.

*Table 3-2: Rehabilitation objectives, audit findings and ratings*

| Ref                 | Key Objective  | Audit Rating         | Audit Finding  |
|---------------------|--|----------------------|--|
| Diversions Channels |  |                      |  |
| 1                   | Vegetation communities similar to control areas of McArthur River and Barney Creek are in the process of being progressively established along the McArthur River and Barney Creek Diversions Channels | Good to Poor         | <ul style="list-style-type: none"> <li>The upper and lower sections of the McArthur River Diversions Channel are showing good progress towards achieving similar vegetation and habitat parameters as control site vegetation communities</li> <li>The middle sections of the McArthur River Diversions Channel face challenges including: original trapezoidal design and construction of the channel constraints, coupled with annual wet season high water volume and flow velocity, which has led to soil erosion and constrained revegetation</li> <li>Barney Creek Diversions Channel lower section is also progressing well towards meeting sustainable vegetation community targets</li> <li>Barney Creek Diversions Channel middle section has revegetation established along the upper bank, with some limitations relating to revegetation on the rocky middle and lower banks</li> <li>The on-site nursery is well-equipped and operational, enabling propagation of locally sourced seed for revegetation activities, which enhances plant adaptation to local conditions</li> <li>Revegetation success is more likely with locally sourced seed and the involvement of the Rehabilitation Team in propagation and planting, as it promotes ownership and responsibility</li> </ul> |
| 2                   | The river systems have been stabilised through the reduction of water velocity and implementation of appropriate erosion control methods   | Satisfactory to Poor | <ul style="list-style-type: none"> <li>The rocky central sections of the McArthur River Diversions Channel, particularly the middle and occasionally the lower banks, are heavily eroded due to high water volume and flow velocity during the wet season</li> <li>The upper and lower sections of the McArthur River Diversions Channel, along with the Barney Creek Diversions Channel lower section, are largely stabilised</li> </ul>  |

| Ref                                   | Key Objective  | Audit Rating         | Audit Finding  |
|---------------------------------------|--|----------------------|--|
|                                       |  |                      | <ul style="list-style-type: none"> <li>The middle sections of the Barney Creek Diversion Channel experience wet season erosion due to high water volume and flow velocity on the rocky middle and lower banks</li> <li>The large woody debris program has effectively stabilised lower banks and provided substrate for vegetation, leading to natural regeneration of several species</li> </ul>  |
| 3                                     | Rehabilitation success has been assessed along the McArthur River and Barney Creek Diversion Channels through the continued monitoring of riparian birds, aquatic fauna and vegetation | Good to Satisfactory | <ul style="list-style-type: none"> <li>Rehabilitation monitoring is thorough and regular (annually at a minimum), providing long-term data that enables early issue detection, trend analysis, and adaptive management</li> <li>The annual monitoring undertaken by specialists for revegetation, riparian bird and aquatic fauna supports regulatory compliance, transparency, and continuous improvement of rehabilitation methods</li> <li>Whole-of-ecosystem monitoring is limited, with scope for more focus on weed and pest (livestock and predator) monitoring and management within rehabilitation areas</li> </ul>   |
| 4                                     | Habitat connectivity has been developed/improved as indicated by aquatic fauna and riparian bird monitoring  | Good to Poor         | <ul style="list-style-type: none"> <li>Monitoring reports indicate strong presence, composition and passage of aquatic fauna (e.g. Barramundi and Sawfish)</li> <li>Riparian bird monitoring reveals ongoing differences between the diversion channel and control sites, but progress is notable given this is a mid-term objective</li> <li>Due to the erosion-prone steep barren slopes (middle and upper riverbanks) in the middle section of the McArthur River Diversion Channel limiting vegetation connectivity, revision of KPIs and completion criteria to focus on terrestrial habitat connectivity along the high banks and adjacent flats is recommended</li> </ul> |
| North Overburden Emplacement Facility |  |                      |  |
| 5                                     | Vegetation communities similar to desired grassland ecosystem are in the process of being progressively established, including species diversity and natural recruitment               | Very Poor            | <ul style="list-style-type: none"> <li>Although proposed since 2021, NOEF revegetation trials have yet to commence. Revegetation has not commenced on any of the NOEF revegetation areas outlined in the schedule for 2021 ,2022 and 2023 (RMP Table 18) which totalled 92.6 hectares for revegetation</li> <li>A BGM covers the completed dumping areas of the NOEF to prevent air and water infiltration into hazardous materials, with plans for a layer of growth media to be applied for revegetation</li> <li>An area in the south of the NOEF is planned for revegetation trials using methods successfully applied in the Northern Clean Water Drain</li> </ul>          |

| Ref     | Key Objective   | Audit Rating | Audit Finding   |
|---------|---|--------------|---|
| 6       | The batters have stabilised through the implementation of appropriate erosion control methods and design      | Good         | <ul style="list-style-type: none"> <li>The exposed NOEF batters appear relatively stable due to the implementation of erosion control techniques and design measures, including areas where BGM has been installed</li> <li>Construction trials have been conducted on the western face of the NOEF using different sizes and depths of rock materials, and different earth moving equipment to determine an optimal design for construction of a stable batter layer beneath the BGM cover system</li> <li>Overall progress is positive, with adaptive management strategies actively guiding ongoing improvements and adjustments</li> <li>A seepage event occurred during flooding caused by Tropical Cyclone Megan in March 2024 and this incident has been investigated and construction to final design height since completed to prevent recurrence</li> </ul>   |
| General |   |              |   |
| 7       | The adaptive management process and continual learning loop have been used to refine rehabilitation practices | Poor         | <ul style="list-style-type: none"> <li>Lack of formal revegetation documentation risks knowledge loss, as key details are informally retained and vulnerable to staff turnover</li> <li>Reliance on external consultants can fragment understanding, weaken internal ownership, and hinder integration with site operations and rehabilitation planning</li> <li>Delays in commencing revegetation trials risk inefficiencies in developing adaptive management and learning across the NOEF's large and variable rehabilitation footprint (&gt;400 ha)</li> <li>The adaptive management practices and learnings that have been gained from the established revegetation areas in McArthur River and Barney Creek Diversion Channels could potentially be used in a more systematic manner to enhance revegetation success</li> <li>The knowledge from the recent successful seeding and revegetation of the Northern Clean Water Drain may be used in future rehabilitation practices</li> </ul> |
| 8       | Undertake rehabilitation and revegetation trials as required  | Very Poor    | <p>The revegetation trials proposed in the RMP, in addition to the proposed NOEF trials (item 5 above), have not yet commenced, including:</p> <ul style="list-style-type: none"> <li>Mine Levee wall potential rehabilitation trials in 2021</li> <li>Carpentaria Highway vegetation enhancement trial in 2021</li> </ul>  |

| Ref | Key Objective  | Audit Rating         | Audit Finding   |
|-----|--|----------------------|---|
|     |  |                      | <ul style="list-style-type: none"> <li>Phytoremediation trial to investigate the use of vegetation for reducing location water table elevation in the vicinity of the NOEF 2022</li> </ul> <p>Metallurgy area high density tree screen trials commenced in 2018, however subsequent planned trials in the area have been delayed</p>  |
| 9   | Progressive rehabilitation of mine landforms and other disturbances will be undertaken as infrastructure becomes redundant and is decommissioned   | Good to Satisfactory | <ul style="list-style-type: none"> <li>Diversion channel revegetation is progressing well through a staged approach, with initial sections showing successful vegetation establishment while lessons from early stages inform improvements in later phases</li> <li>Effective progressive rehabilitation of western exploration drill pads (Teena No.1 and No.2) demonstrates that natural regeneration is viable when topsoil is respread post-capping, with diverse vegetation establishing within two years</li> <li>Revegetation of the Mine Levee has been deferred until mining ends due to uncertainty over final landform, with this presenting as a risk regarding sufficiency of vegetation establishment before closure</li> <li>Progressive rehabilitation of the NOEF landform has progressed slowly as the BGM cover system design is refined</li> </ul>                                  |
| 10  | Rehabilitation monitoring results will be assessed annually to identify if rehabilitation is trending towards the completion criteria  | Satisfactory         | <ul style="list-style-type: none"> <li>Regular and comprehensive vegetation monitoring provides a strong long-term dataset to assess rehabilitation progress</li> <li>Monitoring improves transparency, regulatory compliance, and informs refinement of rehabilitation methods, increasing the likelihood of successful and sustainable ecosystem restoration</li> <li>Vegetation monitoring reports provide insight on adaptive management but lacks clear KPI evaluation; report structure and formatting reduce clarity and prioritisation</li> <li>Current completion criteria unsuitable and immeasurable, and some terminology inconsistent between documentation</li> <li>The Rehabilitation Monitoring Report could be improved by more clearly presenting year on year comparative analysis to identify and track trends in progressive rehabilitation towards completion criteria</li> </ul> |
| 11  | RMP will be reviewed annually, revised following planning and/or legislative amendments, as a result of trials and monitoring recommendations, or as per the adaptive management framework | Poor                 | <ul style="list-style-type: none"> <li>The RMP (2021–2023) has not been updated since 2021, with some components now outdated or irrelevant</li> <li>It is unclear if revision triggers (e.g., monitoring, legislative changes, Mine Management Plan updates) have been assessed</li> <li>Completion criteria in the RMP Table 20 are ambiguous, relying on binary outcomes without clear success definitions</li> <li>Some indicators and criteria are misaligned with rehabilitation goals, focusing on operational rather than ecological outcomes</li> <li>Opportunity exists for improved rehabilitation data management and incorporation of trial results into the adaptive management process supported by internal resources in the regular review the RMP</li> </ul>  |

## 4. Opportunities for Improvement

---

The OFIs identified through the audit are presented as clear, practical actions intended to support the Operator in managing environmental risks and enhancing performance. These OFIs are recommendations provided by the Independent Monitor and are not regulatory requirements.

As they reflect conditions at a specific point in time, the relevance of OFIs may change if site circumstances or processes evolve. It is recommended that applicable OFIs be incorporated into control measures within the Operator's compliance and risk registers. This will help ensure they remain current, are tracked appropriately, and are updated as needed to reflect changes.

The OFIs are summarised in Table 4-1.

Table 4-1: Opportunities for improvement

| Reference | Aspect   | Description of Opportunity  |
|-----------|--|---|
| 01        | Nursery records                                  | Transcribe hard-copy nursery records and procedures into electronic form, to improve accessibility, longevity and to enable easier data analysis.   |
| 02        | Planting focus                                   | Shift the focus of revegetation activities from high numbers of plantings to targeted planting in specific areas with higher likelihood of survival success, in specific areas with higher likelihood of survival success, such as high banks and adjacent flats, and areas with more gradual slopes and soil retention.                                  |
| 03        | McArthur River Diversion Channel- Middle Section | In the middle section area of the McArthur River Diversion Channel, revegetation efforts should focus on the upper banks and adjacent flats to help achieve connectivity for fauna and establish source plant populations.  |
| 04        | NOEF   | Revegetation trials should be initiated on the NOEF as soon as possible, with recognition that they will need to occur in phases over multiple years, and that unsuccessful outcomes are an expected and valuable part of developing robust, site-specific rehabilitation solutions.  |
| 05        | Mine Levee Wall                                  | Progressive revegetation of the Mine Levee, in targeted locations that will not be re-worked, should commence in the near term, independent of the final design. Early establishment will facilitate vegetation maturity, improve landscape stability and enhance ecological function, likely leading to a more rapid achievement of completion criteria. |
| 06        | Pest Animal Management - Livestock               | Continue regular inspection (weekly during the dry season) to help detect early signs of grazing pressure and allow for timely intervention to protect critical habitat for target bird species, namely Purple-crowned Fairy-wren.  |
| 07        | Weed Management                                  | Prioritise integrated approaches to weed management in revegetation areas that balance weed suppression with the need for erosion control.  |
| 08        | Pest Animal Management – Feral Cats              | Install trail cameras in key bird habitat (Purple-crowned Fairy-wren and Gouldian Finch) with regular monitoring to provide information on temporal patterns in feral animal (particularly cats) density and inform management requirements.  |
| 09        | Documentation- RMP                               | Prepare a revised RMP as a high priority.   |
| 10        | Documentation- RMP                               | Undertake a comprehensive review and update of the RMP to align with current site conditions, regulatory expectations, and best-practice rehabilitation standards.  |

| Reference | Aspect                                 | Description of Opportunity   |
|-----------|--|--|
| 11        | Documentation- RMP                     | Revise the RMP to guide the next phase of rehabilitation activities, incorporating outcomes, constraints, and lessons learned over the past four years. Redefine completion criteria to ensure they are achievable, measurable, and rehabilitation focused.  |
| 112       | Documentation- RMP                     | Develop Revegetation Completion Criteria using the SMART principle and informed by established guidance documents, including <i>A Framework for Developing Mine-site Completion Criteria in Western Australia</i> , the <i>Queensland Rehabilitation: EIS Information Guideline</i> , and the <i>Queensland Statutory Guideline: Progressive Rehabilitation and Closure Plan</i> .   |
| 13        | Documentation- Monitoring              | Align future annual Revegetation Monitoring reports with completion criteria, integrate figures with relevant text, and provide concise and actionable recommendations.  |
| 14        | Documentation – Information Management | <p>Develop a structured and centralised revegetation data management system to capture and store all relevant information.</p> <p>This system should include:</p> <ul style="list-style-type: none"> <li>• Detailed records of all revegetation and trial activities (e.g., species lists, planting numbers and densities, soil preparation methods, timing, rainfall events).</li> <li>• Site condition data (e.g., soil characteristics, slope, aspect, hydrology) at the time of planting and over time.</li> <li>• Monitoring results and reports, where applicable (e.g., establishment success, survival rates, erosion risk, weed incursions, erosion impacts).</li> <li>• Adaptive changes or lessons learned during implementation.</li> <li>• Photographic evidence and geospatial references for mapping and tracking.</li> </ul> |
| 15        | Documentation – External Consultants   | Consider internal staffing resources required to support effective rehabilitation specialist collaboration, integration, and whole-of-system understanding. Joint activities may include field inspections, regular coordination meetings, and a centralised rehabilitation data management system to enable knowledge transfer, continuity, and internal ownership.   |
| 16        | Bushfire Management                    | Revise the Fire Management Plan as a priority as fire is a primary threat to revegetation success.   |
| 17        | Bushfire Management                    | Information on fire risks to revegetated areas, particularly for Purple-crowned Fairy-wren habitat, along with management actions and responsibilities should be incorporated into the revised RMP and Fire Management Plans.  |

## 5. Conclusion

---

Audit findings show a mixed level of performance with respect to the overarching objectives of the RMP, with some areas of remediation activity demonstrating significant progress and others lagging.

The Operator has focussed rehabilitation effort to date on the revegetation of the McArthur River Diversion Channel and the Barney Creek Diversion Channel. Rehabilitation activity to reduce erosion and improve batter stability has been undertaken on the NOEF and Mine Levee; however, revegetation trials have not commenced on these areas.

Revegetation monitoring has found revegetation efforts have been relatively successful within the upper and lower reaches of the McArthur River Diversion Channel and the lower reaches of the Barney Creek Diversion Channel, where a canopy cover and/or vegetation diversity has been established. Conversely, in the middle-section of the McArthur River Diversion Channel and the middle and upper reaches of the Barney Creek Diversion Channel, the survivability of plantings has been challenged. Unfavourable rocky sides and the highly erosive impact of flooding upon topsoil and seedlings is linked to the limited establishment of vegetation in these sections.

The audit assessed performance against 11 RMP objectives, with performance against one objective rated as "good," against two other objectives rated as "very poor," and performance against the remainder of objectives was within the range of "good" to "poor". Areas of relatively high performance related to:

- Progressive rehabilitation of mine landforms, particularly diversion channels and exploration drill pads
- Implementation of thorough and regular rehabilitation monitoring, which supports issue detection, trend analysis, adaptive management, and regulatory compliance
- Demonstrated habitat connectivity along diversion channels for aquatic fauna
- Progress of effective erosion control measures on exposed batters of the NOEF

While the Operator has demonstrated effective action in some areas, gaps remain in planning, implementation and documentation of remediation activity. The audit identified opportunities for improvement to address these gaps in the following action areas:

- Revise the RMP to reflect current site conditions, regulatory expectations, and best-practice guidelines. Incorporate lessons learned and redefine completion criteria to ensure they are achievable, measurable, and focused on rehabilitation outcomes
- Enhance monitoring and data analysis to support year-on-year comparative assessments and track trends in progressive rehabilitation
- Develop a centralised revegetation data management system to improve information capture and accessibility
- Accelerate revegetation trials on the NOEF, using phased approaches to inform effective techniques and support closure planning

- Allocate resources to strengthen internal capacity and ensure rehabilitation is integrated into broader mine operations

Actions to effectively implement these opportunities will strengthen the Mine's rehabilitation program, enhance environmental outcomes, and facilitate alignment with regulatory expectations.