
# Assessment Report under the

# *Environmental Protection Act 1994*

*on the*

# Environmental Impact Statement

*for the*

# Roseby Copper Project

*proposed by*

# Universal Resources Limited

**July 2008**



**Environmental Protection Agency**
**www.epa.qld.gov.au** ABN 87 221 158 786

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## Glossary of Acronyms

EIS – Environmental Impact Statement, Universal Resources July 2007. Includes Appendices A to O.
SR – Supplementary Report, Universal Resources December 2007
IRR –Information Request Response, Universal Resources April 2008
EM plan – Environmental Management Plan, Universal Resources July 2007
Amended Noise Report – Universal Resources (June 2008)

## 1. Introduction

This report provides an evaluation of the environmental impact statement (EIS) process pursuant to Chapter 3 of the *Environmental Protection Act 1994* (EP Act) for the Roseby Copper Project proposed by Universal Resources Ltd. The Environmental Protection Agency (EPA) as the administering authority of the EP Act coordinated the EIS process. This assessment report has been prepared pursuant to Sections 58 and 59 of the EP Act.

The objective of this assessment report is to:

(a) summarise key issues associated with the potential adverse and beneficial environmental, economic and social impacts of the Roseby Copper Project and the management, monitoring, planning and other measures proposed to minimise any adverse environmental impacts of the project; and

(b) make recommendations on the suitability of the project to proceed and where so, to make recommendations on necessary conditions for any approval required for the project.

Section 58 of the EP Act lists the criteria that the EPA must consider when preparing an EIS assessment report, while section 59 of the Act states what the content must be. In summary, this assessment report addresses the adequacy of the EIS in addressing the final terms of reference (TOR), the suitability of the draft environmental management plan (EM plan) and other prescribed matters.

This report provides a summary and assessment of the key issues identified through the EIS process, and discusses in greater detail those issues of particular concern that were either not resolved or required specific conditions for the project to proceed.

Delivery of this EIS assessment report to the proponent completes the EIS process under the EP Act.

### 1.1 Project details

Universal Resources Limited (URL) is the proponent for the proposed "Roseby Copper Project" (the project).

The project is located in north-west Queensland approximately 65 kilometres (km) north-west of Cloncurry and 90 km north-east of Mount Isa wholly within the Cloncurry Shire. The project area is within an established mining and grazing area. Mining tenure will comprise five contiguous Mining Leases (90162 to 90166) over an area of approximately 14,000 hectares.

The project site is currently used for low intensity cattle grazing.

The total mineral resource identified on project site is 123.2Mt of ore with an average grade of 0.73% copper and 0.06% gold. The quantity of contained metal in the deposits is 900,000t copper and 228,000oz of gold. The project involves the development of 10 open pits over a 25km strike length. Seven of these comprise predominately native copper (oxide) mineralisation and three comprise copper-gold sulphide mineralisation. The pits will range from 70m to 150m deep and have a surface area of 9 ha to 28 ha. The total volume of waste rock to be stored in dumps (20 to 40m high) or returned to voids is 41.7 M $m^3$ and the total area of the pits is 138 ha while the waste rock dumps would cover 177.5 ha. Overall, the project will result in the disturbance of 743 ha. The ore deposits will be mined using conventional earth-moving equipment and blasting.

The ore will be processed by floatation to produce a concentrate of 30% copper. The final products will be transported by road to Mt Isa for processing. Approximately 3 Mt/year of tailings will be produced.

Water for processing and dust control will be sourced from groundwater ingress to the pits and make up water will be sourced from the Lake Julius-Ernest Henry Pipeline which traverses the project area between the plant site and the most northern pit (Little Eva). Total water demand will be approximately 3,500 Ml a year.

The project is expected to have a minimum of a nine-year mine life mining approximately 20 million tonnes of ore and waste per year to produce up to 79,000 tonnes of copper concentrate annually.

Major infrastructure that will be developed for the project includes an accommodation village for up to 150 personnel, a processing plant, workshops and offices, haul roads and a new intersection from the Burke Development Road, telecommunications infrastructure and a tailings storage facility.

The proposed tailings facility will cover approximately 200ha and will abut the Knapdale Range which rises about 100m above the countryside in the north-east corner of the mining lease.

During construction, power will be sourced from generators, but once operational, the project will be connected to the power grid at either Chumvale or Mica Creek substations.

## 1.2 Approvals

The following approvals are required for the Roseby Copper Project:

| Approval | Legislation (Administering Authority) |
|---|---|
| Environmental authority (mining activities) | *Environmental Protection Act 1994* (EPA) |
| Access works to State controlled roads (Bourke Developmental Road) | *Transport Infrastructure Act 1994* |

## 1.3 Impact assessment process

### *1.3.1 The EIS process*

The EIS for the Roseby Copper Project was conducted under Chapter 3 of the EP Act. The EIS process was initiated by Universal Resources Limited on 19 October 2004 by application to the EPA to prepare a voluntary EIS under section 70 of the EP Act. The EPA approved the application to undertake a Voluntary EIS on 5 November 2004.

The EPA issued a notice of publication of the draft TOR to URL on 6 January 2005. The EPA placed a public notice on the EPA's website and in the Mt Isa North West Star newspaper on 17 December 2005 and in The Courier-Mail on 18 December 2005. The draft TOR was available for public comment from 6 January to 18 February 2005. URL issued copies of the public notice to affected and interested persons.

Thirteen submissions were received by the EPA on the draft TOR within the public comment period. These submissions, together with one from the EPA, were forwarded to URL on 4 March 2005 to which URL responded on 24 March 2005. The EPA considered all submissions received on the draft TOR and URL's responses prior to issuing the final TOR on 22 April 2005.

URL submitted the draft EIS on 20 April 2007 to the EPA for review prior to public notification. The EPA compared the draft EIS to the final TOR and at the request of URL, extended the decision period on the draft EIS to 18 July 2007 to allow for changes to be made to the submitted EIS. On 4 July 2007 the EPA issued to URL a notice of decision to proceed with the amended draft EIS. The public notification and submission period was set at the minimum 30 business days.

A public notice was placed on the EPA's website and advertised in The Mt Isa North West News on 13 July 2007 and in The Courier Mail on 14 July 2007. The draft EIS was available for public comment from 16 July 2007 to 27 August 2007. URL also issued copies of the public notice to affected and interested persons.

Seven submissions were received by the EPA on the draft EIS within the submission period. Submissions were received from six State government departments and agencies and one member of the public. These submissions, together with a submission from the EPA were forwarded to URL for consideration and response on 11 September 2007. The period for the proponent to submit a response to the comments on the EIS was extended on 8 October 2007 to the 19 December 2007. URL submitted a response to submissions (Supplementary Report) to the EPA on 19 December 2007 and a Notice of Amendment of Environmental Impact Statement.

On 19 December 2007, copies of the Supplementary Report were issued for review to members of the advisory body who made a submission on the draft EIS.

Five responses were received on the Supplementary EIS. A request for further information concerning matters raised in the responses was issued to URL on 5 February 2008. URL provided this information on 2 April 2008.

For the EPA to fully assess possible noise impacts on the homestead, a request for further information on noise impacts on the Roseby Station homestead was made to URL on 24 April 2008. This information was received on 11June 2008.

A notice of the decision to allow the submitted EIS to proceed was issued on 2 July 2008.

The EPA, in the preparation of this EIS assessment report, considered submissions and comments from members of the advisory body and other interested parties. Copies of this EIS assessment report are to be forwarded to all members of the advisory body, interested and affected persons and is to be available on the EPA's website (www.epa.qld.gov.au).

### *1.3.2 Consultation program*

#### *Public consultation*

In addition to the statutory requirements for public notification of the TOR and draft EIS and identification of interested and affected parties, URL consulted with the Cloncurry Shire Council, local organisations, and indigenous interests concerning the project.

#### *Advisory Body*

The EPA invited the following organisations to assist in the assessment of the TOR and EIS by participating as members of the advisory body for the Roseby Copper Project:

- Department of Mines and Energy
- Department of Communities;
- Department of Emergency Services;
- Department of Housing;
- Department of Local Government, Sport and Recreation;
- Department of Main Roads;
- Department of Natural Resources and Water;
- Department of Primary Industries and Fisheries;
- Queensland Conservation Council;
- Cloncurry Shire Council;
- Southern Gulf Catchments Group;
- Queensland Health;
- Queensland Transport; and
- Department of Infrastructure and Planning.

***Public notification***

In accordance with the statutory requirements, advertisements were placed in The Courier-Mail and Mt Isa North West Star to notify the availability of the draft TOR and draft EIS for review and public comment as stated in Section 1.3.1 above. In addition, notices advising the availability of the draft TOR and the draft EIS for public comment were displayed on the EPA website.

The draft TOR and draft EIS were placed on public display at the following locations during their respective public notification/submission periods:

- EPA website (draft TOR and Initial Advice Statement only);
- Customer Service Centre, EPA Central Office, Brisbane;
- EPA District Office, Mt Isa;
- Cloncurry Shire Council; and
- AustralAsian Resource Consultants, Taringa.

Copies of the draft EIS were available for purchase from URL and AustralAsian Resource Consultants.

***Site visit***

An advisory body briefing and site visit was held on 24 August 2007 in Cloncurry during the public notification period for the draft EIS.

#### *1.3.3 Environment Protection and Biodiversity Conservation Act 1999*

The Roseby Copper Project was not referred by URL to the Commonwealth Department of Environment and Heritage (DEH) for consideration under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Universal Resources considered that the project was unlikely to impact on matters of national environmental significance.

## 2. Matters considered in the EIS assessment report

Section 58 of the EP Act requires, when preparing this EIS assessment report, the consideration of the following matters:
(a) the final TOR for the EIS;
(b) the submitted EIS;
(c) all properly made submissions and any other submissions accepted by the chief executive;
(d) the standard criteria;
(e) another matter prescribed under a regulation.

These matters are addressed in the following subsections.

### 2.1 The final TOR

The final TOR document, issued on 22 April 2005, was considered when preparing this EIS assessment report. While the TOR were written to include all the major issues associated with the project that were required to be addressed in the EIS, they were not exhaustive, nor were they to be interpreted as excluding all other matters from consideration. The TOR stated that if significant matters arose during the course of preparation of the EIS that were not incorporated in the TOR (e.g. currently unforeseen issues that emerge as important or significant from environmental studies) then these issues should also be fully addressed in the EIS.

Where matters outside of those listed in the final TOR were addressed in the EIS, those matters have been considered when preparing this EIS assessment report.

## 2.2 The submitted EIS

The "submitted EIS" was considered when preparing this EIS assessment report. The "submitted EIS" comprised the:

(i) draft EIS that was publicly released on 16 July 2006;

(ii) the proponent's response to submissions report (Supplementary Report) received by the EPA on 19 December 2006 that was provided to relevant advisory body members;

(iii) the Information Request Response to the Supplementary Report received by the EPA on 2 April 2008. This response addressed several issues arising from the Supplementary Report that were raised by advisory body members; and

(iv) a report on predicted noise levels and management of noise at the Mount Roseby Homestead received by the EPA on 11 June 2008. This information was requested by the Assessment Manager following confirmation that the Mount Roseby Homestead would need to be treated as a 'sensitive site' under the *Environmental Protection (Noise) Policy 1997*.

## 2.3 Properly made submissions

Seven submissions were received by the EPA on the submitted EIS. Six submissions were received by the EPA on the submitted Supplementary EIS. All were properly made and all were considered when preparing this EIS assessment report.

## 2.4 The standard criteria

Section 58 of the EP Act requires that, among other matters, the standard criteria listed in Schedule 3 of the EP Act must be considered when preparing the EIS assessment report. The standard criteria are:

(a) *the principles of ecologically sustainable development as set out in the* National Strategy for Ecologically Sustainable Development*;*
(b) *any applicable environmental protection policy;*
(c) *any applicable Commonwealth, State or local government plans, standards, agreements or requirements;*
(d) *any applicable environmental impact study, assessment or report;*
(e) *the character, resilience and values of the receiving environment;*
(f) *all submissions made by the applicant and submitters;*
(g) *the best practice environmental management for activities under any relevant instrument, or proposed instrument, as follows—*
    *(i) an environmental authority;*
    *(ii) an environmental management program;*
    *(iii) an environmental protection order;*
    *(iv) a disposal permit;*
(h) *the financial implications of the requirements under an instrument, or proposed instrument, mentioned in paragraph (g) as they would relate to the type of activity or industry carried out, or proposed to be carried out, under the instrument;*
(i) *the public interest;*
(j) *any applicable site management plan;*
(k) *any relevant integrated environmental management system or proposed integrated environmental management system;*
(l) *any other matter prescribed under a regulation.*

The EPA has considered the standard criteria when assessing the project. With regard to criterion (l), there was no other matter prescribed under a regulation that required consideration.

# 3. Adequacy of the EIS in addressing the TOR

The submitted EIS (including the Supplementary Report and Information Request Response) adequately addressed the final TOR. However, the EIS included a draft EM plan that did not meet the content requirements of section 203 of the EP Act and must be satisfactorily revised before the application process can proceed to the draft environmental authority stage. This section of the EIS assessment report discusses aspects of the proposal that require special mention due to unusual circumstances or the need for matters to be further addressed in a revised EM plan.

## Surface Water

Surface watercourses and overland flow channels in the project area are ephemeral. The only water bodies that remain for any significant time after flow events are located in the Dugald River outside the proposed lease boundary. However, some of those waterholes are downstream of the project site and have values that must be protected from impact.

The surface water quality data presented in the draft EIS were for only one date in 2006 while mention was made in the EIS of other flow events (e.g. 2003), which were also sampled. The draft EIS reported that the background level of a number of toxicants (copper, iron, lead, manganese and zinc) in the surface water exceeded ANZECC guidelines, and revised trigger levels for these metals were proposed in the EIS and draft EM plan. The EPA requested more data on the sampling and water quality measurements. The EPA required that the background levels be established using appropriate sampling and testing methodologies.

In response to requests from the EPA, additional data on surface water quality, and information on the sampling methodologies used to obtain the data, were provided in the proponent's response to submissions on the draft EIS and the subsequent information request response. Together, the data and information provided has adequately addressed the EPA's concerns regarding the background surface water quality sampling described in the EIS. The proponent has proposed a monitoring program, sampling protocols and methodologies that will be used during mining operations. The program involves collecting samples at 12 locations on the Dugald River and Cabbage Tree Creek and their tributaries using rising stage sampler equipment. The location of surface monitoring location 3 (see map) is adjacent to a major haul road which may affect the turbidity readings due to dust during mining operations. The EPA has recommended that this monitoring site be moved sufficiently upstream to reduce the likelihood of contamination. A modified sampling program should be provided in the revised EM plan and include measures for the protection of water quality values in water holes downstream of the project site.

It is necessary that before mining commences appropriate surface water quality trigger limits should be satisfactorily determined for a range of contaminants. The monitoring of any water quality criteria above trigger limits would prompt remedial actions that should also be detailed in the revised EM plan. In comments on the SR, the EPA provided recommendations for surface water trigger limits based on ANZECC[1] guidelines. This information complemented the proposed trigger levels provided in the draft EIS and subsequent responses. Based on water samples obtained from the rising stage samplers, the proponent recommended surface water quality trigger levels for silver, cadmium, chromium, aluminium, copper, lead and zinc that are higher than the 90% species protection trigger levels in the ANZEEC guidelines (Table 9 p.28 IRR). However, as the sampling methodology used to establish these trigger levels was not consistent with ANZEEC requirements, and no further data has been provided to validate the proposed water quality trigger levels presented in the EIS, the EPA requires that the surface water toxicity trigger levels outlined in the ANZEEC guidelines should be used in conditioning the project until such time as criteria can be derived from satisfactorily obtained local data. The EPA acknowledges that in highly mineralised catchments like those associated with the Roseby project the ANZEEC guideline for toxicity trigger values, particularly for some metals, may have less relevance than at other sites. The proponent must upgrade its surface water quality monitoring to enable more locally relevant trigger levels to be used.

[1] Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 200; and Australian Drinking Water Guidelines, ANZECC 1996.

## Groundwater

The ToR required the proponent to address the quality of the groundwater likely to be affected by the project sufficiently to enable specification of the major ionic species present in the groundwater, metals, as well as pH, electrical conductivity and total dissolved solids.

While the EIS and SR provided information on the background water quality at a several sites, predominately associated with the Blackard (eight bores) and Little Eva (seven bores) prospects, the EPA expressed concern that the data provided was all from one sampling event. To date no additional data has been provided.

Trigger levels for groundwater quality are proposed in Appendix J of the draft EIS based on the data from the monitoring program at Blackard and Little Eva prospects. Where data was not available, ANZECC water quality trigger levels were proposed. As the regional groundwater flow remains below the ground surface and does not re-emerge as springs it is apparent that ground water levels and chemistry has little impact on regional biota. The only groundwater which does have some expression at the surface is localised temporal springs high on slopes in the Knapdale Range which only flow following heavy rainfall events. These springs are fed by water collected in exposed fractured rock systems. No facilities or disturbance is planned for these locations hence this assessment would support the findings of the EIS that the project is unlikely to effect these flows.

The process water dam, mine pits and tailings storage facility (TSF) were identified in the EIS as potential sources of contamination of groundwater resources. As the process water dam will be lined, it is acknowledged that groundwater contamination should be adequately managed. While a number of concerns were raised by the DME and EPA on the design of the tailings storage facility, these comments were primarily focused on surface water management. As the TSF is underlain by clay and competent rock, with low permeability (water movement is estimated at $8.6x10^{-5}md^{-1}$) it is considered that the movement of contaminated leachate from the tailings into groundwater is unlikely. A groundwater monitoring program (which includes monitoring groundwater down gradient from the TSF) as outlined in the EIS is considered adequate to detect groundwater contamination that may result from the TSF. Further, it is considered that the proposed measures to be undertaken to contain and collect seepage at the tailings storage facility would be adequate to minimise the risk of groundwater contamination from this source.

The EPA, while not averse to the use of mine pits for the storage of tailings and encouraging such use where suitable, were concerned that insufficient information had been provided in the EIS and SR to demonstrate that groundwater contamination would not occur due to in-pit storage of tailings. In the IRR, URL stated that due to the current stage of mine planning, URL has not been able to determine if or when mine pits may become available for backfill or tailings disposal. They concluded that should the pits become available, use of the pits for tailings disposal would result in a very narrow zone of impact peripheral to the pit due to the low conductivity of the host rock and that the level of impact is unlikely to be detectable.

The IRR outlines the full ground water production and monitoring program. This includes at least five water production bores at each pit and a further 18 groundwater monitoring bores over the whole mine site. However, there is no indication of when this monitoring program would commence.

While no additional monitoring information was provided in the IRR regarding background groundwater quality, the suggested default trigger levels for groundwater quality provided in Appendix J of the EIS are adequate to set baseline trigger levels. Once the monitoring program is in place, the proponent could request that these trigger levels be amended should the new data indicate a change would be appropriate. It is recommended that the groundwater baseline concentrations be conservatively based on ANZECC (2000) Livestock drinking water quality guidelines until such time further monitoring can provide reliable background data sets. Baseline data should be collected and submitted prior to mining activities in order to determine site specific contaminant concentrations.

**Recommendation:**

The proposed surface and groundwater monitoring program should be described in the EM plan and should be consistent with the findings of this assessment. The monitoring programs should be capable of detecting any significant changes in groundwater quality due to the project. It is also recommended that the draft environmental authority include a condition requiring baseline surface water quality to be established with adequate statistical confidence prior to operations commencing at the site.

## Nature Conservation – Terrestrial Flora

The draft EIS reported that no weeds of management concern were observed during the flora surveys. However, it is only true that no weed species declared under the *Rural Lands Protection Act 1985* were found, and the EIS did indeed report the presence of several environmental weeds, namely, buffel grass (now *Pennisetum ciliare* – previously known as *Cenchrus ciliaris*) and *Calotropis procera* in several regional ecosystems with 'endangered' and 'of concern' biodiversity status. The environmental values of these and several other regional ecosystems in the project area were threatened by weed invasion and grazing pressure.

In subsequent responses, the proponent expanded the definition of weeds in to include environmental weeds. The scope of the Weed Management plan described in the EIS was expanded to incorporate a number of strategies to identify and control weeds. The strategies should be incorporated in the revised EM plan and are to be developed in consultation with the landholder. The scope of weed strategy described in the EM plan in the EIS is limited to the management of areas disturbed by the mining activities (750.5ha) and is to be subject to rehabilitation. The scope of the weed strategies should be expanded to cover the whole of the project area (13,537ha).

**Recommendation**

The proposed weed strategy as described in the SR should be revised to include environmental weeds and weed management for the whole of the project area. The revised weed strategy should be incorporated in the EM plan for the project.

## Waste rock characterisation and disposal

The submitted EIS has provided adequate information on the management of waste rock from the Little Eva and Blackard pits (the first two pits proposed to be mined) to ensure that the risk of acid mine drainage can be adequately managed. However, The EPA, DME and the local landholder raised concerns in submissions on the draft EIS that not all potential pit sites had been sampled for testing. Also, concerns were raised regarding the relatively small number of samples from the remaining eight deposits identified as potential pits (of the total of 95 samples, 56 of these were from two deposits - Little Eva and Blackard). Recommendations were made that progressive sampling and testing of waste rock would be undertaken before mining operations moved to new deposits. URL committed to undertaking this sampling testing in the draft EM plan and also proposed a condition for the draft EA requiring this to occur.

The sampling and testing of the waste rock indicated that most of the overburden material was Non Acid Generating (NAG) and that a quantity of this material had a significant Acid Neutralising Capacity (ANC). However, mechanisms to manage this material to minimise the risk of acid being generated by blending or sequencing the disposal of the Potential Acid Forming (PAF) and NAF, high ANC material were not described. According to the EIS, strategies to achieve this will be developed as the quantity and availability of the material is better determined during the mining operation. It is necessary that the mechanisms detailing how the strategies will be developed and implemented will be included in the revised EM plan.

**Recommendations**

It is recommended that the client note previous EPA recommendations about the characterisation and management of waste rock, and that the client:

1. Address the requirement for characterisation of the waste rock;
2. Prepare a management plan for waste rock material;
3. Establish requirements for the scope of the plan with regard to sampling, management, verification and rehabilitation of any areas disturbed by waste rock.

## Management of 'scats' from the processing facility;

Scats are small pieces of uncrushed ore that are separated at the semiautogenous grinding mill (SAG mill). While the presence of scats is indicated in the EIS, the quantity, composition and fate of the scats was not described. The EIS stated that the scats will be recycled back into the feed circuit for the SAG mill. However, experience at other mines has been that this material is difficult to process and often ended up in stock piles without any management to control leaching and runoff. Nevertheless, the proponent has assured the EPA that scats can be effectively processed through the SAG mill.

While the draft EIS was inadequate in characterising the 'scat' material and did not address its disposal or management, subsequent information provided by the proponent has established that the material can be adequately managed and there will not be any significant quantity of scats on the mine site at any time.

**Recommendation**

The environmental authority should include conditions requiring the processing of scat material and that material with any significant sulfide content should not be placed in dumps above natural ground level. Furthermore, it should be a condition of approval that an inventory is kept for the reporting of the quantity and fate of scats at the mine site. Procedures for the management of scats should be incorporated in the EM plan.

## Creek diversions

The project, as described in the draft EIS, initially included the construction of a barrier and the diversion of Cabbage Tree Creek in the vicinity of the Little Eva deposit. However, the proponent has subsequently changed the mine plan and now intends not to divert the watercourse. The new plan includes modification of the upper flood plain embankment adjacent to the Little Eva pit. This embankment will be armoured as will the bund wall proposed to protect the Little Eva pit from the flood flows in Cabbage Tree Creek. If such works are within the banks of a watercourse determined as such by the Department of Natural Resources and Water then an approval under the *Water Act 2000* may be necessary. Even if the works are not within the banks of a watercourse, they will interfere with overland flow, and it will be necessary for the proponent to determine whether any approvals to interfere with overland flow are needed from DNRW.

If the works are carried out as indicated (that is, there will be no waterway barrier) there will be no requirement for an approval under the *Fisheries Act 1994*.

**Recommendation**

The EM plan should address the protection of vegetation in the lower flow channel of Cabbage Tree Creek and the minimisation of disturbance in the vicinity of the proposed works.

The proposed bund and armouring should be designed and constructed to industry best practice standards.

## Tailings storage facility (TSF) design and rehabilitation

The EIS provided a satisfactory description of the proposed tailings storage facilty to be located in the north of mining area against the north-east corner of the Knapdale Range. The facility is designed with a total storage volume of 3.9Mm$^3$ which includes an allowance for runoff water from the catchment above the facility. EPA's comments on the design of the tailings facility in the EIS was critical of the location of the facility as it resulted in runoff from about 226ha ha reporting to the facilty and a 'blind' catchment against the southern wall of the facility. A recommendation was also made that the design of the TSF should consider multiple cells to allow for better management of the tailings material. A revised design of the TSF was provided in the SR which included changing the location of the southern bank of the TSF to exclude runoff from a 170ha catchment and the filling of a small gully and diversion channel to prevent the formation of a 'blind' dam at that site.

Concerns were also raised that post-mining, the capped surface of the TSF may be subject to erosion and instability due to run on from the remaining 56 ha catchment above the TSF. DME recommended that a designated armoured channel or culvert was required to manage run on and infiltration through the cap on the TSF. The figure on page 33 of the SR, shows that it would be feasible to construct a catch drain to prevent run on to the capped TSF. Further, the IR describes the construction of a catch drain above the TSF reporting to a natural gully which feed Cabbage Tree Creek to the north of TSF. Commitments are made regarding battering and revegetation of the bank of the TSF and capping, contouring and revegetating the surface of the TSF. Mention is made of permanent spillway to be constructed on the south side of the TSF as part of decommissioning.

DME recommended that the design of the RSF incorporate an under drainage pump-out. In response, the SR explained that a network of underdrains within the basin area of the RSF would be used to collect any drainage in a sump in the NE corner. Drainage would be removed from the sump by pump. The SR also notes that external to the TSF embankment there will be monitoring bores which will be sized so that they can be converted to pump-out bores if seepage impacts on groundwater. Also, additional bores can be installed if necessary.

In comments on the EIS, DME recommended the use of mine waste rock for embankment construction. A commitment was made in the SR that waste rock would be used where possible, however this material will need to be carefully selected. URL also state in the SR that they aim to use decommissioned open pits for tailings storage in preference to the TSF. This would substantially reduce the total quantity of tailings material in the TSF.

In summary, the design, construction and management of the TSF have been adequately described in the EIS documents including: details of materials to be used in construction; underdrainage; monitoring for seepage and groundwater contamination; water management and rehabilitation. The management of run off from catchments above the TSF will be controlled through the resiting of the southern bank of the TSF and the diversion of run off away from the TSF. Commitments in the IR regarding construction of a diversion channel to redirect run off to the north of the TSF addresses the concerns raised by DME regarding the possible impacts of run off from the remaining catchment above the TSF on the integrity of the capping.

**Recommendation**

Changes to the management of the TSF due to the revised design and operation of the facility (outlined in the SR and IR) should be incorporated in the revised EM plan for the project.

The design and management of the tailings storage facility should comply with the current EPA guideline (Code of Environmental Compliance for an Environmental Authority for High Hazard Dams containing hazardous waste – EP Act) or later versions.

## Management of voids

As the project will involve the mining of ore from ten open pits, there is potential for each of these pits to be left post mining as a void. If left unfilled, the voids would cover up to 138 ha. While the possibility of filling the voids either totally or partially with waste rock or tailings was mentioned in the EIS, no commitment was made. Both DME and EPA commented on the desirability of filling the voids as well as raising concerns that the quality of the water in the voids should they not be filled, would initially be unsuitable for use by stock and the quality would continue to deteriorate.

The proponent stated in the SR that there are limited opportunities for filling the voids either with tailings or waste rock. This is because the voids would only become available later in the life of the mine, and they are spread out over 25km of strike making them somewhat remote from the processing plant. Consequently, scheduling the filling of one pit when another is opened and transporting waste rock and/or tailings to pits would be difficult to achieve, and in most cases, not feasible. However, the proponent has committed to investigating the disposal of waste rock and tailings in voids as part of pre-mining planning.

The EIS acknowledged that after mining ceases the voids are likely to contain poor quality water that will deteriorate further over time due to evaporation and leaching. Ultimately, water quality will not be suitable for stock particularly in the sulfide ore pits. Concerns were raised by the landholder, the EPA and DME that cattle and other fauna would be able to access this poor quality water. In response, the proponent has committed to bunding and taking other measures to prevent stormwater ingress to the void and the use of a rock barrier on the pit ramp to prevent access. The proponent considers that these measures will result in the voids not requiring on-going maintenance or being an impost on the landholder in the long-term.

Notwithstanding the comments by the proponent in the SR, the EPA requested further investigation into the longer term management of the voids. The EPA considered that it is not best practice to leave up to ten residual voids, with deteriorating water quality, as well as a similar number of out-of-pit waste rock dumps. Also, as the waste rock material from eight of the ten pits has not yet been well characterised, a risk remains that the potentially acid forming waste rock may not be able to be adequately managed.

The proponent responded to these concerns in the IR and provided a number of reasons why, at the current stage of mine planning, they could not commit to backfilling the voids. The proponent considered that it was not practical as the first two pits to the mined, Blackard and Little Eva, will be mined simultaneously and have a seven year life during which the geometry and mine plan would prevent backfilling. The proponent also stated that there may be economic sulfide resources below those planned for extraction by this project. However, it would not be until several years into the project that the quality and extent of these resources will be known.

The proponent states that it maybe economically feasible to backfill some of the pits in the smaller resource locations (Bedford, Legend, Longamundi and Great Southern) close to the processing plant with tailings. Again, it is stated that this cannot be assessed until later in the mine life. A major benefit from disposing of tailings to voids would be the reduction in size of the Tailings Storage Facility.

**Recommendation**

The EPA reiterates that it is not best mining practice to leave ten residual voids, with deteriorating water quality, as well as a similar number of out-of-pit waste rock dumps. Mine planning should schedule mining in a manner that aims to minimise mine voids on closure to prevent long term environmental impacts and ongoing management issues. The revised EM plan should detail measures for ensuring the minimisation of voids and for their use, where practical and suitable, for the disposal of tailings.

## Road impacts

The project will impact on several state controlled roads including the Barkly Highway and the Burke Developmental Road. Mine access is from the Burke Development road while concentrate will be transported to Mt Isa via the Burke Developmental Road and the Barkly Highway. While the type and frequency of traffic on these roads was described in the draft EIS, the Department of Main Roads (DMR) sought further information on the commitments regarding the design and construction of mine access off the Burke Developmental Road. Clarification was also sought on how the proponent is planning to deal with existing mine accesses to public roads post mining.

URL, in the SR, state that they are aware of their requirements and responsibilities under the *Mineral Resources Act 1989* in relation to notifiable road use and have committed to fulfilling their obligations under the Act with regard to maintenance and rehabilitation due to use of state controlled roads. The Department of Main Roads, as the agency responsible for state controlled roads, would need to be consulted in relation to the amount, method and timing of the contribution from the proponent to the cost of increased road maintenance due to the project.

DMR has advised that works related to mine access and intersection with the Burke Developmental Road will require construction approval under the *Transport Infrastructure Act 1994*. Detailed design of the proposed mine access and intersection will need to be submitted to DMR.

After mining ceases, the decision of whether to retain or remove the access road will depend on the land owner's requirements at that time. This would also need to be negotiated with DMR as part of the Notifiable Road Use Agreement.

**Recommendation**

The Department of Main Roads has advised that two requirements need to be met prior to project construction. They are:

1. Prior to project construction, the proponent is to construct an access road and intersection to the agreed design standard (Auxiliary Left Turn (AUL) treatment with opposing slip lane) to the east of the project site. Construction approvals for this activity would be required under the *Transport Infrastructure Act 1994*.
2. URL is to contribute to the cost of increased road maintenance associated with mine construction and operational traffic on the State-controlled road network. The amount, method and timing of the contribution are to be assessed and agreed between the proponent and the Main Road North Western Division Office.

## Cultural heritage

The potential impacts on indigenous cultural heritage values in the vicinity of the project must be managed under a cultural heritage management plan (CHMP) developed and approved under Part 7 of the *Aboriginal Cultural Heritage Act 2003*. It is also a requirement of the Act that the environmental authority for the proposal cannot be issued until the CHMP has been developed and approved unless the environmental authority contains conditions requiring that an approved CHMP is in place before any activity that could cause harm to Aboriginal cultural heritage occurs. It is understood that the proponent has consulted with the Kalkadoon people, who are the traditional owners and native title claimants for the area of the mining leases, and has developed a CHMP.

**Recommendation**

If the proponent has not already done so, they should provide evidence to the EPA that a CHMP has been approved for the project. Otherwise, the environmental authority should contain conditions requiring that a CHMP be approved before any activity that could cause harm to Aboriginal cultural heritage takes place.

## Social impact assessment

**Consultation on potential social impacts**

While the proposed mining lease lies in the country of the Kalkadoon people, the project has the potential to cause social impacts, both beneficial and adverse, in the greater Cloncurry and Mt Isa area including land of the Mitakoodi-Juhnjlar people. In its submission on the draft EIS, the Department of Communities (DoC) expressed concerns regarding the extent of consultation that occurred with that department and with representatives of the local indigenous communities in Cloncurry and Mt Isa, particularly the Mitakoodi Aboriginal Corporation and the Mitakoodi-Juhnjlar people (as well as a number of regional organisations and agencies), regarding potential impacts due to the project.

In response, a representative from the proponent undertook further consultation with DoC and the Mitakoodi-Juhnjlar peoples in November 2007. However, feedback from DoC indicates that their expectations, and those of the local representatives, have not yet been met.

The environmental authority for a mining project is limited in its scope to activities on the mining lease. Consequently, this EIS assessment report cannot recommend conditions applying to consultation with representatives of local communities. However, it would seem prudent to recommend that the proponent undertake further consultation with local communities and involve the Department of Communities in those discussions.

**Social impacts – Cloncurry**

Submissions from DoC on the draft EIS and SR consider that the description of the social environment, particularly in Cloncurry in the draft EIS inadequately describes the impact of the construction and operational workforce that would be located in Cloncurry on the population, housing, social institutions and social services currently available. The proponent is intending to house 80% (150 people) of their workforce at the mine site on a fly-in, fly-out basis and they estimate that the remaining 20% of the workforce would be drawn from the existing population in Cloncurry. As URL have adopted a policy of limiting the number of workers requiring housing in Cloncurry (at least initially) these additional workers will increase the number of workers in the mining industry in Cloncurry by less than 10% of the total mining workforce. Mining in Cloncurry directly employs about 20% of the workforce. Hence, It was argued that the direct impacts on housing and the Cloncurry community due to the Roseby Copper Project would be small.

As the project will actively source commercial goods and services from the local community this will have an effect on the economy of the area although, the extent of this impact was not described in the EIS.

DoC also recommended that an expanded study of social impacts, including consultation with a number of service providers in Cloncurry (schools, child care, etc), was required. In response, URL considered that as the proportion and make up of the project's workforce that would be located in Cloncurry is small and could not be predicted with any reliability, further assessment and consultation would be 'inadvertently misleading or wasting the time of those entities'. However, URL did acknowledge that the added population due to the project would need to access existing social services in Cloncurry (schools, hospital, etc) and that this increase would assist in supporting these services, but this was not quantified.

Demographic statistics in the draft EIS indicate that Cloncurry and surrounding districts have been experiencing growth over the past 10 years, particularly in the mining sector. Hence, the concerns expressed by DoC in relation to impacts of the project are a reflection of the issues that have emerged with this growth. While it is acknowledged that better planning based on accurate projections of growth and impacts due to the Roseby Project is desirable, this is difficult to achieve particularly for a new mining project which is one of number proposed for the area.

**Recommendations**

The URL continue to work with the DOC and any regional development bodies, Cloncurry Shire Council and major social service providers regarding timing of major activities that may impact on the population and services provided in Cloncurry.

## Noise impacts on 'sensitive receptors'

The nearest sensitive receptor identified in the EIS is the Mount Roseby Homestead. While more distant receptors should not be significantly impacted by the proposed operations, the EIS has indicated that some mining activities could cause excessive noise and vibration that would be a nuisance at the Mount Roseby Homestead, particularly in the evening and at night. The draft EIS stated that mining at the Scanlan pit, closest to the homestead, is not likely to occur until seven years after operations begin, and that the homestead will be vacated by this time and would no longer be a 'sensitive site'. However, the residents of the homestead made a submission stating that they do not intend to vacate the homestead and that it is likely to continue to be occupied during mining operations.

URL has prepared a report on potential noise nuisance at the Mount Roseby Homestead during mining activities. It indicates that if certain practices are followed during mining operations at the Scanlan deposit the potential for nuisance from noise and vibration at the homestead can be significantly reduced.

**Recommendation**

In the absence of any resolution of the matter, it is recommended that the environmental authority include specific conditions limiting nuisance at the homestead due to noise and vibration from mining operations.

## 4. Adequacy of the EM plan for the project

A draft EM plan was included with the draft EIS that was released for public notification. A number of submissions on the draft EIS raised issues that required amendments to the draft EM plan and many of these amendments were agreed to by URL in the Supplementary Report. However, an amended draft EM plan has not yet been provided by URL. Changes made to the project since the EIS and the recommendations outlined in this EIS assessment report must be incorporated into a revised EM plan before the document would be acceptable. The revised EM plan, which must meet the content requirements of s203 of the EP Act, must be resubmitted for assessment before the decision under s207 is made on whether to allow the application to proceed to the draft environmental authority stage.

## 5. Suitability of the project

Project issues and recommendations were outlined in Section 3 above. The EPA has considered the final TOR, the submitted EIS, all submissions on the submitted EIS, and the standard criteria. Despite some areas where the TOR was not fully addressed, the submitted EIS and supplementary information have not identified impacts of sufficient magnitude to prevent the project from proceeding. However, the recommendations of this EIS assessment report should be fully implemented.

## Recommendations for conditions for any approval

Section 59 of the EP Act states that this EIS assessment report must recommend any conditions on which any approval required for the project may be given. However, section 202 of the EP Act states it is the purpose of the submitted EM plan to propose environmental protection commitments to help the administering authority prepare the draft environmental authority for the application. As the submitted EM plan is not adequate and must be revised and resubmitted, this EIS assessment report is unable to recommend specific conditions. The environmental authority will be drafted after the proponent has submitted a satisfactory EM plan.



## 6. Approved by

| SIGNED | 2 JULY 2008 |
|---|---|
| Signature | Date |

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