

NORTHERN TERRITORY OF AUSTRALIA

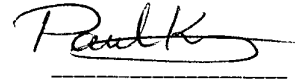
Mining Management Act

VARIATION OF AUTHORISATION

To: McArthur River Mining Pty Ltd (ACN 008 167 815)
34a Bishop Street
Winnellie NT 0820

I, **PAUL ANDREW KIRBY**, the Minister for Primary Industry and Resources, pursuant to section 38(2) of the Act, after having paid due regard to the matters referred to in section 34 of the Act and being satisfied as to the matters referred to in section 38(3) of the Act, **vary** the Authorisation defined in section 4AB of the *McArthur River Project Agreement Ratification Act* for the mining site known as the McArthur River Mine (reference 0059-01 and 0059-02), situated within MLN 1121, MLN 1122, MLN 1123, MLN 1124, MLN 1125, MLN 1126, MLN 582, MA 366, MA 455 and MA 456 granted under the *Mining Act*, and for the period of those titles, by **omitting** the Schedule to the Authorisation as varied on 7 June 2019, and **inserting** the Schedule attached to this instrument.

This Variation commences on the date this document is signed.



Minister for Primary Industry and Resources

15TH August 2019

Document history:

Authorisation	Grant/ variation	Date issued	Issued by
0059	Variation	12/10/2018	Alister Trier
0059	Variation	20/12/2018	Ken Vowles
0059	Variation	07/06/2019	Paul Kirby
0059	Variation	/08/2019	

SCHEDULE - CONDITIONS OF AUTHORISATION

Definitions

1. In this document, unless the contrary intention appears:
 - a. **Acidic and Metalliferous Drainage** or **AMD** means drainage (which may be generated from sources including waste rock piles, ore stockpiles, tailings storage facilities and tailings dams, processing areas or facilities, roadways and embankments constructed with sulfidic material, open cuts and mine pits, underground mines, heap and dump leach piles, and acid sulfate soils) with the characteristics detailed in Figure 1 of the Preventing Acid and Metalliferous Drainage, Leading Practice Sustainable Development Program for the Mining Industry (DFAT 2016). Acid and Metalliferous drainage includes acidic drainage and pH neutral metalliferous drainage (NMD), and saline drainage (SD), generally caused by the oxidation of sulfide minerals¹.
 - b. **Act** means the *Mining Management Act* (NT) and includes any statutory instruments made under it, any amendment to it, or replacement of it;
 - c. **ARI** is an acronym for annual recurrence interval meaning the average, or expected, value of the periods between exceedances of a given rainfall total accumulated over 72 hours;
 - d. **CCL** is an acronym for compacted clay liner;
 - e. **Community** means the community of Borroloola in the Northern Territory of Australia, including local businesses and other organisations such as Mawurli and Wirriwangkuma Aboriginal Corporation (ABN 54 878 185 797);
 - f. **Department** means the Department of Primary Industry and Resources (or any other Northern Territory Department or Agency that is, from time to time, responsible for the administration of these conditions) and the delegates, officers, employees and other agents of that Department;
 - g. **Environmental Value** means a feature of, or a use of, the environment or part of the environment;
 - h. **Independent**, in relation to a person, means the person has agreed in writing to:
 - i. act independently of the parties with an interest in the person's engagement;
 - ii. act with honesty, reason and with the degree of professional care, skill, knowledge, experience and diligence which may reasonably be expected of the person in carrying out the engagement;

¹ Australian Government Department of Industry Tourism and Resources (2016) Preventing Acid and Metalliferous Drainage, Leading Practice Sustainable Development Program for the Mining Industry. <http://www.industry.gov.au/resource/Documents/LPSDP/LPSDP-AcidHandbook.pdf>, Accessed 27 June 2018.

- iii. treat information received or prepared by the person as part of the engagement:
 - 1. in confidence such that the information is not disclosed to a party other than the parties with an interest in the engagement or the person without the consent of the other parties (unless the disclosure is reasonably required by law, such as the rules of a stock exchange or disclosure to a Minister, Parliament or Legislative Assembly); and
 - 2. by freely sharing the information between parties with an interest in the engagement and the person, such that no one of those parties is less informed than another in relation to the engagement.
- iv. report in writing to the parties with an interest in the engagement at the same time, immediately upon becoming aware of one of the following relevant matters:
 - 1. any potential, perceived or actual conflicts of interest that arise, including any relationship or association, interest in assets, office held, professional or contractual obligation or provision of services relating to the parties with an interest in the engagement which might affect the ability of the person to perform the engagement impartially, diligently or independently;
 - 2. any attempted interference or influence in the performance of the engagement by parties with an interest in the engagement; and
 - 3. any failure to cooperate with the person or unresponsiveness to the person's requests by a party whose cooperation is required for the engagement.
- i. **ICE** is an acronym and means Independent Certifying Engineer
- j. **Mine** means the mining site in which mining activities authorised by this document may occur;
- k. **Minister** means the Minister responsible for the Act;
- l. **MMP** is an acronym for mining management plan and means:
 - i. the documents entitled Sustainable Development Mining Management Plan 2013-2015 Volumes 1 and 2 dated 3 March 2015 approved by the Minister under the Act on 23 December 2015; and
 - ii. and approved amendments to the Mining Management Plan entitled:
 - 1. McArthur River Mining Pty Ltd – Cell 2 Raise 3 Detailed Design Report – Revision 2 April 2015 (GHD Report).
 - 2. McArthur River Mining Pty Ltd – Southern PAF Run Off Dam (SPROD) – Dam Lining Upgrade Design Report – August 2016 (GHD Report).
 - 3. McArthur River Mining Pty Ltd – TSF Cell 2 – Raise 4 to RL 10057 m Detailed Design Report - February 2017 (GHD Report).
 - 4. CWNOEF and NOEF West D Amendment - Construction according to Phase 3 EIS. This MMP Amendments included presentation to officers of the department, MRM's 2016 - 2018 Waste Plan,

Additional information provided by MRM to the department during February 2016, meeting between MRM and the department to discuss the amended MMP, presentation to departmental officers on kinetic testing and waste classification and additional information provided by MRM to the department during March 2016. This MMP Amendment approval is associated with all of these documents.

5. Western PAF Run-Off Dam (WPROD) and Western Surface Water Management Design Update (GHD Memo).
 6. Design Basis for the Lead Sulphate Filter Plant - Attachment D of Additional Information lodged 01/05/2015).
 7. McArthur River Mining Pty Ltd – TSF Cell 2 – Raise 5 to RL 10059 m Detailed Design Report - May 2018 (GHD Report).
 8. McArthur River Mining Pty Ltd – Eastern Perimeter Runoff Dam - Detailed Design Report – March 2018 (GHD Report).
 9. Letter dated 11 May 2018 from McArthur River Mining Pty Ltd regarding Mining Management Plan Amendment – EPROD and Drilling Investigations.
 10. Letter dated 12 September 2018 from McArthur River Mining Pty Ltd regarding Mining Management Plan Amendment – Central West Charlie Stage Foundation works. This amendment also includes additional information provided by MRM on 21 September 2018 in relation to groundwater, Central West Charlie Stage Foundation underdrainage and security.
 11. Letter dated 5 March 2018 from McArthur River Mining Pty Ltd regarding Mining Management Plan Amendment – Additional Water Release. This amendment also includes additional information provided by MRM on 31 October 2018, 26 November 2018 and 14 December 2018.
 12. McArthur River Mine Mining Management Plan Amendment, January 2019, including all appendices. This amendment includes:
 - a. additional information provided by MRM on 26 February 2019, 26 March 2019, 28 March 2019, 5 April 2019 and 18 April 2019;
 - b. McArthur River Mining Pty Ltd – TSF Cell 1 Stage 4 – Raise to RL 10056, Detailed Design Report, March 2018, Revision 1;
 - c. McArthur River Mining Pty Ltd – Tailings Storage Facility, Design Development – Life of Mine Plan, May 2017, Revision 2; and
 - d. McArthur River Mining Pty Ltd – Tailings Storage Facility Seepage Interception Trench Design, January 2018, Revision 1.
- m. **NAF** is an acronym for non-acid forming;
- n. **NOEF** is an acronym for the northern overburden emplacement facility, being a Waste Rock dump at the Mine which includes the Waste Rock and all ancillary facilities, infrastructure, areas and things connected to that facility;
- o. **NOEF West A, B, C, D, CW, CE, NE, NW and SE** are names for specific areas within the NOEF as identified in the MMP;
- p. **Operator** means McArthur River Mining Pty Ltd ACN 008 167 815;

- q. **PAF** is an acronym for potentially acid forming;
- r. **Quality Control or QC** means a system of maintaining standards in construction by testing samples of the output against pre-defined specification;
- s. **Quality Assurance or QA** means a system for the maintenance of a desired level of quality in construction, especially by means of attention to every stage of the construction process;
- t. **Receiving Environment** means any aspect of the environment (within the Mine or outside of the Mine) that has the potential to be impacted by the Mine;
- u. **Responsible Representative** means a delegate of the Minister and includes Chief Executive Officer, Deputy Chief Executive Officer, Executive Director – Mines and Director – Mining Operations;
- v. **Tailings** means the residue or waste resulting from the processing of ore, often being a slurry of suspended solid particles and water, but includes both the liquid and solid components;
- w. **Territory** means the body politic established by the *Northern Territory (Self-Government) Act 1978* (Cth) as the Northern Territory of Australia;
- x. **Title Holder** means each person that is registered as an owner, on the mineral titles register maintained by the Territory, of a mining interest to which this document relates;
- y. **TSF** is an acronym for Tailings storage facility, being a dam, the Tailings stored within the dam and all ancillary facilities, areas and infrastructure connected to that facility;
- z. **Waste Rock** is:
 - i. Benign Waste Rock if it is classified as LS-NAF(HC); and
 - ii. Non-Benign Waste Rock if it is classified as one of the following:
 - a) MS-NAF (HC);
 - b) MS-NAF (LC);
 - c) PAF (HC); and
 - d) PAF (RE) (including PAF(HW)).

Interpretation

- 2. In this document, unless the contrary intention appears:
 - a. words defined or used in the Act have the same meaning as in the Act;
 - b. a reference to “this document” includes the cover page and Schedules;

- c. a reference to a document is a reference to that document as in effect from time to time;
- d. the word "including" is not a word of limitation and is to be interpreted as though it were immediately followed by the words "but not limited to";
- e. headings have been included for ease of reference only and do not affect interpretation;
- f. a reference to the singular includes the plural and vice versa;
- g. a reference to time is to the time at Darwin in the Northern Territory of Australia; and
- h. a reference to dollars and \$ is to Australian currency.

General

- 3. Subject to any conditions contained in the Act and this document,² the Operator must comply with the commitments and activities contained in the MMP including the implementation of all systems referred to in the MMP.³
- 4. The Operator may only conduct mining activities identified in the MMP within the Mine subject to any conditions contained in the Act, this document and the conditions commitments and systems contained in the MMP.
- 5. The mine site is to be developed and operated in accordance with relevant legislation e.g. *Environment Protection and Biodiversity Conservation Act 1999*, *Territory Parks Wildlife and Conservation Act 2006* and *Heritage Conservation Act 2011*.

Mining management plan and reporting

- 6. The Operator must on 31 August 2017 and on each anniversary of that date (or such other date as nominated by the Operator and approved by the Minister), review the MMP and if necessary, amend the MMP.⁴
- 7. The Operator must submit quarterly all environmental monitoring data⁵ which has been collected since the previous data submission. The data submission must be provided in the approved form (being an MS Excel template that can be provided on request) and include laboratory and field data for the following:
 - a. surface water;
 - b. groundwater;
 - c. dust;
 - d. soil;

² Section 37(1) of the *Mining Management Act*

³ Section 37(2) of the *Mining Management Act*

⁴ Section 41(1) of the *Mining Management Act*

⁵ See condition 43 of this document in relation to environmental monitoring requirements

- e. sediments;
- f. gas; and
- g. water transfers and discharges (including dates, times and volumes).⁶

Security and levy

- 8. The Operator must provide a security of **\$519,728,466** in the form of cash or an unconditional bank guarantee to the Minister prior to undertaking any mining activities authorised by this Variation of Authorisations 0059-01 and 0059-02.⁷
- 9. The security provided for under condition 8 will be reassessed, and may be revised, following each assessment of an amended MMP. The Operator must provide the revised security amount in the form of cash or an unconditional bank guarantee to the Minister.
- 10. Each financial year, upon receipt of a written notice by the Minister as to the levy payable for that financial year, the Operator must pay a levy to the mining remediation fund of an amount calculated in accordance with the Act and as stated by the Minister in that written notice.⁸

Exploration

- 11. The Operator must ensure that:
 - a. Works are undertaken in accordance with management systems detailed in Condition 1.i;
 - b. An environmental management plan is in place that addresses chemical use/storage (e.g. hydrocarbons, drilling fluids), erosion and sediment control, dust and associated risks common for exploration works;
 - c. Rehabilitation must be undertaken for locations not needed for further use, including the submission of a rehabilitation report that includes details on proposed adjustment of total security as a result of the works, to the satisfaction of the Minister.

Non-mineral Waste Management

- 12. The Operator is authorised to complete works to prepare and construct a Centralised Waste Facility (CWF) for management of general, contaminated and putrescible wastes, in accordance with:
 - a. concept designs presented in the document entitled *McArthur River Mine Mining Management Plan Amendment, January 2019*, as defined in Condition 1.i.ii.12, ensuring:

⁶ Section 37(3)(d) of the *Mining Management Act*

⁷ Section 37(2)(b)(i) of the *Mining Management Act*

⁸ Sections 37(2)(b)(iii), 44A and 44B of the *Mining Management Act* and regulation 5A of the *Mining Management Regulations*

- i. Detailed designs follow the approved concepts for the facility (including 100 year ARI flood immunity, CCL and protective armour, drainage works and bio-security control). The detailed design must include design objectives that satisfies both engineering and environmental performance requirements and clearly defined construction hold points at critical phases of the structure that is likely to affect the design objectives;
 - ii. The detailed designs must include allowances for installation of an adequate number of monitoring bores at suitable locations to monitor the environmental performance of the structure with respect to contaminant seepage. These monitoring locations must be integrated and reported within the site-wide water monitoring requirements; and
 - iii. The detailed designs must be reviewed and endorsed by an Independent Certifying Engineer (**ICE**) without limitation on responsibility and provided to the department prior to commencement of construction.
- 13. An ICE must warrant and accept both the design and construction works, without limitation on responsibility:
 - a. during all phases of construction (including at hold points) the ICE must be present at the CWF site to oversee and certify the works that they meet design specifications and approve re-commencement of construction at defined hold points;
 - b. any material changes to the design during construction must be approved by the ICE;
 - c. if the ICE wishes to use the Operator's project manager/resident engineer as an onsite representative then the ICE must agree that this does not diminish responsibility or liability for the project;
 - d. the ICE must hold appropriate public and professional indemnity insurance to cover the scope of works associated with the CWF design and construction;
 - e. at completion of the construction works the ICE must approve an "as-constructed" construction report that is to be submitted to the Department. The report must detail all the works undertaken and include evidence of hold-point sign-offs, testing carried out (including but not limited to field tests, laboratory tests and statistical tests), acceptance criteria applied and compliance of the test results with the acceptance criteria. Where deviations to the plan have occurred, justification that demonstrates the design intent and performance of the structure has not been compromised must also be supplied; and
 - f. the existing waste facilities must be decommissioned and rehabilitated, but only after an approval of rehabilitation plan by the Department. The rehabilitation plan must include details on proposed adjustment of total security as a result of the works.

Rehabilitation Trials

14. The Operator is authorised to undertake the following rehabilitation trials, in accordance with concepts defined in Condition 1.l.ii.12 and ensuring any contaminated runoff is contained with the water management circuit:
- a. Construction Test Pads (CTP) on NOEF West stage;
 - b. PAF(RE) Cell and Cover System Performance on NOEF Southeast stage; and
 - c. Mine Levee revegetation.

Waste Rock Management

15. Waste rock is defined in Condition 1.z
16. From the commencement of this variation to Authorisation Non-benign Waste is to be permanently placed:
- a. above the 100 year ARI flood level, unless flood mitigation measures are provided consistent with the 2013-2015 MMP Amendment defined in Condition 1.l.ii.12 and relevant Detailed Designs submitted to the Department in accordance with the conditions of this variation of Authorisation, with the exception of PAF(RE);
 - b. on a compacted clay liner (CCL) or engineered low permeability material that slopes towards a Perimeter Runoff Dam (PROD) or a storage structure, as defined in 37(a);
 - c. and encapsulated in a minimum of a 600mm thick CCL, or engineered low permeability material, upon construction being finalised; and
 - d. the encapsulation CCL or engineered low permeability material must be covered by benign material to protect it from erosion and desiccation.
17. PAF (HC) and PAF (RE) waste rock cells, if not finalised, must have interim alluvium covers placed prior to the 1st November each year.
18. The Operator must only place PAF (HC) and PAF (RE) Waste Rock at the following locations:
- a. NOEF West A, B, C and D;
 - b. Central West NOEF (**CWNOEF**) Alpha and Bravo stages, but only after the Western Perimeter Runoff Dam (**WPROD**) has been designed, constructed and commissioned in accordance with all requirements of the Minister;
 - c. Central West NOEF (**CWNOEF**) Charlie stage, only after approval under the EPBC Act; and
 - d. Central East NOEF (**CENOE**) Alpha and Bravo, but only after:
 - i. approval under the EPBC Act;

- ii. the completion of construction in accordance with Conditions 25 and 27; and
- iii. commissioning of the Eastern Perimeter Runoff Dam (EPROD) in accordance with Conditions 43, 44 and 45.

Construction of the CWNOEF

Alpha and Bravo Stages

19. The Operator must construct, operate and maintain the CWNOEF Alpha and Bravo Stages in accordance with:

- a. The version of the document entitled *Northern Overburden Emplacement Facility (Central West Phase) Design, Construction & Operations Manual* which has been approved by the Minister from time to time, subject to any conditions imposed or changes required by the Minister⁹.
- b. Concept designs presented in the document entitled *McArthur River Mine Mining Management Plan Amendment, January 2019*, as defined in Condition 1.I.II.12. Should future review of the designs 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.

20. During construction of the CWNOEF Alpha and Bravo stages,

- a. the Operator must ensure:
 - i. PAF is emplaced in lift heights that minimises particle size segregation and creation of chimney structures, and must not exceed 7.5m; and
 - ii. advection barriers of appropriate thickness and moisture condition are emplaced at suitable intervals that disrupt the formation of oxygen convection cycles
 - iii. The ICE verifies the suitability of the PAF placement methodology with respect to particle size segregation and advection barriers.
- b. the Operator must provide construction reports to the Minister upon request including the following:
 - i. QA and QC results and reporting for CCLs; and
 - ii. results and reporting of testing undertaken to waste rock placement;

⁹ At the date of this document, version 2.1 of the manual had been approved subject to the changes set out in the Operator's submission to the former Department of Mines and Energy dated 5 February 2016 (identified as MDOC2016/00840 in the Department's document management system).

- iii. results and reporting of testing undertaken to confirm alluvial materials placed at the CWNOEF would not generate AMD if exposed to water and were geotechnically suitable for the location they were placed.
- 21. An Independent Certifying Engineer (ICE) must warrant and accept both the design and construction works, without limitation on responsibility:
 - a. during all phases of construction (including at hold points) the ICE must be present at the CWNOEF Alpha and Bravo stages to oversee and certify the works that they meet design specifications and approve re-commencement of construction at defined hold points;
 - b. any material changes to the design during construction must be approved by the ICE;
 - c. any monitoring equipment/structure installed or to be installed as part of the construction must remain functional at the conclusion of the construction works. If such equipment becomes non-functional, then replacement or an ICE approved alternative must be implemented;
 - d. if the ICE wishes to use the Operator's project manager/resident engineer as an onsite representative then the ICE must agree that this does not diminish responsibility or liability for the project;
 - e. the ICE must hold appropriate public and professional indemnity insurance to cover the scope of works associated with the CWNOEF design and construction; and
 - f. at completion of the construction works the ICE must approve an "as-constructed" construction report. The report must detail all the works undertaken and include evidence of hold-point sign-offs, testing carried out (including but not limited to field tests, laboratory tests and statistical tests), acceptance criteria applied and compliance of the test results with the acceptance criteria. Where deviations to the plan have occurred, justification that demonstrates the design intent and performance of the structure has not been compromised must also be supplied.

Charlie Stage

- 22. The Operator is authorised to complete works to prepare and construct CWNOEF Charlie stage in accordance with:
 - a. the 2013-2015 MMP amendment entitled *Mining Management Plan Amendment: North Overburden Emplacement Facility – Central West Charlie Stage Foundation* and additional information provided to the Department, as defined in condition 1(j)(ii)(10). The Operator must ensure:
 - i. including allowances for survey accuracy/tolerances, the post construction CCL thickness is not less than 500mm;
 - ii. the acceptance criteria for all tests, including those outlined in the condition 1.(j)(ii)(10), that are to be undertaken as part of the construction must be provided to the Department prior to commencement of the construction;

- iii. waste rock used for construction of the CWNOEF Charlie stage foundation, as outlined in the condition 1.l)(ii)(10), meets the geochemical criteria for classification as benign;
 - iv. results and reporting of testing undertaken to confirm alluvial materials placed at the CWNOEF would not generate AMD if exposed to water and were geotechnically suitable for the location they were placed; and
 - v. the construction of the foundation will not impede surface water and underdrainage systems ability to convey all water to the sediment trap.
 - b. concept designs presented in the document entitled *McArthur River Mine Mining Management Plan Amendment, January 2019*, as defined in Condition 1.l.ii.12, and subject to Condition 18c, ensuring:
 - i. Detailed designs follow the approved concept designs for CWNOEF and must include design objectives that satisfies both engineering and environmental performance requirements and clearly defined construction hold points at critical phases of the structure that is likely to affect the design objectives. One of the construction hold points must include verification of PAF waste placement methodology;
 - ii. The detailed designs must be reviewed and endorsed by an ICE without limitation on responsibility and provided to the department prior to commencement of construction; and
 - iii. Should future review of the designs 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.
23. During construction, and subject to Condition 18c,
- a. The Operator must ensure:
 - i. PAF is emplaced in lift heights that minimises particle size segregation and creation of chimney structures, but must not exceed 7.5m;
 - ii. PAF(RE) is emplaced in dedicated cells in lift heights that minimises particle size segregation and creation of chimney structures, but must not exceed 2m; and
 - iii. Advection barriers of appropriate thickness and moisture condition is emplaced at suitable intervals that disrupts formation of oxygen convection cycles;
 - iv. The Central West Charlie Sump is appropriately lined to receive AMD; and
 - b. The 100 year ARI flood level mitigation system along the northern footprint of the structure is in place prior to the oncoming wet season;

24. An independent Certifying Engineer (ICE) must warrant and accept both the design and construction works, without limitation on responsibility:
- a. during all phases of construction the ICE or approved delegate must be present at the CWNOEF Charlie site to oversee and certify and be accountable that all materials and material testing undertaken, QA/QC procedures and construction methods used satisfy the design intent and meet all the design specifications and approve re-commencement of construction at defined hold points. Where tests conducted demonstrate non-compliance to the acceptance criteria, evidence of corrective action taken (such as re-working of materials and re-testing) must be provided in the final report (as per clause (f));
 - b. if the ICE wishes to use a delegate as an onsite representative then the ICE must agree that this does not diminish the ICE's responsibility or liability for the project and documented evidence be provided prior to commencement of works that lists the name of the delegate, their qualifications and experience and the level of duties assigned;
 - c. any material changes to the amendment must be approved by the ICE and the Department notified as soon as practicable;
 - d. the frequency of the permeability testing be no less than 1 test per 10,000 cubic metres;
 - e. the Vibrating Wire Piezometers, and any other monitoring equipment/structure to be installed as part of the construction, should be installed in such a manner that it remains functional at the conclusion of the construction works and during future activities on the structure. If such equipment becomes non-functional, then replacement or an ICE approved alternative must be implemented that achieves the intent of the inoperable equipment, given the importance of such data for future approvals; and
 - f. at completion of the construction works the ICE must approve an "as-constructed" construction report. The report must detail all the works undertaken and include evidence of hold-point sign-offs, testing carried out (including but not limited to field tests, laboratory tests and statistical tests), acceptance criteria applied and compliance of the test results with the acceptance criteria. Where deviations to the plan have occurred, justification that demonstrates the design intent and performance of the structure has not been compromised must also be supplied.

Construction of the CENOEF

25. The Operator must construct, operate and maintain the CENOEF in accordance with:
- a. Concept designs presented in the document entitled *McArthur River Mine Mining Management Plan Amendment, January 2019*, as defined in Condition 1.i.ii.12, and subject to Condition 18d, ensuring:

- i. Detailed designs follow the approved concept designs CENOEf and must include design objectives that satisfies both engineering and environmental performance requirements and clearly defined construction hold points at critical phases of the structure that is likely to affect the design objectives. One of the construction hold points must include verification of PAF waste placement methodology;
- ii. new areas of the NOEF foundation development (i.e. areas at base level) that do not currently contain PAF wastes must include a compacted clay layer (CCL) or, an engineered low permeability liner, of at least 0.5m thickness and maximum saturated hydraulic conductivity of 1×10^{-9} metres per second, above which future PAF wastes are to be stored;
- iii. The detailed designs must be reviewed and endorsed by an ICE without limitation on responsibility and provided to the department prior to commencement of construction; and
- iv. Should future review of the designs 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.

26. During construction, and subject to Condition 18d(i),

a. The Operator must ensure:

- i. PAF(RE) is emplaced in lift heights that minimises particle size segregation and creation of chimney structures, but must not exceed 2m;
- ii. Advection barriers of appropriate thickness, moisture conditioned (if required), is emplaced at suitable intervals that disrupts formation of oxygen convection cycles. If the PAF(RE) cells are not finalised, a 1m thick compacted advection barrier must be placed prior to every wet season;
- iii. The 100 year ARI and 20 year ARI flood level mitigation systems along the eastern footprint of the structure is in place prior to the oncoming wet season.

27. An independent Certifying Engineer (ICE) must warrant and accept both the design and construction works, without limitation on responsibility:

- a. during all phases of construction the ICE or approved delegate must be present at the CENOEf site to oversee and certify and be accountable that all materials and material testing undertaken, QA/QC procedures and construction methods used satisfy the design intent and meet all the design specifications and approve re-commencement of construction at defined hold points. Where tests conducted demonstrate non-compliance to the acceptance criteria, evidence of corrective action taken (such as re-working of materials and re-testing) must be provided in the final report (as per clause 27(g));

- b. if the ICE wishes to use a delegate as an onsite representative then the ICE must agree that this does not diminish the ICE's responsibility or liability for the project and documented evidence be provided prior to commencement of works that lists the name of the delegate, their qualifications and experience and the level of duties assigned;
- c. any material changes to the design must be approved by the ICE in writing;
- d. including allowances for survey accuracy/tolerances, the post construction CCL thickness is not less than 500mm;
- e. the frequency of the CCL permeability testing be no less than 1 test per 10,000 cubic metres;
- f. any monitoring equipment/structure installed or to be installed as part of the construction must remain functional at the conclusion of the construction works and during future activities on the structure. If such equipment becomes non-functional, then replacement or an ICE approved alternative must be implemented that achieves the intent of the inoperable equipment; and
- g. at completion of the construction works the ICE must approve an "as-constructed" construction report. The report must detail all the works undertaken and include evidence of hold-point sign-offs, testing carried out (including but not limited to field tests, laboratory tests and statistical tests), acceptance criteria applied and compliance of the test results with the acceptance criteria. Where deviations to the plan have occurred, justification that demonstrates the design intent and performance of the structure has not been compromised must also be supplied.

Investigation of the NOEF

28. Engagement of Consultant and scope of works:

- a. The Operator must engage an Independent third-party (Consultant) to investigate whether the placement and containment of mining waste at the NOEF is causing, or may cause, environmental harm to the Receiving Environment (Investigation).
- b. The Operator must ensure that the Consultant engaged by it in accordance with condition a:
 - i. has expertise in each of the following areas: groundwater hydrogeology; ecotoxicology; water treatment; and
 - ii. carries out the Investigation in accordance with this document.
- c. The Operator must provide a detailed scope of works for the Investigation to the Executive Director of the Mines Division of the Department of Primary Industry and Resources (ED) for approval by not later than 12:00pm on 22 April 2016.

- d. Upon receipt of the scope of works referred to in condition c, the ED may in his or her discretion:
 - i. approve the scope of works;
 - ii. refuse to approve the scope of works; or
 - iii. request that the Operator submit further information in relation to the scope of works to enable him or her to decide whether to approve or refuse to approve the scope of works.
- e. If the ED requires further information in accordance with condition d.iii:
 - i. the Operator must provide the further information within the time frame requested by the ED; and
 - ii. if the Operator fails to submit the further information the ED may refuse to approve the scope of works.

29. General conduct of the Investigation: The Investigation must

- a. identify the location and boundaries of any groundwater aquifer that may potentially be impacted by the NOEF, including the placement or containment of mining waste at the NOEF;
- b. for each aquifer identified in accordance with this condition, identify the nature and type of the aquifer, including:
 - i. the direction of flow;
 - ii. groundwater contours;
 - iii. groundwater depth;
 - iv. aquifer connectivity;
 - v. potential pathways along faults; and
 - vi. recharge rates.
- c. identify the source, cause and extent, or any potential source, cause and extent, of any environmental harm from the placement or containment of mining waste at the NOEF to each groundwater aquifer identified in accordance with condition b;
- d. identify and define the Environmental Values of the Receiving Environment in accordance with the methodology in the document entitled *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*¹⁰; and

¹⁰Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 1* October 2000.
<http://webarchive.nla.gov.au/gov/20130904203051/http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html>, Accessed 20 November 2017.

- e. identify the source, cause and extent, or any potential source, cause and extent, of any environmental harm from the placement or containment of mining waste at the NOEF to the Receiving Environment.

30. Review of monitoring programmes:

- a. As part of the Investigation, the Consultant must review all monitoring programmes required to be carried out by the Operator under the MMP;
- b. The Consultant's review of the Operator's monitoring programmes referred to in condition a must:
 - i. assess the adequacy of the current groundwater monitoring programme to effectively identify any release or potential release of Contaminants from the placement and containment of mining waste at the NOEF;
 - ii. identify whether any additional groundwater monitoring bores are required to improve the effectiveness of the existing groundwater monitoring programme and, if so, identify suitable locations for those bores;
 - iii. identify whether any additional surface water monitoring sites are required and, if so, identify appropriate locations for those sites; and
 - iv. identify whether any additional water quality parameters are required to be measured and, if so, provide recommendations for the inclusion of those parameters into the current surface water monitoring programme.

31. Assessment of contamination of the environment:

- a. As part of the Investigation, the Consultant must identify, assess and compare options to address any environmental harm to the Receiving Environment to ensure the protection of Environmental Values of that Receiving Environment;
- b. Without limiting the obligation in condition 31.a, the Consultant must provide:
 - i. an assessment of all practical options to address any environmental harm referred to in condition 31.a;
 - ii. a detailed description of any remedial works required to address any environmental harm referred to in condition 31.a;
 - iii. an estimate of the likely costs of implementing the remedial works referred to in condition 31.b.ii; and
 - iv. an appropriate time frame for the implementation of the remedial works referred to in condition 31.b.ii.

32. Interim revised monitoring programme:

- a. the Operator must provide to the Minister an interim revised monitoring programme that sets out any interim improvements that can be made to the current monitoring programmes that are required to be carried out by the Operator under the MMP; and

- b. the Operator must provide the interim revised monitoring programme referred to in condition 32.a to the Minister by no later than 12:00 pm on 22 June 2016.

33. Interim remediation options report:

- a. the Operator must provide to the Minister a report that sets out any interim remedial options that should be implemented pending the finalisation of any long-term remedial works referred to in condition 31; and
- b. the Operator must provide the interim remediation options report referred to in condition 33.a to the Minister by no later than 12:00 pm on 1 April 2017.

34. Final investigation report:

- a. as part of the Investigation, the Consultant must prepare an investigation report (**Final Report**):
 - i. addressing each of the matters set out in condition 31;
 - ii. providing remediation options;
 - iii. providing a revised monitoring programme; and
 - iv. any other relevant findings of the Investigation.
- b. the Operator must submit a copy of the Final Report to the Minister by no later than 12:00 pm on 22 June 2017.
- c. upon receipt of the Final Report, the Minister may in his or her discretion:
 - i. approve the Report;
 - ii. refuse to approve the Report; or
 - iii. request that the Operator submit further information in relation to the Report, or the matters the subject of the Report, to enable the Minister to decide whether to approve or refuse to approve the Report.
- d. If the Minister requires further information in accordance with condition 34.c.iii:
 - i. the Operator must provide the further information within the time frame requested by the Minister; and
 - ii. if the Operator fails to submit the further information in accordance with condition 34.d.i, the Minister may refuse to approve the Report.

Water management and storage

35. When appropriate, the Operator must prepare, review and include the following for each MMP and where appropriate each MMP amendment, a Water Management Plan which includes:
- a. modelling of surface water at and around the Mine;

- b. a whole of Mine water balance which takes account of the modelling of surface water;
 - c. calibration of the modelling of surface water to confirm its accuracy;
 - d. a written plan detailing how water at the Mine will be managed for the forthcoming wet season;
 - e. a plan of actions which will be undertaken to reduce the risk of any releases from AMD storage structures;
 - f. a plan of actions, including engineers' reporting schedules, which will be undertaken to ensure the structural integrity of all AMD storage structures; and
 - g. a plan of actions which will be undertaken to ensure seepage from AMD storage structures is minimised including, where required, timelines for repairing damaged or installing new seepage management infrastructure.
36. Dewatering activities as part of pit development and borefield development for beneficial use must be metered to allow determination of parameters for assessment of extraction volumes and aquifer sustainability
37. Water storage structures into which the Operator places or directs AMD must be designed, constructed and managed by the Operator to minimise to as low as reasonably practicable contaminants entering the Receiving Environment. In this regard:
- a. the water storage structures into which the Operator is authorised to place or direct AMD whilst they continue to meet the requirements of this condition are as follows:
 - i. Southern Perimeter Runoff Dam (**SPROD**);
 - ii. Southern Perimeter Sediment Runoff Dam (**SPD**);
 - iii. South East Perimeter Runoff Dam (**SEPROD**);
 - iv. Western Perimeter Runoff Dam (**WPROD**);
 - v. Eastern Perimeter Runoff Dam (**EPROD**)-contingent on also meeting conditions 43, 44 and 45;
 - vi. Central West (**CW**) A Sump (CWAS);
 - vii. Central West C Sump (CWCS)
 - viii. Anti-Pollution Pond (**APP**);
 - ix. Concentrator Runoff Pond (**CRP**);
 - x. Van Duncan's Dam (**VDD**);
 - xi. Pete's Pond (**PP**);

- xii. Lake Archer (**LA**);
- xiii. Old Stores Dam (**OSD**);
- xiv. Pond 2 (**P2**);
- xv. Central East 1 Sump (**CE1S**);
- xvi. East Drain Sump (EDS);
- xvii. West D Sump (WDS);
- xviii. Mine Infrastructure Area Sump (**MIAS**);
- xix. West A Sump (**WAS**);
- xx. Bing Bong Site Runoff Pond 1 (**BBSRP1**);
- xxi. Bing Bong Site Runoff Pond 2 (**BBSRP2**); and
- xxii. Bing Bong Site Runoff Pond 3 (**BBSRP3**).

38. The Operator must not transfer water to or discharge water from any water storage structure until water quality analysis has been received and interpreted by the Operator and results confirm the water is suitable for the destination, having regard to the requirements of this document and the MMP and any other relevant restrictions on transfer or discharge of water within or from the Mine. In this regard:

- a. The Operator is authorised to undertake works to release water from WMD to Little Barney Creek in accordance with the 2013-2015 MMP amendment and additional information provided to the Department, as defined in Condition 1.I)(ii)(11) and Condition 38(b).
- b. Water releases are authorised from the following points

Authorised Release Points	Receiving Water Body	Location Coordinates
WMD	Little Barney Creek	Latitude: -16.42635 Longitude: 136.06393
Mine Levee Release Point (MLRP)	Barney Creek Diversion	Latitude: -16.42743 Longitude: 136.11143
South-East Levee 1 Release Point (SEL1 RP)	Barney Creek Diversion	Latitude: -16.42394 Longitude: 136.10824

- c. Total loads of mine-derived contaminants from all source inputs must be characterised for the 2017-2018 period by 30 June 2020, unless otherwise agreed in writing by the Department.

d. The Operator must ensure:

- i. The WMD release to Little Barney Creek is undertaken in a way that minimises localised erosion, and utilises suitable energy dissipation and flow spreader structures (e.g. rock basin) and be monitored daily during release events;

In the event of erosion at the Carpentaria Highway culvert system, remediation must be implemented to the satisfaction of DIPL and Department;

- ii. A cross-section profile survey is undertaken immediately up-stream and down-stream of the Carpentaria Highway crossing, prior to and following each wet season;
- iii. Significant changes to creek morphology as function of time are quantified, prior to first water release, and following the last water release, for each wet season. This could be achieved, for example, using a drone survey of the drainage system between the flow outlet and Barney Creek Diversion using a consistent flight path, with the resulting image overlayed on appropriately sized grid (e.g. 2.5 x 2.5 m);
- iv. Evidence is available for inspection of continuous flow in Little Barney Creek along the length of the drainage system between WMD release outlet and Little Barney Creek Diversion Channel;
- v. measurement and recording of flow duration, flow rate and volume of all water released from WMD into Little Barney Creek;
- vi. The surface water monitoring schedule for the mine site includes SW06, and must be assessed for identical parameters as defined for SW03 as per Condition 1.I)(ii)(11). At monitoring points SW03 and SW06:
 - a) Field parameters must also be measured daily during water release from WMD into Little Barney;

The surface water monitoring analytical suite must include thallium, boron and cobalt.
 - b) The surface water monitoring be continued for a further two weeks following completion of the release activities for the season or until field parameters have returned to baseline levels,
- vii. total loads of analytes (including lead and zinc) from all controlled discharge activities entering McArthur River must be measured at location SW06.
- viii. All data and results acquired as part of the activity be interpreted and reported in the Operator's Annual Operational Performance Report and the performance of this activity evaluated in terms of its effectiveness as a management tool.

39. Surface water management infrastructure associated with the lead filtration facility at the Mine must be suitably designed and constructed to contain a 100 year ARI rainfall event.

40. Water management using the Centre Pivot Irrigator is authorised within the Mine Levee in accordance with concept presented in the document entitled *McArthur River Mine Mining Management Plan Amendment, January 2019*, as defined in Condition 1.1.ii.12. The system is to be configured to maximise evaporation and minimise surface spray drift, surface runoff and infiltration into underlying natural soils.

WPROD construction

41. The Operator must construct the WPROD in accordance with the following regime:
- a. six hourly monitoring of field parameters for the first 24 hours of dewatering. Should parameters not stabilise during the first 24 hours then six hourly monitoring must continue until stabilisation has occurred;
 - b. field parameters must be taken daily following the first 24 hour period. Should parameters change more than 20% then the frequency must increase to every 12 hours until parameters have stabilised;
 - c. field parameters must include pH, SEC, temperature, REDOX and dissolved oxygen;
 - d. water samples must be taken and analysed at the commencement of dewatering at the end of the first 24 hours, and then weekly sampling and analysis of dewatering water for the remainder of the construction;
 - e. additional sampling and analysis must be undertaken if there is a substantial change in field parameters (approximately 30%);
 - f. analysis must include: SEC, major ions (Ca, K, Mg, Na, Cl, CO₃, HCO₃ and SO₄), Al, As, Cd, Co, Cu, Fe, Mn, Ni, Se and Zn;
 - g. field parameters and samples for analysis must be taken from the dewatering source, not the receiving storage;
 - h. if flow meters fail, then dewatering must cease until they are repaired or replaced;
 - i. field water quality parameters, flow meter volumes and laboratory analysis must be submitted to Department on a monthly basis;
 - j. any indication of fracturing and/or caverns (Karstification/dissolution features) must be recorded during logging along with water strikes and estimated yields during drilling; and
42. Construction reports including QA and QC data must be provided to the Department within 30 days of construction being completed.

EPROD construction

43. The Operator is authorised to complete works to construct the EPROD in accordance with the document entitled *McArthur River Mining Pty Ltd - Eastern Perimeter Runoff Dam - Detailed Design Report - March 2018* (GHD Report) ensuring that only benign material be used in the construction of the western embankment wall.
44. The Operator must construct the EPROD in accordance with the following regime in the event groundwater dewatering is necessary:
- a. six hourly monitoring of field parameters for the first 24 hours of dewatering. Should parameters not stabilise during the first 24 hours then six hourly monitoring must continue until stabilisation has occurred;
 - b. field parameters must be taken daily following the first 24 hour period. Should parameters change more than 20% then the frequency must increase to every 12 hours until parameters have stabilised;
 - c. field parameters must include pH, SEC, temperature, REDOX and dissolved oxygen;
 - d. water samples must be taken and analysed at the commencement of dewatering at the end of the first 24 hours, and then weekly sampling and analysis of dewatering water for the remainder of the construction;
 - e. additional sampling and analysis must be undertaken if there is a substantial change in field parameters (approximately 30%);
 - f. analysis must include: SEC, major ions (Ca, K, Mg, Na, Cl, CO₃, HCO₃ and SO₄), Al, As, Cd, Co, Cu, Fe, Mn, Ni, Se and Zn;
 - g. field parameters and samples for analysis must be taken from the dewatering source, not the receiving storage;
 - h. if flow meters fail, then dewatering must cease until they are repaired or replaced;
 - i. field water quality parameters, flow meter volumes and laboratory analysis must be submitted to Department on a monthly basis;
 - j. any indication of fracturing and/or caverns (Karstification/dissolution features) must be recorded during logging along with water strikes and estimated yields during drilling; and
45. Construction reports including QA and QC data endorsed by the Independent Certifying Engineer (ICE) must be provided to the Department prior to commencement of operation within 30 days of construction being completed.

Tailings storage facility

46. An Independent Certifying Engineer (ICE) must oversee and be responsible for any works undertaken at the TSF:

- a. the ICE must warrant and accept both the design and construction works, without limitation on responsibility;
 - b. during all phases of construction the ICE must be present at the TSF site to oversee and certify that the works meet the approved design specifications. If the ICE wishes to use the Operator's project manager/resident engineer as an onsite representative then the ICE must agree that this does not diminish responsibility or liability for the project;
 - c. the ICE must hold appropriate public and professional indemnity insurance to cover the scope of works associated with any embankment raise contemplated in the MMP; and
 - d. construction reports including QA and QC data must be provided to the Department within 30 days of construction being completed.
47. The Operator must convene an advisory board (**Independent Tailings Review Board or ITRB**) and the Operator must ensure that includes independent geotechnical, tailings, and groundwater specialists which meets regularly to advise on operation of the TSF and any future modifications to its design. Should future review of the designs 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.
48. Details of the members of the ITRB panel and meeting frequency must be submitted to the Department for endorsement by the Department.
49. The ITRB is required to meet within 90 days from commencement of construction to allow sufficient time for review of subsequent modification to the TSF.
50. The Operator must ensure ITRB endorses any future modifications to the TSF in writing, with all ITRB review comments appropriately addressed for both construction and future use of the structure. This includes, but not limited to:
- a. Studies and/or trials to inform future construction and/or operation of the structure; and
 - b. The TSF Operations, Maintenance and Surveillance (OMS) manual, including the Trigger, Action and Response Plan (TARP) is updated regularly to accommodate any relevant changes to the structure that may impact on its stability and performance
51. The Operator is authorised to complete works to recommission TSF Cell 1 in accordance with the 2013-2015 MMP amendment and additional information provided to the Department, as defined in Condition 1.I (ii)(12). The Operator must ensure:
- a. The existing clay cap, if redundant, is removed as part of the recommissioning works;

- b. The Cell 1 Seepage Interception Trench system must be constructed and an operation manual detailing rules of operation, maintenance and environmental monitoring requirements be developed prior to operation of the system; and
 - c. The TSF OMS manual, including the TARP must be updated to include Cell 1.
- 52. The Operator is authorised to complete lift Cell 1 embankment raise works as follows:
 - a. Cell 1 Stage 4 is to be in accordance with the 2013-2015 MMP amendment and additional information provided to the Department, as defined in Condition 1.I (ii)(12).
 - b. Trials and investigations, including but not limited to blending of tailings with clay, investigation of in-situ Cell 1 conditions at east and west sumps, restriction on rate of placement of embankment materials and any other works identified by ITRB must be undertaken to inform the final construction;
 - c. If construction works are not completed prior to the start of the wet season, the Operator must make allowances of rainfall on the stability of the structure to the satisfaction of the ICE;
 - d. At completion of the construction works the ICE must approve an "as-constructed" construction report and updates to the TSF Operations, Maintenance and Surveillance Manual and TARPs. The construction report must detail all the works undertaken and include evidence of hold-point sign-offs, testing carried out (including but not limited to field tests, laboratory tests and statistical tests), acceptance criteria applied and compliance of the test results with the acceptance criteria. Where deviations to the plan have occurred, justification that demonstrates the design intent and performance of the structure has not been compromised must also be supplied to the Department prior to the deposition of tailings; and
 - e. The TSF Cell 1 seepage mitigation system is fully operational and optimised within 12 months of recommencing tailings deposition in Cell 1.
- 53. The Cell 2 Raise 3 lift of the TSF may be via upstream construction. Cell 2 Raise 4 lift of the TSF has been reviewed and approved by the ITRB. Cell 2 Raise 5 and Cell 2 Raise 6 lifts of the TSF has been reviewed and approved by the ITRB.
- 54. The Operator must operate and maintain the TSF in accordance with the most up-to-date TSF OMS manual, ensuring:
 - a. not discharge water into the TSF unless it is water contained within the Tailings stream which is at normal operational slurry densities;
 - b. deposit all Tailings sub-aerially to allow proper beaching and drying between deposition cycles;
 - c. maintain surface water levels in the TSF such that they do not come into contact with the embankment internal walls; and
 - d. manage the phreatic surface to avoid compromising the integrity of the embankment.

55. The Operator must provide quarterly to the Minister a written status report on the seepage and management of seepage from the TSF, including the following:
- a. water levels in the TSF;
 - b. all monitoring data associated with the seepage (including geotechnical and environmental monitoring);
 - c. flow rate of each seep;
 - d. all actions undertaken during the quarter associated with the seepage and management of Tailings; and
 - e. all actions planned for the next quarter associated with seepage and management of Tailings.¹¹
56. The Operator is authorised to complete works to raise the embankment of the TSF in accordance with the document entitled *McArthur River Mining Pty Ltd - Cell 2 TSF Stage 5 Raise to RL 10059 - Detailed Design Report – May 2018* (GHD Report), ensuring:
- a. Construction reports including QA and QC data endorsed by the Independent Certifying Engineer (ICE) must be provided to the Department prior to the deposition of tailings within the Cell 2 Raise 5 storage capacity and within 30 days of construction being completed.
57. The operator is authorised to construct, operate and maintain Cell 2 Stage 6 embankment lift in accordance with:
- a. concept designs presented in the document entitled *McArthur River Mine Mining Management Plan Amendment, January 2019*, as defined in Condition 1.I.ii.12, ensuring:
 - i. Detailed designs follow the approved *McArthur River Mining Pty Ltd Tailings Storage Facility Raising General Specification for Design and Construction* and must include design objectives that satisfies both engineering and environmental performance requirements and clearly defined construction hold points at critical phases of the structure that is likely to affect the design objectives;
 - ii. The detailed designs must be reviewed and endorsed by the ITRB provided to the department prior to commencement of construction; and
 - iii. Should future review of the designs by independent experts require additional matters to be addressed, the operator together with the ITRB must provide and implement a written response that justifies the existing design or proposes an alternate design to the satisfaction of the Department.

¹¹ Section 37(3)(d) of the *Mining Management Act*.

- b. at completion of the construction works the ICE must approve an “as constructed” construction report and updates to the TSF Operations, Maintenance and Surveillance Manual and TARPs. The construction report must detail all the works undertaken and include evidence of hold-point sign-offs, testing carried out (including but not limited to field tests, laboratory tests and statistical tests), acceptance criteria applied and compliance of the test results with the acceptance criteria. Where deviations to the plan have occurred, justification that demonstrates the design intent and performance of the structure has not been compromised must also be supplied to the Department prior to the deposition of tailings.

Geochemical, Geotechnical and Hydrogeological Assessments and Investigation Drilling

- 58. The Operator is authorised to undertake Drilling Investigations as outlined in Conditions 1.1(ii)(9) and 1.1(ii)(12), ensuring adhering to industry best practice:
 - a. in order to collect samples for waste rock characterisation and geochemical and geotechnical analyses;
 - b. to characterise available construction and rehabilitation materials available within the Mine Levee Wall (including the pit) and areas surrounding the TSF and NOEF;
 - c. to enable geochemical assessment of the overburden emplacement facility and underlying sediments; and
 - d. to obtain hydrogeological information associated with pit inflows, groundwater inputs into the underground void and installation of additional monitoring bores to inform site management.
- 59. Characterisation data from the drilling must be kept and available to the Minister on request and reported in the Operator’s Annual Operational Performance Report.
- 60. All documentation relating to the geochemical assessment and alluvial investigation is to be made available to the Department on request.

Environmental monitoring

- 61. The Operator must collect and maintain the following to the satisfaction of the Minister:
 - a. all environmental monitoring data which is contemplated in this document or the MMP or reasonably required for the proper implementation of this document or the MMP; and
 - b. any other environmental monitoring records and data prepared or obtained by or in the possession of the Operator at any time in connection with the Mine (including for example, monitoring records or data submitted to the Commonwealth government).

62. The Operator must ensure data contemplated by condition 58 is provided to a mining officer upon request and will not be destroyed without the written permission of the Minister.
63. If the Operator establishes a new surface water monitoring location, a written notice of the location (in GDA 94 format) and nature of the monitoring must be given to the Minister within 30 days of its establishment.
64. Before 1 November 2016, the Operator must install and from then on maintain continuous monitoring devices. In this regard:
- a. devices must be installed at the following locations:
 - i. **SW29** (upstream Surprise Creek outside the zone of influence of TSF);
 - ii. **SCGS** (Surprise Creek gauge station between the TSF and the Mine);
 - iii. **SW30** (upstream Emu Creek);
 - iv. **USGS** (upstream at the McArthur River gauge station);
 - v. **BCGS** (upstream at the Barney Creek gauge station);
 - vi. **SW12** (immediately downstream of the Mine capturing outflow from Emu Creek, Barney Creek, drainage lines from SEPROD, Old McArthur River Channel and the McArthur River diversion channel but before the Glyde River joins the McArthur River channel);
 - b. devices must at a minimum measure electrical conductivity, and may measure additional parameters such as pH; and
 - c. the Operator must from 30 August 2017 include data from these devices in data submission under condition 7.
65. The Operator must ensure groundwater monitoring bores and extraction bores are constructed, maintained and decommissioned in compliance with the document entitled *Minimum construction requirements for water bores in Australia* published by the National Uniform Drillers Licensing Committee (third edition, February 2012 or a current version of the document). In this regard:
- a. construction logs and bore location coordinates in GDA 94 format must be available to the Minister on request and provided to the Minister annually in the Operational Performance Report;
 - b. logs of maintenance activities must be kept available to the Minister on request; and
 - c. logs of bore decommissioning activities must be kept and available to the Minister on request and reported in the Operator's Annual Operational Performance Report.

66. The Operator must amend the MMP to include a livestock management plan clearly detailing how the ongoing exclusion of cattle from the Exclusion Area will be managed and monitored. The plan is to include monitoring schedules and remedial actions should monitoring detect cattle within the Exclusion Area, it should also detail the staff member or position responsible for ensuring compliance with the plan.
67. The Operator must remove all livestock and undertake all necessary actions or works to ensure the permanent exclusion of cattle from the Exclusion Area within MLN 1121, MLN 1122, MLN1123 and MLN1124.
68. The Operator must erect and maintain warning signage that is permanent and weatherproof and contains specific wording agreed to by the Chief Health Officer of the Northern Territory. Warning signage must be erected at appropriate distances and frequency along the waterway, and as a minimum be located at all access points, including but not limited to crossings, vehicle tracks and walking tracks. Warning signage must be maintained along the length of:
- a. Barney Creek downstream to its junction with the McArthur River;
 - b. Barney Creek upstream to a point a short distance upstream of where the Carpentaria Highway crosses Barney Creek;
 - c. Surprise Creek to approximately the location of SW29; and
 - d. Bing Bong shipping channel and in the immediate area surrounding the shipping channel and the swing basin.
69. For the purposes of managing dust, to the satisfaction of the Minister:
- a. the Operator must employ dust mitigation and monitoring measures at the Mine and in the course of all mining activities which generate dust, to minimise dust emission and impact on the Receiving Environment;
 - b. If dust is entering the Receiving Environment resulting in or having the potential to cause environmental harm the Operator must undertake works or change its systems or practices to reduce dust to levels which no longer cause potential or actual environmental harm; and
 - c. Any dust suppressant must be suitable for the location where it is to be used.
70. For the purposes of managing chemicals and flammable or combustible liquids:
- a. all hazardous chemicals, toxic substances, gases and dangerous goods associated with the Mine must be stored and handled in accordance with the current Australian Standard where such is applicable, and the laws of the Northern Territory; and
 - b. the Operator must include bulk storage tanks and associated infrastructure on a maintenance schedule which conforms with the current Australian Standard where such is applicable, and the laws of the Northern Territory and includes regular integrity testing to ensure loss of containment or failure of the tanks does not occur.

Independent monitoring assessment conditions

71. These conditions may be cited as the “McArthur River Mine – Independent Monitoring Assessment Conditions”.
72. The purpose of these conditions is to establish and set out the operational requirements for an independent monitoring assessment of the environmental performance of the Mine.
73. The Department will engage an Independent Monitor to undertake the independent monitoring assessment.
74. The Operator and the Department acknowledge that this independent monitoring assessment is in addition to their respective obligations and statutory responsibilities in relation to the Mine.
75. The Independent Monitor will:
 - a. monitor the environmental performance of the Mine by reviewing:
 - i. environmental assessments and monitoring activities undertaken by the Operator; and
 - ii. environmental assessments and audits undertaken by the Department; and
 - b. report to the Operator and the Department any urgent issues requiring investigation and reporting.
76. The Independent Monitor will not review:
 - a. Mine safety; or
 - b. social issues arising from the operation of the Mine in the McArthur River Region.
77. The Department will engage an Independent Monitor in accordance with its procurement processes.
78. The Independent Monitor may be (in order of preference):
 - a. an environmental or mining agency in another jurisdiction in Australia; or
 - b. a university having the necessary expertise; or
 - c. an environmental consultant have the necessary expertise, relevant experience and the necessary resources.

79. Prior to advertising a tender seeking to engage an Independent Monitor, the Department must provide the Operator with a copy of the proposed tender documentation, including:
- a. the conditions of tendering; and
 - b. the scope of services; and
 - c. the assessment criteria; and
 - d. the conditions of contract.
80. The Operator may, within 14 days of receiving the proposed tender documentation, provide comment on the proposed documentation to the Department and the Department must consider any comments provided by the Operator on the proposed documentation prior to advertising the tender.
81. The Department must provide the Community with an opportunity to provide submissions on the engagement of the Independent Monitor and the Department must consider any submissions provided by the Community on the engagement of the Independent Monitor prior to advertising the tender.
82. The terms of engagement of the Independent Monitor may include the following:
- a. a period of engagement between three and five years;
 - b. a statement acknowledging that the Operator is responsible for the costs of the Independent Monitor;
 - c. a warranty by the Independent Monitor that it will:
 - i. act independently of the Department, the Operator, the Minister and any other person; and
 - ii. act honestly, reasonably and with the degree of professional care, knowledge, experience, skill and diligence which may reasonably be expected; and
 - iii. act within the time prescribed under these conditions, the terms of engagement, or where no time is prescribed, within a reasonable time; and
 - iv. immediately notify the Department in writing upon becoming aware of the existence or possibility of a conflict of interest;
 - d. an obligation on the Independent Monitor to keep all information provided to the Independent Monitor confidential.
83. If the Independent Monitor requires an indemnity, the Operator must enter into a binding agreement providing a reciprocal indemnity to the Department.
84. The Department must notify the Operator of the appointment of the Independent Monitor and must provide the Operator with a copy of the terms of engagement.

85. The Operator and the Department must not interfere or attempt to influence the Independent Monitor in its assessment of environmental performance under these conditions.
86. The Operator and the Department must each:
- a. cooperate with the Independent Monitor; and
 - b. provide all necessary information and documents within their possession, custody or control to the Independent Monitor; and
 - c. procure for the Independent Monitor access to such premises owned, leased, or licensed by it as may be reasonably necessary,
 - d. to enable the Independent Monitor to undertake its assessment of environmental performance under these conditions.
87. The Independent Monitor must engage with the Operator, the Department and the Community in undertaking the independent monitoring assessment.
88. If the Independent Monitor identifies an issue it considers requires urgent investigation and reporting:
- a. the Independent Monitor must advise the Operator and the Department of the issue as soon as practicable and may include recommendations as to action to be taken; and
 - b. the Operator must consider the advice, and any recommendations, from the Independent Monitor and notify the Department and the Independent Monitor of the action the Operator proposes to take; and
 - c. the Department may, where appropriate, advise the Operator and the Independent Monitor of action the Department proposes to take; and
 - d. the Independent Monitor may provide further advice to the Operator, and where appropriate the Department, regarding the proposed action and the Operator and the Department must consider the further advice; and
 - e. if, after providing further advice, the Independent Monitor is not satisfied with the proposed action, the Independent Monitor may notify the Operator and the Department of the Independent Monitor's intention to undertake its own investigation and report; and
 - f. the Operator and the Department must facilitate the Independent Monitor's investigation and report.
89. The independent monitoring assessment is to be conducted, where practical, in a manner that complements the existing annual environmental assessment and audit processes undertaken by the Operator and the Department.

90. The Independent Monitor must prepare and provide a report:
- a. annually to the Minister to assist with the review of the Mining Management Plan; and
 - b. on request by the Minister.
91. The Minister must provide a report received from the Independent Monitor to the Operator and the Department within 14 days of receiving the report.
92. The Independent Monitor must prepare an additional report in a form suitable for distribution to the Community.
93. The Operator and the Department acknowledge that the report from the Independent Monitor will be made publicly available (including publication on an appropriate internet site) and may include data used in the preparation of the report.
94. Prior to being made publicly available, the Minister must request from the Operator and the Department any comments on the Independent Monitor's report. Such comments must be provided within 28 days of the Minister's request and must be made publicly available with the Independent Monitor's report.
95. The Operator acknowledges that it is responsible for all costs of the independent monitoring assessment other than those costs directly attributable to those elements of the independent monitoring assessment associated with condition 75 b which are the responsibility of the Department.
96. The Department may provide to the Operator, from time to time, a notice setting out amounts due and payable under the terms of the engagement of the Independent Monitor.
97. The Operator must pay an amount notified in accordance with condition 96 within 7 days of receiving such notice.
98. If the Operator disputes a notice provided by the Department under condition 96:
- a. the Operator must pay the amount specified in the notice in accordance with condition 97; and
 - b. the Operator must notify the Department in writing within 14 days of receiving the notice, setting out the reasons why the Operator disputes the notice; and
 - c. the Chief Executive of the Operator and the Chief Executive of the Department must meet within 5 working days to resolve the dispute.
99. If there is a dispute (other than a dispute mentioned in condition 98) between the Operator and the Department as to any matter or thing arising out of these Conditions (the "Dispute"), the party claiming that a Dispute has arisen must notify the other party to the Dispute and the Chief Executive of the Operator, the Chief Executive of the Department and the Independent Monitor must meet within 5 working days to resolve the Dispute.

100. If the Chief Executive of the Operator, the Chief Executive of the Department and the Independent Monitor are unable to resolve a Dispute within 10 working days of meeting in accordance with condition 99, the Operator and the Department may agree to the appointment of an independent party to assist in the resolution of the Dispute.
101. If, within 5 working days of either the Operator or the Department nominating a person to be the independent party, no agreement is reached as to who is to be appointed as the independent party, either the Operator, the Department or both may refer the matter to the President of the Law Society of the Northern Territory.
102. The President of the Law Society Northern Territory may nominate a person to be the independent party and the parties to the Dispute are bound to accept the appointment of that person.
103. The role of the independent party is to assist in negotiating a resolution of the Dispute and the independent party cannot make a decision that is binding on either the Operator or the Department.
104. The Operator and the Department must make available to the independent party all materials requested by it and must provide the independent party with all other materials relevant to the Dispute.
105. The Operator and the Department must:
 - a. Bear their own costs of resolving the Dispute under this condition; and
 - b. Bear equally the costs of any independent party engaged.

Overburden Management Project

106. The operator must ensure activities related to the McArthur River Overburden Management Project are implemented in accordance with:
 - a. All environmental commitments and safeguards identified in the final Environmental Impact Statement for the McArthur River Mine Overburden Management Project (draft Environmental Impact Statement, Supplement to the draft Environmental Impact Statement and additional information); and
 - b. Recommendations in the NT EPA Assessment Report 86,

Where they are approved under an MMP, as defined in Condition 1.I of the Authorisation

If there is any inconsistency between the above documents, the most recent authorisation shall prevail to the extent of any inconsistency.

107. The Operator must provide written notice to the Minister and NT EPA if it alters or proposes to alter the McArthur River Mine Overburden Management Project and/or commitments, safeguards or mitigation measures in the Environmental Impact Statement in such a manner that the environmental significance of the action may have changed, in accordance with clause 14A of the Environmental Assessment Administrative Procedures 1984.
108. Within 18 months of authorisation¹² of the Overburden Management Project, the Operator must submit a plan to the Department for review, that:
- a. Enables measurement of total loads of lead and zinc and is consistent with requirements of Condition 117;
 - b. Quantifies and ensures annual loads of lead and zinc discharged to the McArthur River in future years (July to June) do not exceed the loads discharged in 2017-2018 (as per Condition 38.c), taking into account seasonal variations in rainfall, and subject to future annual load calculations;
 - c. includes recommendations and outcomes arising from audits of loads by the Independent Monitor; and
 - d. include sufficient detail to inform the development of monitoring and management measures (including but not limited to early warning alerts and intervention levels), as part of the site wide Adaptive Management Plan (Condition 131).

Unless otherwise agreed in writing by the Department. The plan, once approved by the Department must be implemented.

109. Within 18 months of authorisation of the Overburden Management Project, the Operator must submit a plan to the Department for review, that shall include:
- a. site-specific trigger values determined in accordance with Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018 framework, incorporating ANZECC (2000) guidelines, at appropriate monitoring locations, in accordance with Condition 117; and
 - b. a commitment that creeks on the mine site to show long-term improving trends in water quality within 20 years after cessation of mining.

The plan, once approved by the Department must be implemented. The relevant findings from the plan must be incorporated into the Adaptive Management Plan (AMP).

¹² Note: Authorisation of the Overburden Management Project is from approval of the MMP activities defined in Condition 1.ii1.1.12.

110. Within 18 months of authorisation of the Overburden Management Project, the Operator must calculate contaminant loads and contaminant concentrations entering creeks and the McArthur River using system modelling.

The modelling must use suitable site-specific data collected as part of Condition 117 and be subject to review by the relevant independent panel at three year intervals. Specific assumptions to be tested include but are not limited to:

- a. groundwater flow paths; and
- b. attenuation of metals from mine-derived wastes

The Operator must provide a written response to the Department, if an independent technical panels, required under Condition 113, review of the models and modelling outputs, and the data collection programs that informed the model development include recommendations and/or improvements. All relevant outputs must be used to inform and update the Adaptive management Plan.

111. From the date of this approval, an independent environmental audit of the Quality Assurance (QA) and Quality Control (QC) procedures and waste rock identification and handling performance must be undertaken at intervals of every three years.

The results of the audit are to be provided to the Department within 6 weeks and to the relevant independent panel. The Operator must provide a written response to the satisfaction of the Department where findings from the audit and review by the relevant panel includes matters that need to be addressed or areas for improvement.

112. From the date of this approval, new areas of the NOEF foundation development (i.e. areas at base level) that do not currently contain PAF wastes must include a compacted clay layer (CCL) or, an engineered low permeability liner, of at least 0.5m thickness and maximum saturated hydraulic conductivity of 1×10^{-9} metres per second, above which future PAF wastes are to be stored.

113. The Operator must provide funding and assist the Department to establish and operate an independent panel (s) of experts to advise on matters affecting the environmental performance of the NOEF, TSF and mine closure planning in accordance with the relevant NT EPA recommendation.

114. Within 12 months of authorisation of the Overburden Management Project, the operator must submit a report to the Department for review, detailing the results of relevant studies undertaken to inform the requirements for implementation (including timelines) of a NOEF groundwater seepage interception and recovery system that:

- a. controls seepage to the Barney Creek diversion channel and the McArthur River
- b. achieves a recovering trend in the Barney Creek diversion channel and the old McArthur River channel (at SW06) water quality within 20 years of cessation of mining;
- c. facilitates achieving requirements of Conditions 108 and 109.

The Operator must write to the Department responding to any comments received from the NOEF independent panel on the report. The report, once approved by the Department must be implemented by the nominated timeframes.

115. Within 24 months of authorisation of the Overburden Management Project, the Operator must submit a NOEF geosynthetic liner cover system plan to the Department for review. The plan must:

- a. outline a process (including timelines) to test and evaluate (i.e. criteria) the constructability and effectiveness of geosynthetic liner cover options including a geosynthetic liner /compacted clay layer combination; and
- b. include implementation of trials on rehabilitated stages of the NOEF

All relevant performance parameters must be monitored, including but not limited to:

- slope stability during extreme events
- cover performance as a result of heat effects
- tolerance of the geosynthetic liner to expected differential settlement
- veracity of cover longevity predictions
- likely long-term maintenance requirements.

Reporting of trial results and monitoring outcomes shall be provided within three years from the plans submission, and every three years thereafter, to the relevant independent panel and the Community Reference Group for review, and shall be audited by the Independent Monitor. The Operator must provide a written response to the Department, if review from the relevant panels and Community Reference Group require matters to be addressed.

The plan, once approved by the Department must be implemented. The relevant outcomes of trials and monitoring must be used to inform the Adaptive Management Plan and closure planning for the mine.

116. The Operator must submit a strategy to the Department within five years of authorisation of the Overburden Management Project that details the long-term disposal management of tailings within/ into the mine pit void, submerged under a suitable depth of pit water. The plan must:

- a. include strategies on the tailings reprocessing and assessment of residual chemical contaminants that may likely impact on meeting the requirements of Condition 108; and
- b. be reviewed by the relevant independent panel.

The strategy, once approved by the Department must be used to develop a plan, 5 years prior to cessation of mining, for approval by the Department. Any requirement to vary the approved disposal strategy or plan must be:

- a. Applied for in writing to the Minister;
- b. Based on leading practice and site conditions / context;
- c. Supported by the relevant independent panel; and
- d. Notified to the NT EPA in accordance with Condition 107.

117. Within 12 months of authorisation of the Overburden Management Project, the Operator must review and synthesise all available and relevant information to submit a revised water monitoring program/ plan (surface water and groundwater) to the Department for review, ensuring the plan is capable of identifying and quantifying impacts of mining activities on the environmental values and beneficial uses of the McArthur River. The plan must be able to allow assessment of compliance to Condition 108 and include sufficient detail to inform/develop/update the Adaptive Management Plan. The program/ plan, at a minimum must:

- a. quantify loads of lead and zinc entering the McArthur River each year;
- b. quantify impacts to water quality and trends in groundwater to determine that objectives and targets are being met, including the effectiveness of source control to reduce loads as low as is reasonably practicable;
- c. develop appropriate future trigger values for waterways on the mine site and the McArthur River in accordance with the ANZECC Guidelines. In the interim, the trigger values in the most current WDL shall be used.

The revised program/plan must:

- a. be prepared in consultation with the NT EPA;
- b. be prepared in consultation with the relevant independent panel.

The plan, once approved by the Department must be implemented. Any variation and/or updates to the program/ plan (e.g. to maintain the currency of the monitoring network), must be undertaken in consultation with the relevant independent panel.

The results of the program must be reported annually to the Department and audited by the Independent Monitor every three years. The results of the program together with any audits/review findings must be published on the Operator's website.

118. Within 18 months of authorisation of the Overburden Management Project, the Operator must submit a research and investigation program to the Department for review, that establishes the concentration of mine-derived contaminants at which chronic and acute impacts to biota of relevance to the McArthur River system occur using recognised and accepted eco-toxicological testing. The results of this program must be integrated with other relevant programs monitoring programs and management plans. The plan, once approved by the Department must be implemented.

119. Within 18 months of authorisation of the Overburden Management Project, the Operator must submit an aquatic ecosystem monitoring program to the Department for review, that provides improved understanding of aquatic ecosystems in the McArthur River from changing water flows, levels and quality, including available dry season habitat. The program must:

- a. assess impacts of the mine on water levels in refuge pools/waterholes, upstream and downstream of the mine, including in the McArthur River diversion channel;
- b. assess impacts of the mine on water quality in refuge pools/waterholes in the dry season; and
- c. assess impacts of the mine on the health of aquatic biota in the McArthur River using non-lethal sampling methods.

The program must be designed to be integrated with requirements of the Adaptive Management Plan (Condition 131 and Condition 132). The program, once approved by the Department must be implemented.

120. At all times, the Operator must conduct works consistent with the Northern Territory Aboriginal Sacred Sites Act and valid Aboriginal Areas Protection Authority certificate (AAPA). All conditions of the AAPA certificate must be complied with (including but not limited to NOEF height restrictions), and evidence produced to demonstrate compliance, when requested by the Minister.

121. The Operator must not disturb or encroach within 5m of archaeological site MRM4, until a design of the NOEF is agreed in writing by the Department. Consultation between the Minister for Resources, the Operator and the Minister for Tourism and Culture must be undertaken prior to seeking endorsement of the design.

122. Within six months of authorisation of the Overburden Management Project, the Operator must provide a report to the Minister, and AAPA or the Minister for Tourism and Culture (where relevant) that demonstrates the consultation process undertaken or provide a plan to the Minister that details consultation activities and timeliness to identify and engage with appropriate custodians and traditional owners with an interest in land that would be or maybe affected by the Overburden Management Project.

123. The Operator must develop or revise and submit an existing air quality plan within 12 months of this Authorisation to the Department for review, that monitors sulfur dioxide emissions at an appropriate location between the NOEF and sensitive receptors determined in consultation with NT EPA.

The monitoring plan must include objectives, locations, frequency of monitoring, trigger values and reporting commitments to manage and protect any potential air quality risk to human health outside of the mineral lease. Evidence of consultation with the NT EPA must be provided at the time of the plan submission. The plan, once approved by the Department must be implemented. The results of the plan for each reporting frequency made available on the Operator's website and incorporated/updated/revise, where relevant, with the Adaptive Management Plan. Initial monitoring results to be reported within 6 months of the plan being accepted by the Department.

124. Within 24 months of authorisation of the Overburden Management Project, the Operator must submit a monitoring and management plan to the Department for review, that manages risks of metal toxicity from human consumption of aquatic fauna obtained from the McArthur River. The plan must:

- a. Determine if aquatic fauna obtained from any reach of the McArthur River, that may be impacted by the mine's operations, is safe to eat;
- b. include demonstrated evidence of consultation with NT EPA, on advice of the Chief Health Officer;
- c. detail public reporting of the monitoring results, including at appropriate locations in the Borroloola region; and
- d. include provisions for implementation and maintenance of signage at waterways at the MRM site in accordance with the requirements of Condition 68 until the risk of contamination from consumption of this aquatic fauna is negligible.

The plan, once approved by the Department must be implemented.

125. Within 24 months of authorisation of the Overburden Management Project, the Operator must submit a plan to the Department for review, that outlines monitoring program for management of Largetooth Sawfish. The plan must:

- a. include a sampling strategy for Largetooth Sawfish that is non-lethal;
- b. include details of parameters and criteria, from which the results could be used to define specific (measurable and time-bound) performance indicators to abate a significant decline in Largetooth Sawfish movement; and
- c. include trigger levels for investigation and implementation of management measures.

The plan, once approved by the Department must be implemented.

126. Within six months following the establishment of the required panels and groups, the Operator must in consultation with the relevant Independent Panels, Community Reference Group, custodians and traditional owners, develop environmental objectives for a Care and Maintenance Plan, and submit this to the Department for review.

The environmental objectives must be used to develop a Care and Maintenance Plan in consultation with the Department within five years of authorisation of the Overburden Management Project.

127. The Operator must facilitate an independent third-party assessment of the security for rehabilitation of authorised activities in the approved MMP as defined in Condition 1.I, to the satisfaction of the Department, and every 3 years thereafter if the security has been re-calculated or adjusted. The Operator must commission a qualified person within 3 months of the authorisation of the Overburden Management Project, whose appointment is to be accepted by the Minister. The first assessment of the security should occur within 6 months of acceptance of the qualified person by the Minister.
128. For every approved MMP and MMP amendment, the Operator must provide a revised copy of the approved document that removes commercially sensitive information and is suitable for publication on the Department's website, or provide written approval to make the complete documents publicly accessible.
129. The Operator must assist, as required, the Department to establish and operate a Community Reference Group in accordance with the relevant NT EPA recommendation.
130. Within 18 months of authorisation of the Overburden Management Project, the Operator must undertake a synthesis of all environmental monitoring programs that assess impacts of mining activities on the environmental values and beneficial uses of the McArthur River, in accordance with NT EPA's overarching environmental outcome (Condition 108). The revised monitoring programs must:
- a. use outputs generated for review and synthesis of water monitoring programs, as part of addressing Condition 117;
 - b. demonstrate how all monitoring data collected under various monitoring programs and management plans were considered and synthesised (e.g. conceptual site models, trend analysis); and
 - c. be incorporated in the AMP.
131. Within 18 months of authorisation of the Overburden Management Project, the Operator must submit an Adaptive Management Plan to the Department, which includes the following key elements:
- a. clear, measurable environmental objectives for all significant environmental risks and potential impacts;
 - b. measureable performance indicators to show that objectives are on target to be met;
 - c. pre-determined triggers to warn of potential for performance indicators to be exceeded, as informed by monitoring;
 - d. realistic and achievable contingency interventions to maintain performance indicators if triggers are consistently exceeded;
 - e. clearly defined management measures/actions that are capable of being implemented in a timely way to meet performance indicators and environmental objectives;

- f. monitoring in accordance with relevant Recommendations in this Report to determine whether management measures are effective and to inform the need for adjustments to management measures or need for alternatives;
- g. a continual feedback system to inform appropriate actions to be initiated when triggered and environmental objectives are always being met;
- h. continual development of new management actions as required based on knowledge gained from experience at the site and elsewhere across industry.

The AMP must be reviewed by the Independent Monitor or an appropriately qualified, independent third party, and updated with requirements of the Community Reference Group (CRG) (once established under Condition 129), with all review findings and CRG input requirements to be provided to the Department for approval.

132. Unless agreed otherwise in writing by the Department, the Adaptive Management Plan must:

- a. clearly set out the required management objectives and performance indicators;
- b. provide clarity on the triggers for changes to management actions, and responsibility and evidentiary basis for decision-making;
- c. establish the timeframe for initiation of certain actions if triggers are exceeded, including decisions to discontinue an activity and clarify responsibility and evidentiary basis for decision-making;
- d. establish a process for adjusting triggers that includes the regulator;
- e. establish transparent monitoring, reporting and review requirements;
- f. establish processes to achieve transparency and stakeholder engagement in Adaptive Management Plan design and implementation that includes NT EPA, DEE and Community Reference Group; and
- g. set out the mechanism for periodic review by Independent Monitor, which must not exceed a frequency of every three years.

Any amendments to the AMP must be provided to the Department for re-approval.

133. The Operator must provide written notice to the Minister and to the NT EPA (under clause 14A of the Environmental Assessment Administrative Procedures 1984) where trends indicate performance indicators and environmental objectives will not or are unlikely to be met by implementing the Adaptive Management Plan.