NT DEPARTMENT OF LANDS, PLANNING AND ENVIRONMENT

McArthur River Mine Independent Monitor

Independent Certifying Engineer Review Report 2025

10 December 2025

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Disclaimer

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1. Executive Summary

Worley Consulting Pty Ltd 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 environmental mining licence (DML0059-01) conditions. This report presents the findings of a review of the Independent Certifying Engineer (ICE) to assess the adequacy and implementation of activities to accept the design and construction, and to oversee and certify construction works against the design specifications.

The ICE review period was from 01 May 2024 to 30 April 2025. Relevant information from outside the review period has been included, where appropriate.

The Independent Monitor review found the ICE continues to fulfil its role in overseeing design and construction works in accordance with regulatory requirements. Improvements were noted in Inspection and Test Plan (ITP) management and more timely reporting for the annual North Overburden Emplacement Facility (NOEF) construction report. Across both the NOEF and the Tailings Storage Facility (TSF), the ICE demonstrated a structured and well-resourced approach, with integration of office-based and site-based personnel. The Operator's responsiveness to ICE requests and open communication has further supported a constructive working relationship, contributing to continuous improvement in environmental performance and compliance.

The 2024 NOEF "as-constructed" report, entitled "Peer Review of NOEF, Annual Construction Report 2024", second draft dated 10 September 2025, was prepared and signed by the ICE. Following the 2023 NOEF Annual Construction Report this was the second consecutive occasion that an annual NOEF "as-constructed" construction report has been completed.

The review of the ITP process identified notable improvements in the Operator's management and submission of ITPs, which enable the ICE to verify construction quality. While delays in ITP preparation and submission remain an issue—particularly where works may proceed ahead of ITP finalisation, the number of outstanding ITPs has significantly decreased. The Operator's proactive measures, including dedicated personnel and weekly status meetings, have contributed to this improvement. Continued focus on timely ITP completion and integration into the ICE's verification process are important to maintaining construction assurance.

The ICE prepared detailed TSF "as-constructed" reports for Cell 1 Stage 6 and Cell 2 Stage 8 raises. However, these reports were not submitted to the Department of Lands, Planning and Environment (DLPE) within the review period, representing a significant delay in regulatory reporting. Monitoring of TSF stability through the piezometer network continues under ICE oversight, though reliability issues with piezometer instrumentation were noted. The ICE has recommended repairs and closer monitoring to address piezometer data gaps and ensure TSF safety.

DLPE's review of TSF Quarterly Reports identified several outstanding actions and recommendations that were not adequately addressed or recorded in the TSF Recommendations, Instructions and Action Register. Key issues raised by DLPE include: the need for ICE and/or Independent Tailings Review Board (ITRB) endorsement of each TSF raise, improved documentation of ICE recommendations, and more comprehensive reporting on piezometer data and operational status. The Operator is also expected to consult the ICE when deviations from the TSF Operations, Maintenance and Surveillance (OMS) Manual occur and to ensure corrective actions are clearly identified and assessed. These requirements are important to maintain effective oversight and management of the TSF and should be addressed in future TSF Quarterly Reports.

Opportunities for improvement for the Operator that will assist in improving the performance of the ICE include:

- improve timeliness of "as-constructed" report submissions for TSF and other listed structures
- improve the timelines of TSF Quarterly Reports submissions
- integrate ITP status into weekly coordination meetings
- restore adequate functionality of the TSF piezometer network
- provide consolidated TSF piezometer register and status updates
- integrate TSF ICE recommendations into the TSF Recommendations, Instructions and Action Register
- consult ICE on departures from TSF OMS Manual
- include ICE commentary in TSF Quarterly Reports.

In summary, the ICE's activities at the NOEF and TSF during the review period were generally compliant and demonstrated ongoing improvement. Opportunities for improvement for the ICE to enhance compliance and environmental performance have been developed. Implementation of these opportunities will further strengthen the ICE oversight of construction activities.

2. Acronyms and abbreviations

Table 2-1: Acronyms and abbreviations

Acronym / abbreviation	Definition
AEPAR	Annual Environmental Performance Audit Report
AMD	Acidic and Metalliferous Drainage
ARI	Average Recurrence Interval
BGM	Bituminous Geomembrane
CCL	compacted clay liner
COP	Critical Operating Parameters
DLPE	Department of Lands, Planning and Environment
EoR	Engineer of Record
FTE	full time equivalent
ICE	Independent Certifying Engineer
ITP	Inspection and Test Plan
ITRB	Independent Tailings Review Board
Mine	McArthur River Mine
MMP	Mining Management Plan
MS-NAF (LC)	Metalliferous saline non-acid forming rock (low capacity)
OMS Manual	Operations, Maintenance and Surveillance Manual
N/A	Not applicable
NCRs	Non-Compliance Reports
NEa	North East Alpha
NEb	North East Bravo
NW	North West
NOEF	North Overburden Emplacement Facility
PAF	Potentially Acid Forming
PAF (HC)	Potentially acid forming rock (high capacity)
PAF (RE)	Potentially acid forming rock (reactive)
QA/QC	Quality Assurance/Quality Control
SEa	South East Alpha
TSF	Tailings Storage Facility
WMD	Water Management Dam

3. Introduction and objective

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 review was undertaken of the Independent Certifying Engineer (ICE) activities.

The objective of the ICE review was to assess the adequacy and implementation of the ICE's activities to:

- accept the design and construction works
- oversee and certify construction works against the design specifications.

4. Scope and approach

The scope of the ICE review focused on the adequacy of implementation of ICE activities. The regulatory requirements in relation to the ICE are prescribed in the Authorisation conditions 49, 50, 51, 52, 55, 57, 64, 76, 77, 78, 79 and 81.

To inform the review, interviews were conducted with the ICE and Operator representatives:

- Tailings Storage Facility (TSF), Teams meeting on 29 May 2025
  - ICE - the Engineer of Record (EoR) and a Civil Engineer
  - Operator – Water Superintendent, Environment Superintendent, Lead Environment Advisor and 2 Environment Officers
- NOEF, Teams Meeting on 02 June 2025,
  - ICE - Senior Dam and Geotechnical Engineer
  - Operator – Environment Officer

The ICE review period was from 01 May 2024 to 30 April 2025, which aligns with the Annual Environmental Performance Audit Report (AEPAR) 2025 audit period. Relevant information from outside the review period has been included, where appropriate.

4.1 Background

The Authorisation conditions (DML0059-01) detail the obligations and deliverables in relation to the ICE activities. The Operator is required to appoint an ICE to conduct activities including to:

- accept the design
- be present during all phases of construction
- oversee and certify that construction works meet design specifications
- approve changes to design during construction
- verify any monitoring equipment installed as part of construction
- provide certified “as-constructed” reports detailing all works undertaken, including:
  - ‘hold point’ sign offs
  - testing carried out
  - compliance of test results with the acceptance criteria
  - justification that demonstrates in the event of any departures from the plan, that the design intent and performance of the structure is still met
- verify the suitability of the potentially acid forming (PAF) material placement methodology.

The ICE activities at the Mine are organised into two distinct work streams by facility:

- NOEF - the NOEF is designed, constructed and operated by the Operator with the ICE responsible for certifying that the NOEF is built and operated according to the design

specifications. The ICE oversees the Operator's NOEF Projects Team who undertake the civil construction, along with the Operator's NOEF Operations Team who are responsible for the placement of the overburden.

- TSF - the endorsement of the consultant's TSF design and the TSF "as-constructed" reports are provided by the ICE.

5. Findings

The key findings in relation to the ICE review are outlined below.

The eight member NOEF ICE team comprises four office-based team members and four on-site team members. The on-site team members work back-to-back shifts to provide a full time equivalent (FTE) presence during all phases of the NOEF.

The four member TSF ICE team comprises two office-based team members and two on-site team members. It is understood that in the review period this represents an increased number of ICE on-site 'deputies' to ensure full time coverage.

The ICE on-site team members are assigned to either NOEF or TSF. On occasions they work between the NOEF and TSF roles to facilitate transfer of information and knowledge between facility teams, providing flexibility in staff resourcing. The ICE site and office personnel are supported by ICE office-based discipline specialists in geotechnical, hydrology, hydrogeology, geochemistry, closure and geosynthetics.

The TSF ICE role is distinct from the NOEF ICE role, and usually, undertaken by different individuals. In the case of the TSF, the term TSF EoR is used interchangeably with TSF ICE which has the potential to cause confusion. This report uses the term ICE consistently, in line with the Authorisation.

It was evident that a collaborative and effective working relationship continued to develop between the ICE and the Operator during this review period.

The ICE operates subject to contractual arrangements that support continuity and retaining significant operational knowledge of the site's history and detailed understanding of the NOEF and TSF.

The ICE held appropriate insurance coverage for the review period, including Professional Indemnity, and Public and Products Liability.

The ICE role includes warranting and accepting the design and construction works as required by Condition 49 of the Authorisation. The ICE does not warrant the design and construction however they will provide endorsement of the design and construction works, subject to receipt of all required documentation. In the situation where the ICE does not warrant the design and construction work, overall risk (including financial and environmental risks) associated with the project's design and construction increases for the Operator as they assume more responsibility.

5.1 North Overburden Emplacement Facility

"As-constructed" reports prepared by the ICE included the Peer Review of the NOEF Annual Construction Report 2024, second draft dated 10 September 2025 and Peer Review of the

NOEF Monthly Construction Progress Reports (January 2025 to April 2025) were received either during or since the review period.

The North West Foundation Design ICE Review and NOEF North West Stage Wedge Construction ICE Review were received prior to review period. The most recent reviews provided were the NOEF Independent Design Review of North-East Bravo Stage Foundation Design ICE letter dated 13 August 2024 and NOEF, Independent Design Review of South East Alpha Stage Foundation & Base Design ICE letter dated 14 October 2024.

In 2024/25 the Independent Monitor was provided examples of various construction reports prepared by the ICE to document oversight and progressive certification that construction work meets the specifications and design intent.

There is a hierarchy of interrelated construction reports for the NOEF and examples sighted include:

- Daily Site Inspection Reports – including a daily diary and photographs of placement and volumes of material data is entered into ITPs.
- Weekly Construction Reports – prepared by the ICE and the Mine's short term NOEF planning team, titled "NOEF Weekly Overburden Placement Report", providing collation of Daily Reports information and scans illustrating the type and location of placed material.
- Monthly Construction Reports – summarises the status of construction and operations work progressed at the NOEF, provides detail of the Quality Assurance/Quality Control (QA/QC) requirements, test result approval, reviewing hold points and witness points, Non-Compliance Reports (NCRs) outlining rework required to rectify any faults, and resolution of NCRs.
- Annual Construction Reports – annual performance review, includes all ITPs.

The ICE is required to be present on-site during all phases of construction where prescribed in the Mining Management Plan (MMP), including hold points. The hold point sign-off and reporting by the ICE and the Operator is required for the test and survey results before work continues. Examples of NOEF foundation hold points include:

- compaction testing results (avoid rework)
- proof-roll of foundation (any unsuitable material replaced before proceeding)
- placement of geofabric prior to rockfill.

The ICE also signs off witness points (e.g. inspections or tests), which unlike hold points, allow work to continue. Witness points are defined in the Project Quality Plan e.g. material testing for the compacted clay liner (CCL).

The ICE has weekly meetings with the Operator's NOEF short term planning team and is involved with the Operator's review of NOEF performance which examines aspects such as the underdrains, bituminous geomembrane and potentially acid forming rock (reactive) (PAF (RE)) Trial. The ICE is advised they were involved with the Operator in stage design reviews, including risk reviews.

An initiative in-progress between the Operator and their consultant is the proposal to develop a digital twin model of the NOEF to be available in 2026. The 3D model combined with GIS would be developed as a new data management platform. The Operator's development of a digital twin model would create a powerful tool to organise layers of data such as ITPs, test results, survey data, cover and Bituminous Geomembrane (BGM) system monitoring, for data analysis and interpretation to simulate and predict NOEF behaviour and performance. The ICE supports the initiative to develop a digital twin model of the NOEF as this would benefit the ICE activities as a centralised repository for data management.

5.1.1 Annual NOEF Construction Report

An improvement observed in both 2023/24 and 2024/25 review periods is completion by the ICE of the Annual NOEF Construction Report within 12 months of the construction works.

The 2024 NOEF "as-constructed" report, entitled "Peer Review of NOEF, Annual Construction Report 2024", Revision A 11 July 2025 and revision B draft dated 10 September 2025, was prepared by the ICE to provide details of the construction progressed within the NOEF in 2024. The report covers both the Projects and Operations Teams' construction works within the NOEF.

The NOEF Annual Construction Report 2024 states "*Based on routine site inspections, observations and review of QA/QC documentation, the construction works by the Projects team for 2024 in the Central East Bravo, North East Alpha, South East Alpha, North East Bravo, North West stages and […South] Sediment Dam was completed in general accordance with the specifications and are consistent with the design intent*." Noting the ICE's reference to "completed" means the works were undertaken and may be ongoing.

Opportunities for improvement (OFIs) relevant to the "as-constructed" reports have been included in Table 7-1.

5.1.1.1 NOEF Projects Team

The majority of the civil works undertaken by the Operator's Projects Team during 2024 were completed within the North East Alpha (NEa) and the South East Alpha (SEa) stages. Project construction works were undertaken on a total of five stages including North East Alpha (NEa), North East Bravo (NEb), North West (NW), South East Alpha (SEa) and the South Sediment Dam.

The civil works undertaken by the Operator Projects Team during 2024 included:

- extraction towers construction and backfill (NEa and NEb),
- liner installation and achor trench
- flood levee foundation and construction to Q100 Average Recurrence Interval (ARI) level at NEa and Q20 ARI level at SEa.

The South Sediment Dam construction undertaken involved embankment, spillway, outlet pipe, culverts, diversion drain and HDPE liner installation.

5.1.1.2 NOEF Operations Team

The Operator's NOEF Operations Team carried out placement of overburden within the NOEF throughout 2024. The works included the transportation and emplacement of specified materials (PAF (RE), potentially acid forming rock (high capacity) (PAF (HC)), metalliferous saline non-acid forming rock (low capacity) (MS-NAF (LC))) in the locations as per the design plans, with construction of the Core Zone, Wedge Zone, Halo, and alluvial batters.

Evidence was provided that NOEF vertical temperature monitoring bores were installed between May 2024 and April 2025, including to 'replace decommissioned bores within the West stage'. The onsite laboratory completed geochemical analysis of selected samples to compare to site specification requirements for material classification. The Operator's survey team carried out surveying of design compliance for inclusion into the weekly ITPs. The progress of overburden placement within the NOEF was conveyed to the ICE through the weekly ITP process such that a conformance review against the design specifications could be undertaken. Several ITPs were not received throughout the year; hence a full review of the Operator's NOEF Operations Team's work could not be completed by the ICE at the time of drafting the NOEF Annual Construction Report 2024. In this NOEF Annual Construction Report 2024, the ICE describes each of the areas of placement of overburden material as "*generally in accordance with the approved management strategy*", however broader statements regarding compliance are unable to be provided due to lack of receipt of some of the ITPs.

5.1.2 NOEF wet season preparedness

As part of the response to damage to the NOEF BGM cover system and flood protection levees that resulted from the flood event in March 2024 (associated with ex-Tropical Cyclone Megan), and to ensure the continued functionality of the flood protection levees, the ICE conducted a risk assessment to identify potential hazards and appropriate mitigation measures (documented in ICE letter dated 04 July 2025 subject: NOEF Flood Protection Levee Repair Works, July 2024 - September 2024, ICE Oversight). The following actions were recommended, and stand-alone diesel generators were installed at the NOEF extraction towers during the review period:

- Conduct a pre-wet season inspection of the flood protection levees to confirm the BGM condition
- Implement continuous surveillance and monitoring throughout the wet season
- Ensure that pumping systems within the NOEF extraction towers remain fully operational as per their Operation and Maintenance Manuals
- Perform thorough post-flood inspections to assess any damage or required maintenance and implement a process for rectification as required.

The Operator advised that all emplacement areas were active and no capping occurred prior to the 2024/2025 wet season. The ICE advised that they raised the issue of 2025/2026 wet-season preparedness for the NOEF to reduce the risks associated with extreme weather events to emplacement cells (e.g. PAF (RE) cells) left dormant over the wet season. In particular, preparing plans and checklists for active emplacement areas, reducing the number of exposed

areas and, where practical, temporary cover capping to NOEF cells prior to the wet season. OFIs relevant to wet season preparation have been included in Table 7-1.

5.1.3 Cover system design

The BGM cover system for the NOEF is currently in a large-scale trial phase. The installation of a BGM concept design over large areas of the NOEF's southern batters' slopes. The detailed design review of the BGM cover system is pending, and ICE endorsement will only occur following completion of this review. At present, the BGM has not been included in the ICE's Annual NOEF Construction Reports. When the detailed design is complete it will be reviewed by the ICE prior to proceeding to construction. Ultimately the full cover system design construction is to be certified by the ICE. The ICE advised they have had open communication with the Operator in a study of the cover system trial and preparation of a cover system QA/QC report. To support the ultimate ICE certification of the cover system it would be beneficial to continue ICE involvement in the planning and development of the BGM cover system detailed design. OFIs relevant to the ICE involvement in the BGM cover system have been included in Table 7-1.

5.1.4 Inspection and Test Plan (ITPs)

The Operator's NOEF Projects and Operations Teams utilise a weekly ITP quality control process to document the placement, and construction works undertaken across the varying zones within the NOEF. For each area of work undertaken within a zone over a weekly period, the Operator's NOEF Projects and Operations Teams submit ITPs detailing the "as-constructed" quality checks for the works completed.

Daily construction inspections are conducted by the ICE and are guided by ITPs prepared by the Operator for the ICE to review and verify construction activities. It is notable that ITPs for some NOEF work areas (mainly from the NOEF Operations Team) are between two weeks to 12 months behind. Such delays present a risk that construction works undertaken outpace design and may not be completed in accordance with the ITP (yet to be prepared) for that work area. A weekly check is undertaken to identify any ITPs not submitted. Any missing ITPs or ITP issues are escalated in an NCR to identify any matters of concern between the ICE and the Operator.

The Independent Monitor was advised that the number of outstanding ITPs has reduced in the 2023/24 period and again in the 2024/25 period. The ICE advised in June 2025 that this improvement had 27 ITPs out of 2,983 outstanding (9.6%). It was advised that the Operator's NOEF Operation Planning Team has a recruitment process to recruit 3 FTE staff to assist to clear the 2024 ITP backlog. The provision of NOEF Construction Team ITPs allowed for the ICE to certify the construction against the design specifications. Where the NOEF Operations Team ITPs were not provided, the ICE was unable to certify that the construction had met the design specifications.

Related to the NOEF Operations team activities, the ICE NOEF Annual Construction Report 2024 states "*At the time of drafting this report, some ITPs remain outstanding at the end of*

2024 due to either requiring further information to assess the works or the ITP is yet to be submitted to the ICE." and "*Not all work areas constructed in 2024 can be commented on at the time of writing this report given the number of outstanding ITP's still to be submitted to the ICE for review*".

The Operator advised "*There has been an increased focus in the timeliness of completion of the Operations ITPs during the reporting period, including dedicated personnel allocated to this task, weekly status update meetings held and regular communications between MRM and the ICE regarding the status of the Operations ITPs. As a result, there has been a significant improvement over previous years, and the Operational ITPs are effectively up to date as at the end of the reporting period*."

The Operator has made improvements in addressing this ITP backlog issue. These include allocating dedicated personnel, holding weekly status meetings, and maintaining regular communication with the ICE. As a result, the timeliness and completeness of Operations ITPs have significantly improved compared to prior to 2024.

An OFI relevant to the NOEF ITPs has been included in Table 7-1.

5.2 Tailings Storage Facility

The design and construction of TSF cell raises is required to be overseen and certified by the ICE under Condition 49.g and 9.b of the Authorisation by submitting an "as-constructed" report. TSF Construction Reports to satisfy the requirement for "as-constructed" construction reports were prepared by the ICE for Cell 1 Stage 6 Raise to RL 10060.5 m (dated May 2025) and for Cell 2 Stage 8 Raise to RL 10064 m (dated May 2025).

The ICE conducts TSF routine construction supervision inspections (e.g. Construction Checklists, Daily Diary, Daily Tracking Spreadsheets, Material Test Registers, Hold Point Release Forms, Piezometer data analysis). ICE inspections completed during the review period were:

- Supervision of the TSF Cell 2 (Stage 9) Intermediate Buttress construction.
- Supervision of the TSF Cell 1 Stage 6 Raise construction.
- Supervision of the TSF Cell 2 Stage 8 Raise construction.
- Supervision of Water Management Dam (WMD) Auxiliary Spillway construction
- Monthly TSF and WMD visual inspections.

Stability of the TSF structure continues to be monitored by the Operator with the ICE providing oversight for how the vibrating wire piezometer network results are interpreted to achieve optimal performance of the facility. Piezometer data was monitored over the reporting period using a combination of telemetry and manual downloads from data loggers. The ICE's review of the piezometer data concluded that "*the majority of the piezometer instruments exhibited pore pressure profiles consistent with satisfactory factors of safety using peak shear strength for the current configuration of embankment, based on existing stability models*".

The vibrating wire piezometer pore pressure results assessed by the ICE are reported in the quarterly TSF report prepared by the Operator and submitted to DLPE. The TSF Quarter 3 Piezometer review dated November 2024 found "*118 out of the 174 instruments are returning unusable data…*" and "*89 instruments have missing data in their trace in the past 3 months*". The ICE subsequently identified 52 piezometers for repair and recommended the piezometric data be reviewed weekly to identify developing trends and provide continuous understanding of piezometric level within the TSF.

Effective management of pore pressure achieved through monitoring the piezometer network and careful water level management is fundamental for ensuring the safety and stability of the TSF. The Operator's TSF Quarterly Reports state that actions are being undertaken to return the network to its intended capacity.

The *TSF Cell 2 Stage 8 Raise to RL100064, Detailed Design Report*, dated 31 August 2023, includes a 1.0 m crest raise, modifications to the buttress and raise of the emergency spillway. The ICE conducted a review of the TSF Cell 2 Stage 8 Raise Design Report, as described in a letter dated 29 August 2023. It is noted there is no mention of the ICE in this design report and one reference to the EoR. Design reports should provide more clarity by describing the ICE role in the design and certification of the TSF construction, specifically in relation to the relevant conditions of the Authorisation.

An OFI relevant to incorporating the ICE role in the design and certification of the TSF construction into TSF Design Reports has been included in Table 7-1.

5.2.1 TSF "as-constructed" reports

TSF construction activities have been comprehensively documented in the "as-constructed" reports by the ICE. These reports include detailed records of geotechnical testing resulting e.g. particle size distribution, moisture content, compaction results. Hold Point Release forms and acceptance criteria are also incorporated to demonstrate compliance with project specifications. Additionally, any technical queries raised during construction have been addressed and recorded within the reports.

Given completion of Cell 2 Stage 8 (1 m raise to RL 10,064 m) in April 2024 and Cell 1 Stage 6 (1.5 m raise to RL10,060.5 m) in December 2024, according to the TSF Quarterly Report Q1 2025 dated August 2025, the "as-constructed" reports are not considered to have been prepared in a timely manner. Delays of between 5 to 12 months undermine regulatory compliance and construction assurance reporting.

The Cell 1 Stage 6 Raise and Cell 2 Stage 8 Raise construction reports prepared by the ICE both conclude that:

- "*Raise construction was carried out under the supervision of an experienced Construction Supervisor*."

- "[…]*the quality assurance procedures and records are considered to be satisfactory and in general accordance with the designs specifications requirements*."
- "[…] *the Raise has been constructed to an appropriate standard, inline with the design intent*".

The Construction Reports made recommendations including:

- "[…] *the TSF […Operations, Maintenance and Surveillance] (OMS) Manual […] incorporation of the Critical Operating Parameters (COPs) which are considered fundamental to dam safety*."
- "[…] *the new tailings beach vibrating wire piezometer should be closely monitored with results incorporated into the Observational Approach*."
- "*Dam safety triggers associated with the new piezometers should be included with both the OMS Manual and the Dam Safety Emergency Plan*."

An OFI relevant to the TSF "as-constructed" reports has been included in Table 7-1.

5.2.2 TSF Quarterly Reports

In accordance with the requirements of Condition 83 of the Authorisation, the Operator submitted Quarterly Reports that provide an assessment of the effectiveness of seepage monitoring and management at the TSF. The following Quarterly Reports corresponding to the 2024/25 review period were submitted to the department between 5 and 9 months after the reporting period.

- MRM TSF Quarterly Report - Q2 2024, submitted March 2025
- MRM TSF Quarterly Report - Q3 2024, submitted April 2025
- MRM TSF Quarterly Report - Q4 2024, submitted May 2025
- MRM TSF Quarterly Report - Q1 2025, submitted August 2025

The quarterly reports provide updates on key performance indicators, construction progress and actions relevant to seepage management. The reports found the TSF continues to operate generally in accordance with the OMS Manual and reported on parameters including:

- water levels in the TSF, maintained below the Maximum Operating Level
- stability of the TSF, along with monitoring data including the vibrating wire piezometers network
- tailings densities and target range
- tailings deposition quantity
- reclaimed TSF seepage and WMD seepage volumes
- groundwater seepage and seepage returned from the Interception Trench.

No new seepage locations were identified by the Operator. No dam safety concerns associated with seepage were raised in any of the TSF Quarterly Reports relevant to the review period.

The Operator provides the vibrating wire piezometer network monitoring data from the TSF to the design team who prepare the piezometer review for inclusion as an attachment to each TSF Quarterly Report. These assessments are then reviewed by the ICE and findings are included in the TSF Quarterly Report.

Overall, based on the Operator's review of the available TSF monitoring data and trends, they conclude that the key environmental performance objectives relevant to the TSF are being met, and no trends of concern for the stability of the TSF embankment have been identified.

OFIs relevant to TSF Quarterly Reports have been included in Table 7-1.

5.2.3 TSF Quarterly Reports - DLPE review

DLPE conducted a review of TSF Quarterly Reports against Authorisation Condition 83 (or the equivalent condition for the version of the Authorisation relevant at the time) for the period October 2022 to December 2024 and communicated findings to the Operator in June 2025. The review identified actions and recommendations that remain outstanding or have not been appropriately captured in the TSF Recommendations, Instruction and Action Register (an appendix to the TSF Quarterly Reports).

Although the DLPE letter was issued after the review period, its findings are relevant to the current review as they relate to the Operator requirement to address and update all outstanding actions relating to the TSF and to respond in the next TSF Quarterly Report (period from 01 January 2025 to 31 March 2025) which falls within the review scope. The DLPE issues and requirements raised with the Operator relevant to the ICE include:

- confirmation of ICE and /or ITRB endorsement of each raise
- capture ICE recommendations in TSF Quarterly Reports and record in the TSF Recommendation, Instructions and Action Register
- provide a consolidated register of all piezometers and operational status
- explicitly state whether the available piezometer data is appropriate to assess the condition and inform effective management of the TSF
- specify any necessary corrective action to ensure effective management of the TSF
- identify any piezometer with and pressure reading outside the established 'dry' or 'normal' zone and provide this information to the ICE
- provide a comment from the ICE on the appropriates of action taken resulting from periods of low tailings-density
- consult the ICE when an element of the TSF operation deviates from the OMS Manual.

Consistent with DLPE's review the Independent Monitor noted several outstanding actions and recommendations that were not adequately addressed. Since the AEPAR 2022, the Independent Monitor has included an observation that recommendations in the TSF Recommendation Instruction and Action Register should be closed out by the due date.

OFIs relevant to TSF Quarterly Reports including piezometers have been included in Table 7-1.

5.3 "As-constructed" reports

The Operator is required to annually submit to DLPE, a list of structures scheduled to be constructed in the coming year. On completion of construction the ICE is to provide certification of the "as-constructed" report as per Condition 49.g.

In accordance with the Authorisation Condition 9.a the Operator provided a list of structures and estimated dates for completion of construction and dates for "as-constructed" reports (dated 25 October 2024), refer Table 5-1 below. It is noted that the construction timeframes provided by the Operator were subject to change. "As-constructed" reports are required to be submitted by the Operator to the Department within 60 days, or an alternative date agreed in writing, on construction being finalised in accordance with Condition 9.b.

Table 5-1: Forecast construction schedule submitted to DLPE by the Operator on 25 October 2024

Structure name	Construction and commissioning completion estimated date	As-constructed construction report completion estimated date
Water Management Dam	Q3, 2024	Q4, 2024
TSF Cell 2, Stage 8 to 10,064RL	Q3, 2024	Q4, 2024
TSF Cell 1, Stage 6 to 10060RL	Q4, 2024	Q1, 2025
South Sediment Dam	Q2, 2025	Q3, 2025

Note: Construction timeframes may be subject to change. e.g. TSF Cell 2, Stage 8 and Cell 1, Stage 6 as construed reports' completion were originally estimated for Q1, 2024 and was issue dated May 2025.

"As-constructed" reports for the other structures listed in Table 6-1 were received in 2025 but none within the 60 days of completion of construction. The Water Management Dam Upgrade Construction report (construction completed in August 2024) was submitted in February 2025. The TSF Cell 2, Stage 8 (completed August 2024) and Cell 1 Stage 6 (completed December 2024) "as-constructed" reports were both submitted in May 2025. Construction completion dates are taken from the TSF Quarterly Report Q1 2025 dated August 2025.

It is notable that construction stages of the NOEF project construction or NOEF overburden emplacement operational areas are not listed as structures scheduled to be constructed. An annual NOEF Construction Report is prepared each year for the NOEF's continuous construction activities to document the construction works and to certify the works satisfy the design specifications, refer Section 5.1.1 above.

A register of structures updated with all the structures for construction would assist to manage and to maintain the historical list of "as-constructed" reports not completed in the previous year, so these structures are tracked until completion. It is also recommended that stages of NOEF construction areas (e.g. CCL, foundation, underdrain, extraction towers) and NOEF operations overburden emplacement construction work are added to provide a more comprehensive annual structure "as-constructed" list.

A clear definition of construction completion (e.g. construction work completed, commissioning, hand-over, practical completion, etc) for each structure would assist to understand when the relevant "as-constructed" report is due.

An OFI relevant to defining “construction being finalised” to clarify timing for when “as constructed” reports should be submitted has been included in AEPAR 2025, Table 9-2, OFI-24-DE-REG-06.

5.3.1 South Sediment Dam

The SSD was under construction during the review period. The list of structures submitted on 25 October 2024 by the Operator to DLPE in compliance with the Authorisation indicated the SSD construction would be completed in Q2 2025. However, the Operator has since advised that based on the limited environmental risk of this structure (e.g. it does not store Acidic and Metalliferous Drainage (AMD)) they no longer plan to prepare a separate “as-constructed” report for the SSD. As-constructed details for the SSD will be included in the NOEF Annual Construction Report 2024.

5.3.2 Water Management Dam

The WMD Upgrade included the raising of the dam wall crest which was completed in early 2023; however, spillway works were ongoing in May 2024. WMD upgrade works were completed in in August 2024 and the WMD Main Embankment Upgrade Construction Report was submitted dated February 2025. The “as-constructed” report is not considered to have been prepared in a timely manner. Delays of 6 months undermine regulatory compliance and construction assurance.

Some construction tasks were outstanding, including: installation of the auxiliary spillway, all-weather access road along main embankment toe. On completion these outstanding construction items will be documented in an addendum to the WMD Main Embankment Upgrade Construction Report. It is an improvement to prepare an “as-constructed” report near the time of completion and then providing remaining items as an addendum rather than incurring lengthy delays in finalising “as-constructed” reports waiting for all information to be available.

6. Authorisation compliance

The Authorisation conditions prescribe the regulatory requirements in relation to the ICE. An assessment of the level of compliance for relevant active conditions was conducted based on evidence gathered for the AEPAR 2025 for the 01 May 2024 through to 30 April 2025 audit period.

A summary of the compliance audit findings for the ICE's performance against the Authorisation conditions is included in Table 6-1. Noting only the compliance level attained has been listed for conciseness. The audit evidence is detailed in Appendix A of the AEPAR 2025.

Full compliance with the Authorisation relevant to the ICE was achieved for the majority of ICE related conditions. Two conditions were assessed as part compliances (high) where evidence did not fully satisfy the requirements, reflecting that the evidence reviewed did not meet one or more of the following:

- failed to meet a small number of elements of the condition/requirement
- high level of evidence of action
- implemented plan to address
- represented a low risk to the environment, Operator and/or DLPE.

The balance of conditions were assessed as not applicable as they either did not occur or relate to future requirements.

Overall, a high level of compliance was achieved against the ICE related Authorisation conditions. The majority of conditions (13 out of 15) were fully met and only two conditions were assessed as part compliance (high). The part compliance (high) gaps related to:

- the ICE not warranting the design and construction
- limitations around receipt of the NOEF Operations ITPs to allow the ICE to review the construction works
- delays in submitting 'as constructed" reports.

These opportunities for improvement are discussed in Section 7.

Table 6-1: Authorisation conditions relevant to the ICE and their compliance level

23 July 2024 Authorisation Condition No.	Condition/requirement	Compliance
49.	The Operator must appoint an Independent Certifying Engineer (ICE) to:	Refer to sub conditions
49.a	warrant and accept both the design and construction works;	Part Compliance (High)
49.b	be present during all phases of construction where required in the approved MMP (including at hold points) and oversee and certify the works that they meet design specifications;	Full Compliance
49.c	approve re-commencement of construction at defined hold points;	Full Compliance
49.d	approve any material changes to the design during construction;	Full Compliance
49.e	verify any monitoring equipment/structure installed or to be installed as part of the construction as specified in the relevant detailed designs remains functional at the conclusion of the construction works;	Full Compliance
49.e.i	in the event such equipment becomes non-functional, then replacement or an ICE approved alternative must be implemented by the Operator;	Full Compliance
49.f	agree in writing, if the Operator wish to appoint an Operator's project manager/resident engineer as an onsite representative, and agree in writing that this does not diminish the ICE's responsibility or liability for the project;	Not applicable (N/A)
49.g	on completion of construction, provide a certified "as-constructed" construction report detailing:	Part Compliance (High)
49.g.i	all the works undertaken;	Full Compliance
49.g.ii	evidence of:	Refer to sub conditions
49.g.ii.a	hold-point sign-offs;	Full Compliance
49.g.ii.b	testing carried out (including but not limited to field tests, laboratory tests and statistical tests);	Full Compliance
49.g.ii.c	acceptance criteria applied and compliance of the test results with the acceptance criteria;	Full Compliance
49.g.ii.d	where deviations to the plan have occurred, justification that demonstrates the design intent and performance of the structure has not been compromised.	Full Compliance
50	The Operator must ensure that the ICE holds appropriate public and professional indemnity insurance to cover the scope of works associated with the scope of work certified.	Full Compliance
51.d	The Operator must: together with the ICE, provide a written response to the satisfaction of the Department, in the event that future review of the designs by independent experts require additional matters to be addressed;	N/A
52.f	From the date of authorisation Non-benign Waste is to be permanently placed consistent with the approved MMP: the ICE verifies the suitability of the PAF placement methodology with respect to particle size segregation and advection barriers;	Full Compliance

23 July 2024 Authorisation Condition No.	Condition / requirement	Compliance
52.i	From the date of authorisation Non-benign Waste is to be permanently placed consistent with the approved MMP: in the event that future review of the designs or as-built structure by independent experts require additional matters to be addressed, the Operator together with the ICE must provide a written response to the satisfaction of the Department;	N/A
55.a	During construction of the NOEF, the Operator must ensure: engagement of the ICE consistent with Condition 49;	Full Compliance
57.f	The Operator must ensure that non-benign waste temporarily placed outside of the NOEF: has oversight provided by ICE as per Condition 49.	N/A
64.iii	Wastes generated from operation of the Water Treatment Plant and Gypsum Plant must be disposed of in accordance with concepts and management systems detailed in the approved MMP, ensuring: the ICE or an approved qualified and experienced independent third party endorse the waste disposal strategy, if the wastes are to be placed in the NOEF.	N/A
76.(2)	EPROD and WPROD: The Operator must: Prior to use of the structure, submit to the Department construction reports including QA and QC data endorsed by the ICE within 60 days of construction being completed.	N/A
77.b	The Operator is authorised to complete works to construct the Southern Water Management Dam in accordance with the MMP, ensuring: Detailed designs be reviewed by an ICE, consistent with Condition 49 and submitted to the Department for acceptance prior to commencement of construction works;	N/A
78	Prior to the use of the Southern Water Management Dam, submit to the Department construction reports including QA and QC data endorsed by the ICE within 60 days of construction being completed.	N/A
79.e	TSF: From the date of authorisation of the Overburden Management Project, tailings must be managed in accordance with the following: in the event that future review of the designs or as-built structure by independent experts require additional matters to be addressed, the Operator together with the ICE must provide a written response that justifies the existing design or proposes an alternate design to the satisfaction of the Department.	N/A
81	For each lift, the Operator must ensure detailed designs follow the approved McArthur River Mining Pty Ltd Tailings Storage Facility Raising General Specification for Design and Construction; with oversight provided by the ICE consistent with Condition 49.	Full Compliance

7. Opportunities for improvement

Potential opportunities for improvement to support the ICE's role in overseeing construction and certification of the works have been identified through the review and audit process. These opportunities, outlined in Table 7-1, are intended to promote continuous improvement, noting these are not mandatory requirements.

Table 7-1: ICE opportunities for improvement

OFI ref.	Opportunities for improvement
OFI-25-OP-ICE- 01	Conduct NOEF pre-wet season inspections of flood protection levees to verify the condition of the bituminous geomembrane (BGM). Also conduct surveillance throughout the wet season and conduct post-flood inspection to assess any damage or required maintenance.
OFI-25-OP-ICE- 02	Develop and apply NOEF wet season preparedness plans and checklists for active emplacement areas, including reducing exposed areas and applying temporary capping where practical.
OFI-25-OP-ICE- 03	Continue ICE involvement throughout the planning and development stages of the detailed design for the BGM cover system.
OFI-25-OP-ICE- 04	Following ICE endorsement of the BGM cover system detailed design, include cover system progress and QA/QC findings in future Annual NOEF Construction reports.
OFI-25-OP-ICE- 05	Improve timeliness of "as-constructed" reports by submitting "as-constructed" reports (TSF, WMD and other listed structures) within the required timeframe following construction completion.
OFI-25-OP-ICE- 06	Improve timeliness of TSF Quarterly Reports by submitting prior to the end of the following quarter to support timely TSF construction assurance reporting.
OFI-25-OP-ICE- 07	Continue to integrate ITP status into weekly coordination meetings between the Operator and ICE, and include a standing agenda item on ITP progress, outstanding items, and corrective actions.
OFI-25-OP-ICE- 08	Complete a risk-based review of the piezometer network to determine the instruments identified for replacement and those that can be decommissioned, by Q2 2026. Restore adequate functionality of the TSF piezometer network and ensure all instruments remain operational.
OFI-25-OP-ICE- 09	Maintain and submit a comprehensive register of all TSF piezometers, including operational status, data quality, and any instruments outside normal pressure ranges.
OFI-25-OP-ICE- 10	Ensure that all TSF design reports clearly describe the ICE role in the design review and certification process. Include explicit reference to how the ICE's responsibilities align with the relevant conditions of the Authorisation.
OFI-25-OP-ICE- 11	Ensure all ICE recommendations from quarterly and construction reports are captured in the TSF Recommendations, Instructions and Action Register, and are tracked to resolution.
OFI-25-OP-ICE- 12	Establish a formal protocol to consult the ICE whenever TSF operations depart from the TSF Operations, Maintenance and Surveillance (OMS) Manual, including during periods of low tailings density or abnormal pore pressure readings.
OFI-25-OP-ICE- 13	Ensure each TSF Quarterly Report includes a statement from the ICE regarding the appropriateness of actions taken, data reliability, and any dam safety implications.

8. Conclusions

The ICE continues to fulfil its role in overseeing NOEF and TSF design and construction works in accordance with regulatory requirements. These ICE activities contribute to protecting the health of the McArthur River from the potential impacts of mining related activities. The ICE's oversight provides assurance that the design safeguards are properly implemented during construction to manage and mitigate potential environmental risks. In the situation where the ICE does not warrant the design and construction work, overall risk (including financial and environmental risks) associated with the project's design and construction increases for the Operator.

Across both the NOEF and TSF, the ICE demonstrated a structured and well-resourced approach, supported by effective and open communication with the Operator. Improvements were noted in ITP management and more timely reporting for the annual NOEF construction report. Improvements occurred in NOEF reporting and Inspection and Test Plan (ITP) management, with a significant reduction in outstanding ITPs. These measures have strengthened construction assurance, although continued attention to timely ITP submission remains important.

Significant delays occurred in regulatory reporting for TSF "as-constructed" reports for Cell 1 Stage 6 and Cell 2 Stage 8 raises. Piezometer data reliability issues were noted. The ICE has recommended repairs and closer monitoring to address piezometer data. DLPE's review of TSF reporting highlighted the need for improved documentation, ICE consultation, and piezometer data management.

Implementing the identified OFIs—such as restoring TSF piezometer functionality, improving reporting timeliness, and formalising ICE consultation protocols—will strengthen environmental performance and compliance and enhance the robustness of ICE oversight for design and construction. While ICE design and construction oversight is effective, addressing the identified gaps is necessary to enhance NOEF and TSF performance, regulatory compliance, and environmental protection.