ntepa Northern Territory Environment Protection Authority

Statement of Reasons

DEPARTMENT OF MINES AND ENERGY – REHABILITATION OF THE FORMER RUM JUNGLE MINE SITE

PROJECT

The Department of Mines and Energy (the Proponent), submitted the Notice of Intent for the Rehabilitation of the former Rum Jungle Mine Site (the Project) to the Northern Territory Environment Protection Authority (NT EPA) on 30 June 2016 for consideration under the *Environmental Assessment Act* (EA Act).

The former Rum Jungle Mine Site is located near Batchelor, approximately 100 km south of Darwin. Rum Jungle is a highly disturbed landscape, not only from past mining activities but also from the rehabilitation process in the 1980's, when substantial borrow pits were created in order to create covers on the waste rock dumps and backfilled pit. Earlier rehabilitation efforts were only partially successful and the most significant environmental legacy of the former Rum Jungle mine has been the impact on downstream water quality as a result of acid mine drainage (AMD), particularly in the Finniss River East Branch but also further downstream in the main Finniss River. Recent studies have also documented significant groundwater contamination on the mine site that requires remediation.

The proposed Project aims to address the long-term environmental legacy issues at Rum Jungle and the nearby satellite sites of Mount Fitch and Mount Burton, caused by the generation of AMD.

The proposed works would include:

- dewatering and discharge of Main pit during the Wet Season and if required, treatment of contaminated water to meet applicable discharge requirements
- dredging of historic tailings currently located at the base of Main pit and relocation to a new purpose-built waste storage facility (WSF) in the northern location on site, involving clearing of approximately 51 ha of native vegetation
- waste material from Dyson's backfilled Pit (to grade), Intermediate waste rock dump (WRD) and a portion of Main WRD (most reactive waste) to Main pit, following de-watering and dredging of tailings
- relocation of any residual waste (i.e. in excess of capacity of Main pit) from Main WRD, Dysons WRD and contaminated soils (including from fluvial areas) to the new WSF
- treatment of all waste with lime prior to being relocated to either Main pit or the new WSF
- construction of a seepage collection system for any seepage encountered beneath the new WSF, to be directed to Intermediate pit for treatment
- retention of Intermediate pit as a water-filled void for use as a 'passive water treatment system'
- construction of covers over the Main pit, Dysons pit and new WSF, comprising of clays, soils and growth mediums that will be revegetated with locally-collected native tree species

- excavation of borrow pits to extract necessary material for the cover construction, involving clearing of approximately 102 ha of native vegetation
- reinstatement of East Branch of the Finniss River to as far as practicable, its pre-mining course
- removal of the Mount Burton WRD to Rum Jungle for disposal in the new WSF
- relocation of the small overburden heap at Mount Fitch into the Mount Fitch Pit
- landform design and revegetation of disturbed areas following rehabilitation works, including WRD footprint areas, old tailings dam area, old borrow pits, haul roads etc.
- implementation of weed and fire management programs to assist in the successful establishment of native vegetation
- upgrading of access tracks, including construction of haul roads and a bridge to provide all-weather access during construction, involving clearing of approximately 33 ha of native vegetation

The proposed works would likely be undertaken during the Dry season over eight years, with the earliest commencement date being May 2017.

The Proponent has referred the project to the Australian Government for assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

CONSULTATION

The Notice of Intent has been reviewed as a notification under the EA Act in consultation with Northern Territory Government (NTG) advisory bodies and the responsible Minister, in accordance with clause 8(1) of the Environmental Assessment Administrative Procedures.

JUSTIFICATION

Review of the NOI identified that there is a risk of significant impact to the environment from the proposal. Issues contributing to this conclusion include:

Contamination of waters

Whilst the goal of rehabilitation of the mine site is to improve surface and groundwater quality, there is a risk that if the Project is not appropriately designed and/or implemented, historical water quality impacts may not be improved, or could deteriorate further. Additional studies are likely to be required to address the potential failure modes identified in the Notice of Intent.

Appropriate release criteria for proposed Wet season discharge of water from the Main pit need to be established in accordance with relevant guidelines and include consultation with relevant stakeholders. Details of the proposed system for treatment of water from the Main pit and resulting water quality have not been provided. The effectiveness of the proposed utilisation of Intermediate pit for ongoing passive treatment of any contaminated water generated on site post-rehabilitation has not been adequately demonstrated.

The Water Management Plan provided in the NOI is conceptual and will need to be developed further to include specific details of mitigation measures to minimise contamination of surface/groundwater, performance criteria and water quality monitoring programs (both during rehabilitation operations and post-rehabilitation).

Technical reports within the NOI identified several recommendations for additional studies prior to commencing rehabilitation, such as:

- determination of the physical and geochemical properties of tailings from the Main Pit, in order to estimate a geochemical source term for these tailings after they have been neutralised by addition of lime and placed in the proposed new waste storage facility
- completion of additional testing of geochemical properties of acid-forming materials in Main Waste Rock Dump and field validation testing methods
- completion of additional site investigations of pit walls and in-pit backfill materials to advance the design of the Main Pit waste disposal facility and minimise shallow contaminant loading to downstream surface waters
- completion of additional neutralisation testing (including field mixing trials) to further assess seepage likely to be produced from rehabilitated land forms and optimise neutralisation methods during rehabilitation
- completion of additional laboratory testing and groundwater modelling to improve and expand water quality predictions for post-rehabilitation groundwater conditions
- utilisation of the existing groundwater model to evaluate water management of the Main Pit during rehabilitation and its effect on post-rehabilitation water quality
- development of a limnological model for the Intermediate Pit in order to refine the approach to seepage management post-rehabilitation
- finalisation of a post-rehabilitation groundwater monitoring program.

Erosion and sediment control

The proposed Project involves substantial disturbance to land surfaces associated with vegetation clearing and earth-moving, including both previously disturbed areas and substantial new areas (i.e. 319 ha) that have not previously been disturbed. If erosion and sediment control measures are not appropriately designed and/or implemented, significant erosion could occur on site which may result in downstream water quality impacts (i.e. turbidity, sedimentation) and failure to meet rehabilitation objectives (e.g. non-polluting, long-term stable landforms). A site-wide Erosion and Sediment Control Plan covering all aspects of rehabilitation operations and post-rehabilitation will need to be compiled in accordance with relevant guidelines.

Radiation

There are radiologically-contaminated materials at the Rum Jungle mine site (and satellite sites at Mount Fitch and Mount Burton) associated with previous uranium mining activities that require excavation, transport and disposal. Although considered to be 'low level' radiation sources, there is a risk that if not appropriately managed during rehabilitation and/or disposed of appropriately (i.e. isolated in long-term stable landforms), this may pose a risk to humans and/or biota. It is expected that the site will be used by traditional owners with few limitations following rehabilitation but radiological objectives have not been clearly defined, nor has a post-rehabilitation assessment of radiation doses to humans or biota been undertaken.

Combined with the high public profile of Rum Jungle's environmental legacy associated with impacts to downstream water quality and aquatic ecosystems, the remediation of a former uranium mine site with potential radiation issues is likely to generate significant public interest.

Flora and fauna

Risk exists of presence and impacts on species of conservation significance, including:

- Black-footed Tree-rat *Mesembriomys gouldii gouldii* (Endangered under the EPBC Act and Vulnerable under the *Territory Parks and Wildlife Conservation* (TPWC) *Act*)
- Partridge Pigeon *Geophaps smithii smithii* (Vulnerable, EPBC and TPWC Acts)
- Merten's Water Monitor *Varanus mertensi* (Vulnerable, TPWC Act)
- Mitchell's Water Monitor *Varanus mitchelli* (Vulnerable, TPWC Act)
- Bladderworts *Utricularia singeriana* and *U. dunstaniae* (Vulnerable, TPWC Act)
- Darwin Cycad *Cycas armstrongii* (Vulnerable, TPWC Act).

Other risks

Proposed Project activities introduce further risks including potential for:

- disturbance of archaeological object/sites and/or sacred sites
- interaction of construction traffic with tourist vehicles on public roads
- introduction and spread of weeds.

The NT EPA considers that the Project has the potential to significantly impact the environment and a number of risks cannot be adequately characterised without further studies and a more comprehensive assessment.

DECISION

The Rehabilitation of the former Rum Jungle Mine Site is capable of having a significant effect on the environment and its environmental significance is such that an environmental impact statement is necessary with respect to the proposed action.

DR BILL FREELAND

CHAIR

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

30 AUGUST 2016