

Statement of Reasons

ARAFURA RESOURCES LTD – NOLANS PROJECT

NOTICE OF AN ALTERATION – CLAUSE 14(A)

PROPOSAL

The Arafura Resources Ltd (the Proponent) Nolans Project (the Proposal) was assessed under the Environmental Assessment Act 1982 at the level of an Environmental Impact Statement. The assessment was completed by the Northern Territory Environment Protection Authority (NT EPA) with Assessment Report 84 provided to the Minister on 21 December 2017.

The Proponent submitted a notification to the NT EPA on 20 June 2019, to provide details of alterations to the Proposal, in accordance with clause 14A of the Environmental Assessment Administrative Procedures 1984 (EAAP). Further information was requested on 25 July 2019 to inform the NT EPA's decision. The Proponent responded to the further information request on 19 August 2019.

The Proposal is for development and operation of a rare earths mine about 135km north-northwest of Alice Springs and an associated processing facility about 8km south of the mine site. The main components of the Proposal that were considered by the NT EPA in Assessment Report 84 include:

- open cut mine with associated waste rock dumps and tailings storage facility (TSF)
- a 4km diversion of an ephemeral creek
- a mine processing area with a residue storage facility (RSF)
- an accommodation village
- water abstraction from a new borefield in the Southern Basins
- linear infrastructure including roads, pipelines and power lines

The Proposal would operate for 55 years, producing 14 000 tonnes per annum of rare earth oxide and 110 000 tonnes per annum of phosphoric acid. Refining of the rare earth oxide would occur at another location and was not included in the assessment.

ALTERED PROPOSAL

The changes included in the proposed alteration are summarised in Table 1.

Table 1: Alterations to the Proposal since it was assessed by the NT EPA in 2017

Aspect	Assessed Proposal	Altered Proposal
Kerosene Camp Creek diversion at mine site	~4km, maximum depth 22m	Diversion to occur in 2 stages: 1. ~1km diversion around initial pit development (until year 6-9) 2. ~4km diversion as assessed
Waste rock dumps (WRDs) at mine site	For the full life of mine: 5 WRDs; 460 ha, 50m high, interspersed berms	For the first 23 years of mining: 2 WRDs; 220 ha, 60m high, concave slope (no berms)

Aspect	Assessed Proposal	Altered Proposal
Comminution and beneficiation of ore	at mine site	at processing site
Transfer of mined material from mine site to processing site	8km slurry pipeline with associated access track / service corridor	8km haul road with 24-hour operation of a road train at a rate of about 1 return trip per hour
Processing / separation at processing site	60ha; Extraction facility to produce rare earth cerium product and rare earth chloride (to be separated elsewhere)	46ha; Extraction facility unaltered; an additional separation facility will produce final rare earth products of neodymium, praseodymium and heavy rare earths.
Tailings storage facility at mine site	195 – 245ha	No longer required
Residue storage facility at processing site	345ha, plus evaporation ponds (~60 ha)	~480ha; 2 types of cells: 1) tailings and gypsum co-disposed 2) water leach residue
Power station demand	12.5 megawatts (MW)	33MW
Water abstraction	2.7 gigalitres (GL) per year	3.4 – 4GL per year
Vehicle movements on public roads	26 per day	40 per day

CONSULTATION

The notification of the altered Proposal was reviewed in consultation with Northern Territory Government advisory bodies and the responsible Minister as required by clause 14A(3) of the EAAP.

JUSTIFICATION

The NT EPA acknowledges that the Proposal has been altered from that previously assessed at the level of an EIS as outlined in the Proponent's notification and summarised above. The altered Proposal was assessed against the NT EPA's environmental factors and objectives to reconsider the environmental significance of the altered Proposal.

Hydrological processes

Objective: Maintain the hydrological regimes of groundwater and surface water so that environmental values are protected.

The altered Proposal increases the maximum volume of water that would be extracted annually from the Reaphook Paleochannel within the Southern Basins borefield by up to 48%; from 2.7GL/yr to 3.4 – 4GL/yr. This would result in the localised drawdown of groundwater as well as potential long-term impacts to the groundwater resource, current and future users and groundwater dependent ecosystems.

Assessment Report 84 acknowledged that there is a high level of uncertainty and limited capability in the Proponent's use of preliminary groundwater modelling to predict potential impacts and made recommendations 3, 4 and 5 requiring the development and implementation of a Water Abstraction Management Plan (WAMP). The WAMP would be subject to independent review and implemented to the satisfaction of the relevant regulator.

The WAMP provides a suitable framework for the development of a monitoring program with appropriate trigger responses and adaptive management actions to prevent significant detrimental impacts to natural groundwater levels and ecosystems. The NT EPA considers that the implementation of the relevant recommendations from Assessment Report 84, together with the licensing and regulation requirements under the Water Act 1992, provide an evidence-based process to determine whether the proposed extraction volumes are acceptable. It would also ensure that appropriate measures are in place so that any impacts would be reduced to a level that is ecologically sustainable and acceptable to the regulator and the wider community.

The altered Proposal includes a reduced length interim diversion channel (1km diversion) in an ephemeral tributary of Kerosene Camp Creek for the first 6 to 9 years of mining, in comparison to the previously assessed Proposal (4km diversion). Any reduction in risk or impact would be short term given that the final diversion channel would be constructed to the previously assessed 4km length and would remain in place as a permanent feature of the creek system to divert runoff away from the open pit.

Assessment Report 84 recognised the importance of effective design of the diversion channel to deliver surface and subsurface flows from the upstream catchment into the Woodforde River and made recommendation 7 to maintain its environmental values. The Proponent has incorporated the elements of this recommendation into the design of the interim diversion channel. In addition, Recommendation 7 requires the Proponent to demonstrate, prior to any approvals, that the diversion would be fit for purpose and maintain river environmental values to the maximum extent practicable, and requires independent peer review and implementation to the satisfaction of the relevant regulator. This would also apply to the interim diversion channel.

The NT EPA considers that the environmental significance of the Proposal may be changed in relation to this factor due to the increased water extraction volume. However, the Assessment Report 84 recommendations for a WAMP, combined with water extraction licensing requirements under the Water Act 1992, provide appropriate mechanisms to prevent significant impacts. Overall, the NT EPA is satisfied that with adherence to the recommendations in Assessment Report 84 and the Proponent's commitments, the increased water extraction volume together with the interim diversion channel can be managed such that the NT EPA's objective for hydrological processes is likely to be met.

Inland water environmental quality

Objective: Maintain the quality of groundwater and surface water so that environmental values including ecological health, land uses, and the welfare and amenity of people are protected.

The altered Proposal includes the co-storage of all tailings and residue waste material in the RSF at the processing site. This removes the possibility of impacts to water quality from the previously proposed TSF at the mine site but could increase the likelihood of impacts from the RSF, containing increased quantities of contaminants, due to seepage, overflow or failure. The altered Proposal also introduces the potential for leachate from exposed mineralised rock in the interim diversion channel.

Assessment Report 84 acknowledged the potential for acid, neutral, metalliferous or saline drainage from the TSF and/or RSF, and the potential for naturally occurring radioactive material

(NORM) to be a component of contaminants mobilised to receiving waters from tailings and residues. It included recommendations for updating mitigation measures, including waste storage design, prior to approval of the Proposal.

The NT EPA made Recommendation 8 for the provision of an updated Acid and Metalliferous Drainage (AMD) Management Plan that would classify the potential for geological materials (including waste rock, tailings, residue and ore stockpiles) to generate AMD and provide measures to mitigate associated risks and impacts. Recommendation 9 requires the Proponent to engage an independent certifying engineer to oversee the design and operation of all waste storages, and to provide objective and independent expert review on site suitability, design, drainage, liners, performance monitoring, decommissioning and rehabilitation as well as regular inspection, audit and reporting to the relevant regulator. The NT EPA considers that the implementation of these recommendations, combined with the Proponent's commitment to design, construct, maintain, operate and decommission the RSF in accordance with Australian National Committee on Large Dams (ANCOLD) guidelines, would minimise the risk of any seepage, overflow or failure of the RSF and subsequent potential impacts on water quality.

In the notification of the altered proposal the Proponent recognised the potential for exposed mineralised rock encountered during excavation of the interim diversion channel to result in leachate that could contaminate surface water flows in the channel or groundwater through infiltration. To mitigate this, the Proponent has committed to detailed logging of rock along the channel and installation of appropriate surface treatments if required, such as backfilling with benign compacted material or a thin concrete layer to prevent water contacting any problematic AMD or NORM material.

The NT EPA considers that with adherence to the recommendations in Assessment Report 84 and the Proponent's commitments to update the AMD Plan, the NT EPA's objective for inland water environmental quality is likely to be met. The environmental significance of the Proposal remains unchanged in relation to this factor.

Terrestrial flora and fauna

Objective: Protect the NT's flora and fauna so that biological diversity and ecological integrity are maintained.

The alterations to the Proposal could result in an increase in risk of impacts to one threatened species that occurs around the mine site, the black-footed rock wallaby (*Petrogale lateralis*), listed as vulnerable under the Environment Protection and Biodiversity Conservation Act 1999. The altered Proposal includes a haul road between the mine site and processing site, adjacent to rock wallaby habitat. This haul road would carry a greater volume of heavy vehicles compared to the access road in the previously assessed Proposal, presenting an increased risk of impact to the rock wallaby from vehicle strike and reduced habitat due to dust dispersion and deposition.

Assessment Report 84 acknowledged the risk of killing or injuring individual rock wallabies from vehicle strike and concluded that the implementation of a Traffic Management Plan would adequately reduce this risk to an acceptable level. The Proponent had committed to restrictions on driving at night when the highest risk to the species would occur as individuals leave the outcrops and forage/disperse. With the alteration to include 24-hour haulage adjacent to rock wallaby habitat, the Department of Environment and Natural Resources (DENR) Flora and Fauna Division considered that the Proposal could increase the likelihood of vehicle-strike to rock wallabies, particularly during high-risk periods (dusk, dawn and night) and near rocky outcrops and breakaways. It also considered that, while the frequency and consequence of vehicle-strike from the altered proposal on the population are uncertain, they may be significant over the full life of the mine.

The Proponent provided further information committing to the inclusion of additional measures in the Traffic Management Plan for mitigating vehicle strike. These measures include increasing driver awareness, possible use of virtual fencing, speed limits in areas of likely rock wallaby presence, and ongoing audits of a register of vehicle encounters with fauna to determine whether any additional measures may be required to reduce impacts. The NT EPA supports these measures, but considers that the residual risk of mortality of rock wallabies due to vehicle strike from the altered Proposal is significantly higher than from the assessed Proposal. Assessment Report 84 made Recommendation 11 requiring a Biodiversity Management Plan prior to approval of the Proposal. This recommendation provides for the detailed development of the processes for notifications, triggers and effective interventions to address impacts relating to vehicle strike.

Assessment Report 84 also considered the potential impacts of predicted Proposal-related dust levels ($>50\mu\text{g}/\text{m}^3$) and concluded that potential impacts from dust were unlikely to have a significant impact on the species in the context of available habitat for the population within the region. The Proponent's updated modelling predicts an 80% increase in dust emissions and a significantly increased footprint for the $60\mu\text{g}/\text{m}^3$ dust contour (24 hour maximum), largely coinciding with potential rock-wallaby habitat. Increased dust levels could impact rock-wallabies directly through inhalation or ingestion and indirectly through avoidance of habitat or deposition impacts including degradation of habitat and suppression of fodder vegetation. The DENR Flora and Fauna Division advised that the level of significance of the risk of such impacts is uncertain and that the Proponent should adopt a precautionary approach to avoid impacts within suitable rock-wallaby habitat.

The Proponent has committed to provision of an updated Air Quality and Dust Management Plan (AQDMP) and the Biodiversity Management Plan as part of its application for a mining authorisation. This will include commitments to use surfactants and appropriate quantities of water on the haul road to inhibit dust generation, monitor dust deposition over the area of predicted impact, monitor rock wallaby populations and recalibrate the dust model when operational data are available. The NT EPA acknowledges these measures may minimise possible dust impacts in suitable rock-wallaby impact, but takes a conservative approach by concluding that the altered Proposal is likely to result in a greater likelihood of impacts to rock-wallabies and their habitat than that previously assessed.

The NT EPA considers that the potential impacts and risks to black-footed rock-wallaby have increased as a result of the alteration. Therefore the environmental significance of the Proposal in relation to this factor has changed from the previously assessed Proposal. The NT EPA considers these increased potential impacts and risks can be addressed through mechanisms specified in Assessment Report 84 and by the implementation of measures to avoid and mitigate dust and traffic related impacts to black-footed rock wallabies, as committed to by the Proponent. As a result, the NT EPA considers that the altered proposal is unlikely to have a significant impact on the regional population of black-footed rock-wallaby occupying the Reynolds Range. The NT EPA concludes that the NT EPA's objective for terrestrial flora and fauna is likely to be met.

Social, economic and cultural surroundings

Objective: Protect the rich social, economic, cultural and heritage values of the Northern Territory

The altered Proposal has greater predicted traffic movements than the assessed Proposal, so there is potential for impacts on other users of the road and rail transport networks and other people affected by those networks. The Proponent provided an updated Traffic Assessment report indicating an increase of 54% of daily trips from Alice Springs to the Proposal area compared to the assessed Proposal. However, this would only amount to 1% of the remaining traffic volume capacity and is therefore not considered to be significant. The difference in peak period impact on the road network would increase marginally from that assumed in the EIS, though there continues

to be sufficient capacity to cater to this incremental change in traffic. Traffic Management measures would be incorporated into the relevant plans and procedures for the Proposal.

The predicted energy demand has increased by 164% from 12.5 megawatts (MW) in the assessed Proposal to 33 MW in the altered Proposal. The Proponent estimated that the worst-case greenhouse gas emissions from the altered Proposal would be 0.144 Mt CO₂-e per year, which would be about a 0.9% increase of the NT's emissions (based on 2016 data) and not considered to change the significance of the Proposal.

No impacts to known sacred sites are anticipated as a result of alterations to the Proposal. Restricted Work Area 8 (an Aboriginal Areas Protection Authority Certificate Restricted Works Area) is a significant site containing objects of high archaeological and cultural significance that is adjacent to the proposed haul road and service corridor in the altered Proposal. While this road and corridor are wider than the previously pipeline and access corridor, they have been aligned to avoid impact to Restricted Work Area 8.

Assessment Report 84 acknowledged that it is important the Proponent communicate with stakeholders about the Proposal and the associated risks, including in relation to environmental impacts, mine closure and rehabilitation options and post mining land uses. The NT EPA made Recommendation 12 for the establishment of a community reference group to ensure effective management of social and economic impacts and communication with stakeholders.

The NT EPA considers that with adherence to the recommendations in Assessment Report 84, the community would be appropriately informed, the Proponent would address any concerns raised regarding the altered Proposal and that the NT EPA's objective for social, economic and cultural surroundings is likely to be met. The environmental significance of the Proposal in relation to this factor remains unchanged from the previously assessed Proposal.

Human health

Objective: Ensure that the risks to human health are identified, understood and adequately avoided and/or mitigated.

The Proponent's updated predicted radionuclide concentrations (derived from NORM) in the RSF are slightly higher in the altered Proposal compared to the assessed Proposal, potentially increasing the radiological risk to people. However, the altered Proposal includes smaller cells than the assessed Proposal and these will be progressively covered and rehabilitated, thereby reducing radiological risk. The classification of RSF waste material as low level radioactive material remains unchanged by this alteration and the RSF will be managed in accordance with the relevant Australian regulations.

Assessment Report 84 acknowledged that the implementation of relevant radiation plans in accordance with Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) requirements would reduce the risk of exposure of people to radiation to an acceptable level. The NT EPA also made recommendation 9 for an independent certifying engineer to oversee and review the design and operation of all waste storages, and this would provide an additional layer of certainty that radiation risks will be effectively managed.

The NT EPA considers that with adherence to the recommendations in Assessment Report 84 and the Proponent's commitments, the NT EPA's objective for human health is likely to be met. The environmental significance of the Proposal in relation to this factor remains unchanged from the previously assessed Proposal.

SUMMARY

Regarding the above, the NT EPA considers that the environmental significance of the proposed action has not changed in relation to most environmental factors but has changed in relation to terrestrial flora and fauna. However, the NT EPA considers that its objectives for all environmental factors are likely to be met, provided the Recommendations made in Assessment Report 84 and the Proponent's commitments are applied to the altered Proposal. Therefore, the NT EPA considers that further assessment is not required.

DECISION

The Nolans Project has been altered in such a manner that its environmental significance has changed. Assessment Report 84 adequately addresses the potential impacts that could be significant. Therefore, subject to clause 14A of the Environmental Assessment Administrative Procedures 1984, the administrative procedures are at end with respect to the proposed action.



DR PAUL VOGEL AM MAICD

CHAIRMAN

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

3 SEPTEMBER 2019