Rum Jungle Mine Rehabilitation Project
Stage 2 Detailed Design

Completion criteria & framework
Introduction
This document includes three parts:
1. broad objective and process
2. objectives and completion criteria
3. summary proposal for exploring economic participation of Traditional Owners during and after rehabilitation (including Mooradoop’s proposal in Appendices A and B)

Corinne Unger

Acknowledgements: Peter Waggitt, Grant Sarra, Ross Smith, Andy Markham, Cassandra Stokes, David Jones, Mitchell Rider, Tania Laurencont, Ali Youssef, Mike Fawcett, Mark Greally, Kathleen Mills, Helen Bishop and Justine Gannon.
A) BROAD OBJECTIVE AND PROCESS
Context for detailed objectives

Objectives for the Rum Jungle rehabilitation project were developed during Stage 1 of the rehabilitation project. These objectives were articulated in the Conceptual Rehabilitation Plan (NT DME, 2013). Rehabilitation objectives were developed in consultation with stakeholders, who included other government agencies, neighbours, and the traditional Aboriginal owners — the Kungarakan, Warai as well as the Maranunggu Peoples (for river reaches downstream of the mine). This document outlines the objectives the project will be evaluated against in the form of a completion criteria framework.

Completion criteria were discussed during the design refinement meeting in Darwin 13–16 July 2015. Notes from those group discussions provided high-level completion criteria that have been expanded in this document for refinement, editing and review by stakeholders, including traditional owners and their representatives. The Objectives and Completion Criteria will be incorporated in a Detailed Business Case (DBC) for the Australian Government.

The following figure summarises the broad objective and process to provide context for this document. The intent is to describe ‘what will success look like?’ during and after implementation of rehabilitation. This means both biophysical and cultural ‘balance and harmony’ must be developed in an integrated manner.
Broad objective
Restoring Rum Jungle so that it can be freely accessed

How is this defined?
- Restore biodiversity
- Resolve the land claim
- Walk safely on country
- Conduct ceremony
- Access food and medicine

Action
Remediate the minesite with authentic consultation

How is success measured?
- Water quality
- Radiological safety
- Contaminated land
- Revegetation
- Erosion
- Water
- Biodiversity
- Capacity building
- Economic participation
- Integration of cultural values
- Access & ownership
- Ongoing involvement in post remediation care, maintenance and monitoring
Overall project objectives

Objectives for the Rum Jungle rehabilitation project aim to create a landscape that:

a. is safe for people, flora and fauna
b. is chemically, radiologically and physically stable
c. has a significantly reduced acid and metalliferous drainage (AMD) contaminant loads and concentrations travelling beyond the boundaries of the site
d. supports sustainable land uses by traditional Aboriginal owners with few, if any, limitations
e. facilitates beneficial alternative post-rehabilitation land uses.

The Kungarakan and Warai Peoples are recognised as the joint traditional owners and custodians of the site and see rehabilitation as the removal of impediments to the handing over of this land as part of finalising the Finnis River Land Claim in this area. Their objectives for rehabilitation and post-rehabilitation land use are summed up in their vision for the site. They share an interconnection with the land and their environment, and embrace custodial obligations and responsibilities for caring for it. Their vision embodies these cultural, spiritual, environmental and social connections and principles:

*Kungarakan and Warai People desire that Rum Jungle allows for the return to traditional ceremony, culture and subsistence use of natural resources.*

Their ultimate measure of success will be to see and feel that Balance and Harmony for the People has been restored with their Land and their Environment. In a contemporary context, the Kungarakan and Warai people also seek to maximise their economic participation by ensuring, where possible, they can be directly engaged in all commercial business, employment and training activities associated with the rehabilitation project. This could include the development of commercial operations that are owned, operated and managed by suitably qualified Kungarakan and Warai business entities or joint ventures and through the training and employment of Kungarakan and Warai people as a critical priority for all tenders.

The post-mining landscape will be returned as close as possible to the landscape that existed before mining, with no detrimental impacts on the downstream environment or on the neighbours of Kungarakan and Warai Peoples who live downstream. This includes the Maranunggu and other peoples/persons affected.
Overall project objectives (cont)

To Kungarakan and Warai, rehabilitating the physical landscape will help to identify, protect and preserve sacred sites, and allow spiritual healing of the country to occur. The following outcomes are required for their vision and for the healing process to be achieved:

i. active engagement with the Kungarakan and Warai Peoples relating to cultural heritage and environmental matters and the assurance that their cultural and environmental knowledge will be authentically acknowledged as demonstrated by relevant project decisions

ii. culturally appropriate identification, protection and preservation of Aboriginal cultural heritage

iii. re-establishment of the original landscape as far as is practically and sustainably achievable whilst minimising or neutralising pollution sources

iv. minimising the risks posed by radiological hazards by reducing of the potential for radiological exposure to as low as can be reasonably achieved (ALARA) and ensuring doses are within international standards for radiation protection

v. minimising the potential for surface water to become polluted and remediating the effects of polluted groundwater, consistent with the surface water quality objectives

vi. restoring flora and fauna species endemic to the site and its immediate surrounds maximising employment and business opportunities for traditional Aboriginal owners throughout the rehabilitation process.
Restoring *Balance* and *Harmony* for the *People* with their *Land* and for the *Environment*
# Table 1: Simplification of overall project objectives and Traditional Owner outcomes (DME, 2013) to nine objectives under People, Environment and Land

<table>
<thead>
<tr>
<th>Rehabilitation objectives</th>
<th>Overall project objectives</th>
<th>Traditional Owner outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>PEOPLE (P)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal long term risks to human health and safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity building and knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kungarakan and Warai traditional owners are developed and positioned to successfully compete for economic opportunities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENT (E)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved water quality and aquatic ecosystems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land no longer generates significant pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flora and fauna endemic to the site return as terrestrial ecosystems recover</td>
<td></td>
<td></td>
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<tr>
<td>LAND (L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stable Landscape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New landforms integrate cultural objectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity for greater access, eventual ownership &amp; ongoing rehabilitation maintenance</td>
<td></td>
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</tr>
</tbody>
</table>

Note: Shaded cells show the interaction between the 9 objectives used in this document and the 13 objectives developed for the Conceptual Rehabilitation Plan (DME, 2013)
B) OBJECTIVES AND COMPLETION CRITERIA
OBJECTIVE

P1 Ensure long-term risks to human health and safety are minimised

Ensure, to the maximum extent practicable, that the site is radiologically safe and stable, with the annual public radiological dose meeting ALARA (as low as reasonably achievable) constraints accepting there may need to be some limitations to land use on new landforms for a period of time.

Completion criteria

Radiation: Dose to the public from all sources and all pathways being less than 1 mSv/yr above existing background radiation in adjacent undisturbed areas

Control measures after rehabilitation

Verify radiation dose and apply interim limitations on land use to meet these criteria.

References


DME. 2013. Conceptual Rehabilitation Plan for the former Rum Jungle mine (p.50)

OBJECTIVE

P2 Build capacity and position Traditional Owners to participate in the Rum Jungle rehabilitation project

By building and enhancing capacity and putting in place governance arrangements that recognise the value of their knowledge of the site as well as building their understanding of how they can participate in the project.

Completion criteria

The Traditional Owners will be able to participate actively and productively during the rehabilitation project - progressively melding western scientific knowledge with cultural knowledge.

Control measures after rehabilitation

The Traditional Owners will be supported, to the maximum extent possible (within the scope of the project and dependent on future funding), to assume roles in the post-rehabilitation management of the site, using their knowledge, irrespective of whether they are able to participate in rehabilitation works during implementation.

References


Sarra, G. 2016. Economic participation of Traditional Owners, Part C of this document


OBJECTIVE

P3  Position the Kungarakan and Warai people to successfully compete for Economic opportunities as an integral part of the project

Opportunities will be provided during and after the rehabilitation works.

Completion criteria

Traditional Owners have sufficient capacity and organisational structures in place to successfully tender for tasks as part of the rehabilitation works.

Control measures after rehabilitation

Opportunities will be made available to ensure participation post-rehabilitation of the site (i.e. joint ventures and traditional owner participation clause for all successful tenders).

References


Sarra, G. 2016. Economic participation of Traditional Owners, Part C of this document
OBJECTIVE

L1 New landforms constructed during the rehabilitation project will be stable

New landforms are defined as any new structures constructed during the rehabilitation program as well as the rehabilitated footprints of current landforms and new drainage pathways. The following closure objectives have been used to develop the detailed design:

- The final landforms will be geotechnically stable and safe.
- Erosion rates in new landforms will be at a rate that ensures that the required performance of the landforms is maintained for its design life.
- Erosion from landform slopes, plateaus or surface water management features will not compromise integrity of the landforms or downstream water quality.
- Geomorphic stability will be assured by design of aboveground landforms, below-ground features and fluvial landforms so erosion does not occur at a rate that it jeopardises key design criteria for containing wastes or conveying water across the site.
- There will be no significant build-up of sediments in water management features.
- The final landforms will be vegetated in a way that is compatible with surrounding vegetation communities and enhances surface stability.
- The rehabilitation works will reintstate as close as practicable the pre-mining surface water conditions and processes and support sustainable land uses by traditional Aboriginal owners.
- Seepage and surface runoff from landforms will not adversely impact surface waters or vegetation communities.
- The locally derived water quality objectives (LDWQO) and closure criteria) will be met at defined monitoring location(s) downstream of the site.

Completion criteria

- Waterway ecological habitat and processes in the re-instated East Branch will be maintained by ensuring that appropriate hydraulic design criteria are applied and achieved.
- Organism passage in the reinstated East Branch of the Finniss River will be maintained by including roughness elements to act as temporary refugia.
- Where vegetation is integral to stability, it will be designed into the specifications to ensure appropriate species and methods are applied, with vegetation stability and cover increasing over time.
- Riparian zone stability will be ensured by planting at a relatively high density and will be actively maintained until stable.

Control measures after rehabilitation

- Monitoring programs will be designed and implemented to ensure geochemical, geotechnical, geomorphic stability, aquatic and riparian habitat development, vegetation stability and respect for cultural sites performance objectives are being met over time. Where monitoring detects unacceptable deviations from the required performance parameters appropriate maintenance actions will be undertaken.

Reference

O’Kane Consulting, 2016. Former Rum Jungle Mine site; Civil Engineering Design Program, for the DME.
OBJECTIVE

L2 New landforms will integrate cultural objectives

To restore key sensitive areas that were affected by past mining and to protect other culturally important areas from harm during rehabilitation works.

- Culturally sensitive women’s sites will be restored as closely as possible to approximate pre-mining landscapes
- Culturally sensitive areas outside the footprint of disturbance will be respected by the design, with landform placement taking into account the proximity to sensitive areas.
- Implementation activities will not disturb culturally sensitive areas

Completion criteria

- A section of the East Branch of the Finniss River is redirected around the northern side of the backfilled Main Pit via an engineered channel approximating its pre-mining course and revegetated with appropriate riparian vegetation.
- Cultural integrity will be demonstrated by Traditional Owner satisfaction and agreement with landform design and location decisions.

Control measures after rehabilitation

- Maintenance of drainage lines and riparian vegetation to develop stability over time post disturbance.
- Care and maintenance of the East Branch of the Finniss River and the whole site so that the landscape can be transferred to Traditional Owners, to ensure sensitive areas transition toward integration with the environment.

References

Bishop, H. 2016. Project proposal for Mooradoop — elder Traditional Owner — Rum Jungle Education, Training & Liaison Committee — Remediation & Rehabilitation, prepared by Helen Bishop, May (Appendix B of this document)


OBJECTIVE

L3 Rehabilitation of the former Rum Jungle site will enhance opportunity for greater access to the site

Through rehabilitation, the landscape will have fewer access and use limitations and will enable the final stage of ownership by the Traditional Owners to be followed through. Additionally, opportunities for ongoing economic participation through rehabilitation maintenance will be provided.

Completion criteria

- Traditional Owners are able to return to the site and use it for cultural and other purposes.
- There will be limited restrictions on land access.
- Degraded cultural sites of significance restored, where practicable, enabling renewed access and use.

Control measures after rehabilitation

- Some areas may retain land use limitations to protect new landforms from activities that could threaten stability (due to disturbance of covers for example); however, these limitations may not limit access to the site.

Reference

Bishop, H. 2016. Project proposal for Mooradoop — elder Traditional Owner — Rum Jungle Education, Training & Liaison Committee — Remediation & Rehabilitation, prepared by Helen Bishop, May (Appendix B of this document)


Sarra, G. 2016. Economic participation of Traditional Owners, Part C of this document
OBJECTIVE

E1  Water quality objectives will ensure greater aquatic biodiversity at the mine and downstream

Water quality objectives have been set in consultation with Traditional Owners and other stakeholder groups based on achieving biodiversity targets (percentage of natural taxonomic richness) set for each geomorphic and geochemical river zone.

Kungarakan, Warai and the downstream Marranungu community will continue to inform the monitoring program and acknowledge recovery after rehabilitation.

Completion criteria

- Biodiversity target percentages are:
  - 70% for the mine lease area
  - 80% for the reach to Hannah’s Spring
  - 90% for the East Branch below Hannah’s Spring
  - 95% for the Finnis River downstream of the East Branch
- Monitoring compliance sites: EB@GS200 EB@GS097 FR@GS204 (see Figure 1, Table 2 Hydrobiology, 2015 and Table 3, Hydrobiology, 2013)

Note: Interim site-specific surface water assessment criteria have been developed using the ANZECC & ARMCANZ (2000) framework for the site and areas downstream. These assessment criteria were also used to derive local surface water quality guideline values (GV) for a number of metals including Cu, Zn, Ni, Co, Al, Fe, Mn, and U, and SO₄ (sulfate) and EC (electrical conductivity).

Control measures after rehabilitation

These criteria may not be met until after the constructed new landforms are established due to the site disturbance associated with rehabilitation works. A period of active management during the post-rehabilitation phase may be required, which will become more passive over time.

- Active control measures will include water management measures to divert, collect and neutralise AMD prior to release.
- Passive control measures will include water management measures to divert, and store within the Intermediate Pit.

References


Hydrobiology. 2013. Environmental Values downstream of the Former Rum Jungle Minesite — Phase 1, April
www.nt.gov.au/d/rumjungle/Content/File/completed_studies/13-007-NTG01_EnvValues_V2_0_Final.pdf

Hydrobiology. 2013. Environmental Values downstream of the Former Rum Jungle Minesite — Phase 2, April

Figure 1 Map showing Finniss River zones including the East Branch of the Finniss river and monitoring sites
Source: Hydrobiology, 2015.
Table 2 Recommended Water Quality Objectives based on field data and biological responses at key monitoring sites

<table>
<thead>
<tr>
<th>River Zone</th>
<th>Sites</th>
<th>Cu</th>
<th>Zn</th>
<th>Ni</th>
<th>Co</th>
<th>Al</th>
<th>Fe</th>
<th>Mn</th>
<th>EC</th>
<th>SO₄</th>
<th>Mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µS/cm</td>
<td>mg/L</td>
<td>mg/L</td>
</tr>
<tr>
<td>2</td>
<td>EB@G_Dys</td>
<td>60.2</td>
<td>210.5</td>
<td>130.4</td>
<td>89</td>
<td>236</td>
<td>300</td>
<td>759</td>
<td>2985</td>
<td>1192</td>
<td>86.6</td>
</tr>
<tr>
<td>2</td>
<td>EB@GS200</td>
<td>60.2</td>
<td>210.5</td>
<td>130.4</td>
<td>89</td>
<td>236</td>
<td>300</td>
<td>795</td>
<td>2985</td>
<td>1192</td>
<td>86.6</td>
</tr>
<tr>
<td>3</td>
<td>EB@GS327</td>
<td>27.5</td>
<td>180</td>
<td>43.1</td>
<td>25.9</td>
<td>150</td>
<td>300</td>
<td>443</td>
<td>2985</td>
<td>997</td>
<td>86.6</td>
</tr>
<tr>
<td>3</td>
<td>EB@GS097</td>
<td>27.5</td>
<td>180</td>
<td>43.1</td>
<td>25.9</td>
<td>150</td>
<td>300</td>
<td>443</td>
<td>2985</td>
<td>997</td>
<td>86.6</td>
</tr>
<tr>
<td>4</td>
<td>EBusFR</td>
<td>7.86</td>
<td>180</td>
<td>32.5</td>
<td>3.6</td>
<td>117</td>
<td>300</td>
<td>228</td>
<td>427</td>
<td>761</td>
<td>33.2</td>
</tr>
<tr>
<td>6</td>
<td>FR@GS204</td>
<td>3.4</td>
<td>26.1</td>
<td>20</td>
<td>2.8</td>
<td>117</td>
<td>300</td>
<td>140</td>
<td>190.7</td>
<td>594</td>
<td>33.2</td>
</tr>
</tbody>
</table>

Note that these newly derived values are only for parameters where we have field data and measured biological responses that we could relate. Source: Tables from Ross Smith, Hydrobiology. 8 October 2015

Table 3 summarises the default water quality objectives from the Environmental Values study in 2012–13 that still serve as default targets for other parameters not covered by Table 2.
### Table 3 Water quality objectives as default targets (Hydrobiology, 2013)

<table>
<thead>
<tr>
<th>Zone</th>
<th>Aluminium (µg/L)</th>
<th>Cadmium (µg/L)</th>
<th>Cobalt (µg/L)</th>
<th>Copper (µg/L)</th>
<th>Iron (µg/L)</th>
<th>Manganese (µg/L)</th>
<th>Nickel (µg/L)</th>
<th>Lead (µg/L)</th>
<th>Zinc (µg/L)</th>
<th>Uranium (µg/L)</th>
<th>pH</th>
<th>EC (µS/cm)</th>
<th>TSS (mg/L)</th>
<th>226 Ra (Bq/L)</th>
<th>228 Ra (Bq/L)</th>
<th>Gross Beta (excl. 40 K) (Bq/L)</th>
<th>Gross Alpha (Bq/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. East Branch &amp; tributaries U/S of the Mine</td>
<td>55</td>
<td>0.54</td>
<td>2.8</td>
<td>3.4</td>
<td>200</td>
<td>100</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>6.5-8.0</td>
<td>126</td>
<td>80%ile of Ref</td>
<td>5</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>2. East Branch within mine site to Old Tails Ck</td>
<td>236</td>
<td>4.3</td>
<td>Reduction 8</td>
<td>Reduction 759</td>
<td>55</td>
<td>51.6</td>
<td>142.5</td>
<td>96</td>
<td>Improved</td>
<td>Improved</td>
<td>Improved</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. East Branch Old Tails Ck to Hannah Spring</td>
<td>150</td>
<td>2.16</td>
<td>Reduction 6.25</td>
<td>Reduction 443</td>
<td>42.5</td>
<td>37.6</td>
<td>77.5</td>
<td>62</td>
<td>6.0-8.0</td>
<td>2985</td>
<td>Improved</td>
<td>5</td>
<td>2</td>
<td>0.5</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. East Branch below Hannah Spring</td>
<td>80</td>
<td>1.08</td>
<td>2.8</td>
<td>4.5</td>
<td>300</td>
<td>100</td>
<td>32.5</td>
<td>22.4</td>
<td>37.5</td>
<td>32.9</td>
<td>6.5-7.5</td>
<td>427</td>
<td>80%ile of Ref</td>
<td>5</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>5. Finnis U/S EB</td>
<td>55</td>
<td>0.54</td>
<td>2.8</td>
<td>3.4</td>
<td>200</td>
<td>100</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>6.5-7.5</td>
<td>374</td>
<td>80%ile of Ref</td>
<td>5</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>6. Finnis EB to Florence Ck</td>
<td>55</td>
<td>0.54</td>
<td>2.8</td>
<td>3.4</td>
<td>200</td>
<td>100</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>6.5-7.5</td>
<td>374</td>
<td>80%ile of Ref</td>
<td>5</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>7. Finnis Florence Ck to SOCS</td>
<td>55</td>
<td>0.54</td>
<td>2.8</td>
<td>3.4</td>
<td>200</td>
<td>100</td>
<td>20</td>
<td>10</td>
<td>20</td>
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<td>374</td>
<td>80%ile of Ref</td>
<td>5</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>8. SOCS upstream limit to FW/SW interface</td>
<td>27</td>
<td>0.16</td>
<td>2.8</td>
<td>2.5</td>
<td>200</td>
<td>63</td>
<td>20</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6.5-7.5</td>
<td>374</td>
<td>80%ile of Ref</td>
<td>5</td>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>9. Finnis Estuary</td>
<td>0.5</td>
<td>0.7</td>
<td>0.005</td>
<td>0.3</td>
<td>300</td>
<td>86</td>
<td>7</td>
<td>2.2</td>
<td>7</td>
<td>0</td>
<td>80%ile of Ref</td>
<td>0.1</td>
<td>0.1</td>
<td></td>
<td></td>
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</tbody>
</table>
In 2012–13, some allowances were also made for higher values in the wet season initial flushes that are shown in Table 4.

Table 4 USEPA CMC values (µg/L) for parameters of concern for the Finniss River System in comparison with Hydrobiology (2015)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CMC</th>
<th>WQO by Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Aluminium</td>
<td>750</td>
<td>55</td>
</tr>
<tr>
<td>Cadmium</td>
<td>1.8</td>
<td>0.54</td>
</tr>
<tr>
<td>Cobalt</td>
<td>NA</td>
<td>2.8</td>
</tr>
<tr>
<td>Copper</td>
<td>12.2</td>
<td>3.4</td>
</tr>
<tr>
<td>Iron</td>
<td>428</td>
<td>27.5</td>
</tr>
<tr>
<td>Manganese</td>
<td>NA</td>
<td>140</td>
</tr>
<tr>
<td>Nickel</td>
<td>57.6</td>
<td>13.6</td>
</tr>
<tr>
<td>Lead</td>
<td>107</td>
<td>20</td>
</tr>
<tr>
<td>Uranium</td>
<td>NA</td>
<td>18.9</td>
</tr>
</tbody>
</table>

Note: WQO values above the CMC are highlighted in red. NA denotes no CMC available. Recommended WQOs for river Zones 1–7.

¹ Hardness modified criterion with value for 90 mg/L hardness as CaCO₃
² As only a low-reliability trigger value was defined by ANZECC/ARMCANZ (2000) for this parameter, Hydrobiology (2013) set a water quality objective of a reduction of its concentration for this zone.
³ Criteria based on a biotic ligand model (see [http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/copper/2007_index.cfm](http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/copper/2007_index.cfm)) but values in table are provided based on hardness correction parameters of Appendix B of USEPA (2012).
OBJECTIVE

E2 The land no longer generates significant pollution

The site will be remediated through either removing sources of pollution or treating existing inventories of pollution, the methodologies will be a combination of techniques including:

- Reclaiming existing waste rock dumps
- Reclaiming contaminated soils
- Treating contaminated groundwater
- Consolidating waste.

Reclaimed materials will either be placed in Main Pit as a component of backfilling the pit or transported to and contained in a new engineered Waste Storage Facility located in the northern part of the site. Objective L1 addresses the stability aspects of the new landscape which includes geochemical controls. This objective includes the Copper Extraction Area. The Copper Extraction Area is one area with heavily impacted localised groundwater due to leach extraction processes previously conducted in this area. As part of the site rehabilitation strategy, during the construction phase a ‘pump and treat’ system will be used to remediate impacted groundwater.

Riparian ecosystem and channel stabilisation of re-instated drainage line through the copper leach area will continue after the rehabilitation works.

Completion criteria

- For shallow soil contamination the target is HIL (Health Investigation Level) C (National Environmental Protection Measures (NEPM) 2013, exposure level) - Outlined in Schedule B5c of the 2013 soil quality guidelines for shallow soil contamination.
- Surface and groundwater assessment developed initial and final LDWQOs

Control measures after rehabilitation

- Access to remediated areas and new landforms will be managed to ensure that it does not impact on the long term stability and integrity of the works.
- An appropriate monitoring system will be installed in the new WSF and should ongoing monitoring detect deviations from expected performance, then investigations will be undertaken to determine appropriate corrective actions. The appropriate corrective actions will then be implemented.
- The land use (for landforms and previously disturbed areas) will be open space/recreational use with specific prohibition of any residential and commercial/industrial development. The land use has been determined in consultation with the Kungarakan and Warai traditional Owners.

References


Ferguson, P. and Wels, C. 2012. Phase 3 (Stage 3 Report): Surface Water Quality and Contaminant Load Assessment for the Rum Jungle Mine Site, NT.

Hydrobiology Pty Ltd. 2013. Environmental Values Downstream of the Former Rum Jungle Minesite — Phase 1.


OBJECTIVE

E3 Flora and fauna return as terrestrial ecosystems recover

Due to past mining and rehabilitation activities leaving a legacy of AMD, as well as altered fire behaviour due to weed infestations, the site native ecosystems have been severely degraded. A significant focus on return of native ecosystems will be integrated with rehabilitation. Different revegetation approaches will be applied to different elements of the rehabilitated landscape in conjunction with appropriate land management activities, so that native ecosystems can return to new landforms, excavated areas, construction access disturbance and riparian zones.

Completion criteria

- Sustainable ecosystem with key framework and culturally important species shows evidence of self-seeding, recruitment and regeneration as well as resilience to threatening processes.
- Increasing biodiversity over time in terrestrial ecosystems
- Recovery of riparian ecosystems following implementation works with ongoing maintenance until stable.
- Faunal re-colonisation, with culturally important species.

Control measures post remediation

- Vegetation maintenance to address any short-term failure of revegetation (e.g. due to seasonal and timing factors) to continue intensively immediately following rehabilitation and declining over time as ecosystems establish.
- Management of threatening processes: weeds, fire and feral animals to support establishing ecosystems.
- Ensuring ongoing site care and maintenance, management and monitoring that engages the Traditional Owners.

References


EcOz (2016). Flora monitoring on the revegetation trial to inform rehabilitation design for the former Rum Jungle Mine Site (draft).

Section C outlines the economic participation opportunities that are an integral part of project, planning, implementation, and post-rehabilitation site management and use. This section shows the opportunities and how various aspects interact with the critical pathway for this project.
C) ECONOMIC PARTICIPATION OF TRADITIONAL LAND OWNERS
Critical Pathway for Rum Jungle Rehabilitation Project

Figure 2 shows the Critical Pathway diagram, which highlights rehabilitation of the biophysical environment as the focus of DME’s project management under the National Partnership Agreement. Additionally, the diagram shows the importance of achieving cultural aspirations and Traditional Owner economic participation objectives in the success of the project. The latter elements sit outside the scope of the current technical project; however, the Critical Pathway diagram has been prepared to show how the two components are necessary, requiring further input, leadership and resourcing from the Australian Government for all benefits from this project — environmental, social and economic — to be realised.
Figure 2 Rum Jungle Critical Pathway diagram integrating biophysical works with Traditional Owner aspirations

Conceptualised by G. Sarra and C. Unger (May, 2016)
Kungarakan and Warai Peoples’ Engagement and Governance, Cultural Heritage and Environmental Restoration and Capacity Building and Economic Participation

WHY
The Project Agreement between the Northern Territory Government and Australian Government for managing the former Rum Jungle Mine Site requires a shared responsibility for engaging the Kungarakan and Warai Peoples as stakeholders whose traditional lands were affected, to ensure both groups contribute to and guide the management of the former mine site.

Having already been removed from their traditional lands, the Kungarakan and Warai Peoples were not consulted or engaged in any decisions prior to, or during, the full-scale mining operations at the Rum Jungle Mine site after it commenced in 1953. As a consequence of being removed in the first place, and because of the detrimental impacts mining had on their traditional lands, the Kungarakan and Warai Peoples were traumatised by the process and they continue to feel aggrieved to this day.

The Kungarakan and Warai Peoples assert the impact of mining on their traditional lands caused significant cultural and spiritual damage because it disrupted their interconnection to their land and their environment; destroyed cultural sites of significant importance, particularly to women, and to a lesser extent, men; seriously damaged or destroyed local waterways and ecosystems, which in turn reduced the presence of local flora and fauna that would normally have been used for traditional sources of food, medicine and cultural ceremonial activities. The physical presence of the mining operation also denied them their important responsibility of taking care of their land and their environment. Nor were they afforded economic participation opportunities or compensation of any major significance or benefit.

As is the case for all Aboriginal Peoples across Australia, the Kungarakan and Warai Peoples understand their cultural, spiritual and physical interconnection, and embrace their responsibility for taking care of their land and environment, which includes the flora, fauna and waterways, sacred sites, ceremonial areas and storylines. To Aboriginal Peoples, the land is the Mother — it must be respected and taken care of in order to sustain balance and harmony for the people within their environment. A shared cultural belief among Aboriginal Peoples is that when the land (or Mother) becomes damaged it will automatically create disharmony and imbalance with the environment and among the people. This document has been informed by the content included in Appendices A and B which follow, and other Traditional Owners who have been engaged in the consultation processes (McGuinness et al., 2015).

For the Kungarakan and Warai Peoples, the ultimate outcome and most significant measure of success for the Rum Jungle Rehabilitation Project will be to Restore Balance and Harmony for the People with their Land and their Environment. Completion criteria numbers shown in Table 5 — P1, P2, P3, L1, L2, L3, E1, E2 and E3 — relate to the Critical Pathway (Figure 2) showing nine key objectives for rehabilitation.
Table 5 Cultural expectations for the nine key objectives for rehabilitation

<table>
<thead>
<tr>
<th>Balance and harmony for the people with their land and environment will occur when they:</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Have enhanced access and sense; see, smell and feel that their land and environment is recovering and continuously improving with a very low risk to their personal health and safety from radiological impacts.</td>
<td>P1</td>
</tr>
<tr>
<td>• take back ownership, governance and responsibility for the ongoing care and maintenance of their land, environment and cultural sites of significance.</td>
<td>P2</td>
</tr>
<tr>
<td>• positioned to generate wealth through their active participation in economic activities (jobs, business and other commercial opportunities) that derive from the rehabilitation of their land and restoration of their environment.</td>
<td>P3</td>
</tr>
<tr>
<td>• see their land and landscape becoming more stable through the sustained regeneration of natural local flora and increased presence of local fauna.</td>
<td>L1</td>
</tr>
<tr>
<td>• see landforms become integrated and blended back into the natural landscape.</td>
<td>L2</td>
</tr>
<tr>
<td>• know their cultural sites of significance are protected and preserved for current and future generations and cultural ceremonies and activities can again be practiced</td>
<td>L3</td>
</tr>
<tr>
<td>• see improvements in the quality and health of local waterway as evidenced by the increased presence of aquatic life and the regeneration creek and riverbed vegetation.</td>
<td>E1</td>
</tr>
<tr>
<td>• see increased reductions in pollution.</td>
<td>E2</td>
</tr>
<tr>
<td>• see the sustainable return of local flora and fauna.</td>
<td>E3</td>
</tr>
</tbody>
</table>
Kungarakan and Warai Peoples’ Engagement and Governance, Cultural Heritage and Environmental Restoration and Capacity Building and Economic Participation

HOW
To achieve this outcome, these are the objectives:

Engagement and governance objectives

1. Establish, build, nurture and maintain a culturally sensitive, safe and respectful engagement, governance and decision-making process that acknowledges and embraces traditional cultural and environmental knowledge and ensures the Free, Prior and Informed Consent of the Kungarakan and Warai Peoples for all relevant decisions relating to the management of the former mine site.

2. Build the capacity of the Kungarakan and Warai Peoples to ensure they can take a leadership role in the governance and stewardship of the site after rehabilitation.

Strategies

a. Maintain an effective Traditional Owner meeting and decision-making processes to ensure all cultural, environmental and other issues and concerns can be taken into full and proper account and project updates and relevant information shared.

b. Maintain regular and consistent consultation with all Traditional Owner family groups to ensure up-to-date knowledge and understanding of all relevant project issues and concerns.

c. Maintain up-to-date formal records for all Traditional Owner meetings, ensure all relevant issues, actions and decisions made are accurately recorded and disseminated in a timely manner.

d. Support the development of a Traditional Owner governance structure that enables them to effectively manage (for the common good) their business affairs, activities, records, finances and land transfer arrangements during and after the Rum Jungle Rehabilitation Project.

e. Support the development of a Kungarakan Land Management and Conservation of Protected Areas Plan to conserve, protect and enhance the cultural and spiritual values of the land and environment, post rehabilitation, for the benefit of current and future generations (see also Appendices A and B).

f. Ensure other key stakeholder holders (i.e. Northern Land Council (NLC) and other Northern Territory Government and Australian Government agencies) are kept informed of project progress via Rum Jungle progress meetings.

Performance measures

- Traditional Owners are kept informed and up-to-date of project progress and activities via regular information sharing meetings and formal records of meetings detailing key issues and concerns, as well as decisions made.

- Authentic acknowledgement ensures Free, Prior and Informed Consent of Traditional Owners is secured via Full Traditional Owner meetings, and consideration of traditional cultural and environmental knowledge is taken into full and proper account in all relevant project decisions.

- Kungarakan and Warai families agree and fully support the governance structure.
• The development of a land management and conservation of protected area plan would provide a foundation, framework and strategies for the ongoing conservation of protected areas after the Rum Jungle Rehabilitation project.

• All other key stakeholders are kept informed and up-to-date on the project’s progress.
Cultural heritage and environmental restoration objectives

1. Ensure all existing sites of cultural significance to women and men are identified within the site are protected and preserved.
2. Ensure all previously damaged and or destroyed sites are rehabilitated and or restored within reason and where possible.
3. Ensure all Traditional Owners and scientific environmental concerns and issues (including information relating to flora, fauna and riparian areas and vegetation) are researched, recorded and supported by strategies in response to identified problem and risks.

Strategies

a. In collaboration with Traditional Owner representatives, formally record (where appropriate) the locations and cultural significance of women’s and men’s sites and ensure they are protected and preserved.

b. Rehabilitate or restore previously damaged sites of significance, where possible, under the direction and guidance of Traditional Owner representatives with the appropriate cultural knowledge and authority.

c. Research and monitor all environmental concerns and issues (including information relating to flora, fauna and riparian areas and vegetation) and develop and maintain effective support strategies in response to identified needs.

Performance measures

- Site locations and cultural significance (including cultural interpretations and stories) of women’s and men’s sites are clearly defined, recorded, protected, and preserved in accordance Traditional Owner direction and guidance in compliance with the Northern Territory Government’s cultural heritage conditions and requirements.
- Previously damaged sites are rehabilitated and restored within reason and where possible.
- All environmental concerns and issues are effectively identified and managed.
Capacity building and economic participation objectives

1. Build capacity and position Kungarakan and Warai Peoples to successfully compete for economic opportunities through independent business or joint venture opportunities or through direct employment as an integral part of the project.

Strategies

a. Coordinate the Kungarakan and Warai Employment and Business Skills Audit to determine numbers of skilled and unskilled people.

b. Identify Australian Government and Northern Territory Government and non-government agencies and programs to build capacity and enhance competitiveness of unskilled people for employment and business opportunities linked to the rehabilitation project.

c. Coordinate a Social and Economic Baseline Study for Batchelor and the surrounding areas to identify potential employment and business opportunities independent of the rehabilitation project that may be of interest to Kungarakan and Warai Peoples.

Performance measures

- Skills audits identify actual numbers of skilled and unskilled people as well as training and development needs.
- All skilled Kungarakan and Warai Peoples are informed of opportunities identified in the Rum Jungle Workforce Development Strategy.
- Kungarakan and Warai Peoples are positioned to successfully compete for economic opportunities derived from the rehabilitation project.
- The Social and Economic Baseline Study identifies employment and business opportunities independent of the Rum Jungle Rehabilitation Project that may be of interest to Kungarakan and Warai Peoples.
Kungarakan and Warai Peoples’ Engagement and Governance, Cultural Heritage and Environmental Restoration and Capacity Building and Economic Participation

WHAT

The Rum Jungle Rehabilitation Project provides a unique opportunity for the Northern Territory Government and the Australian Government to:

a. demonstrate an authentic engagement process and the active economic participation of the Kungarakan and Warai Peoples as an integral part of the Rum Jungle Rehabilitation Project

b. develop mine rehabilitation and closure, environmental restoration, and cultural heritage preservation models that have been informed by Kungarakan and Warai Peoples’ cultural and environmental knowledge and melded with western scientific knowledge and expertise.

c. Increase community confidence in Australia’s capacity to successfully manage and control future mining activity in compliance with stringent mine operation and closure, rehabilitation, environment and cultural heritage policies, conditions, practices and procedures.

d. Authentically restore Balance and Harmony for the Kungarakan and Warai Peoples with their Land and their Environment.
APPENDIX A: MOORADOOP’S INTRODUCTION

Introduction

This presentation is about my responsibilities to Koongurrukun, to mean that I must return what I have learnt over my lifetime. Through the process of ngirrwut I will be demonstrating the importance of retaining knowledge, particularly of the sacred sites in this case of Ungurrookoolpum, (Abandoned Rum Jungle mine site). During the presentation I am ensuring that this cultural knowledge will survive by sharing with you sensitive and specific information — and at my juluk, whenever I finish up, the washing away my responsibilities, separating my shadow from my physical being will leave only the knowledge to survive through each of you and hopefully into a permanent keeping place for the future of our people. It will remain in cultural perpetuity living in this document, within a keeping place and individually in each of the people involved in shaping solutions and working towards the remediation of the site. Eventually our site will be returned to us and, my responsibility completed, this is what drives me to suggest that I need to ensure that our cultural heritage forms intrinsic aspects tied to the ongoing care for this area of land.

For some, through the course of colonisation and assimilation we have been forced into distance from Koongurrukun cultural values. To those who suffered as a result of this separation I gently say to you, we are imbued in the country as it is imbued in you, your DNA. Our country holds the memory of your ancestors and forms your being to connect you to us and us to you through lok (land) Koongurrukun. There is no such thing as Johnny come lately, for you have been born with the same heritage as we who have remained here, you are from this heritage, you belong beside us here in spirit, this site here in this lok, this is Mookununggunuk.

We are only custodians of our culture, we do not own it, but it forms and shapes our identity and its existence. We did not design our culture, our Mupulbuk (our ancient ones) created these as told in our creation stories. I recognize that what I propose is to ensure the longevity of our culture, our people and importantly our lok to bind us back together through the healing of this site. So my role here today is to share what I have inherited from other custodians in their absence, before it is too late to share the knowledge of this very important site and to bring to your awareness the duties we all hold and are obliged to fulfil.

Firstly the legacy of others, that have now joined Mupulbuk came together to wurrurk (to sing) and call out to lok and to purrukoot jell, (white peoples’ ears) and when they heard our voices they could not deny hearing our anthem, the voice of our land. Aunty Vi mibi (eyes) for NTLRA, my julut, started our wurrurk to draw our attention to a new process that would aid us to gain back what we once held authority and responsibility for, our lok. We had to claw back our status as traditional owners to the area we know we had inherited responsibility for. We had to prove that we were born from this land, that stories and special places are in this land, and remove the cloak of invisibility that had been thrown over us, to make us unseen and to muffle our voices. So this proposal aims to celebrate and restore recognition in our cultural heritage, to bring to life the wurrurk sung across this land and to acknowledge our ancestors, their fight for our lok, of their efforts and valuable time and commitment to reveal our heritage one that speaks directly to Mookununggunuk, our cycle of life situated here in this area known as Ungurrookoolpum, the Abandoned Rum Jungle mine site.

As we weren’t prepared for the deceit that was to come in the early days, or the stealthy way that we were not included as part of the human family and the carving up of our precious land so others may pick over their preferences, this proposal comes as a valuable means to build awareness and to educate as well as to retain Koongurrukun cultural values/imperratives and heritage of the region.

I will begin by discussing the aim of the proposal then detail the elements that can support the delivery of key products or outcomes that can sustain our intimate involvement in the rehabilitation and restoration of our precious lok at Ungurrookoolpum.
A Proposal to Rehabilitate, Restore and Retain Koongurrukun Heritage

The Aim of this proposal is to Enable Traditional Owners redress in heritage and cultural responsibilities to attend to and participate in the ongoing cultural and environmental restoration of the area of land known to as Ungurrookoolpum.

The objectives necessary to enable the aim to come to fruition sets out where opportunities to provide traditional owners such redress and enable:

1. Reclamation of land for immediate cultural use,
2. Effective community infrastructure to support administrative maintenance of the following;
3. Ongoing involvement of Traditional Owners in actively designing, shaping and contributing to the rehabilitation of the landscape, and care for the maintenance of sacred sites inside the area,
4. Employment, training and building of sustainable partnerships throughout the district/region,
5. Advancement in cultural heritage in the provision of education and maintenance of sacred areas and their ongoing protection,
6. Keeping place – historical and heritage records/library/archives pertaining to Ungurrookoolpum and Koongurrukun areas beyond,
7. Memorialize, Honour and Respect for Mupulpuk especially for those who fought for our lok and recognize the sacred sites as critical to enabling Mookununggunuk,
8. Recognition of those whose lives where lost across this site – transversing an historical spectrum, (Aboriginal and non Aboriginal).

These objectives assist in capturing the essential/necessary elements that are cultural values or imperatives, therein to care for country and the cultural obligations that flow from the sites and the catastrophic damage caused. These remain relevant to restoring the country to its former state in rehabilitating the land, in honouring and recognizing our people, as a memorial to lives and lands decimated by colonisation and the destruction caused by this mine, to enhancing relationships across and within our group with other affected parties. What is desired and necessary are echoed in the voices of our Ancestors in the restoration of the natal dreaming directly linked to Mookununggunuk.

In the early days Koongurrukun were helpless to do anything about the destruction of the area that is now to be rehabilitated. The struggle for those who held the main responsibility for the sites remain immutable but their anguish in failing to turn the tide on the destruction continues to be overwhelming, soul destroying. Our voices and our presence were not recognized during this time, however as I have said, Aunty Vi was the conduit that made us well aware of what we must do to gain back our land. The work of our Elders made it possible to gain back some important areas, however in order to heal and to hold Ungurrookoolpum we are obliged to follow their pombah, (footpaths) restoring us fully to what is rightfully our country and ultimately our responsibility.

Some time ago I had an architect draw up a building plan for a Keeping House that I named Wetjey House. This plan captures my visualization of what I believe is necessary (the infrastructure) to begin to organize, manage, monitor and maintain the rich heritage across the site and to set a precedent in mutual restorative heritage and environmental justice. Once a site of reclaimed land for cultural use has been cleared (in all manner of meanings) then to move toward establishing the plan below and implement its’ building. It may have to be larger than the current design to accommodate for the elements I have named here in the objectives. It is my wish to ensure that I have met with my responsibilities to enable knowledge transference, ngirrwut and to establish the means through which our cultural values/imperatives can be actively organized and empowered.
A place where we can come together to meet, organize our work, retain our knowledge, celebrate our heritage, place and build unique and empowering relationships across our country and nation. Our experience can be drawn upon to assist others through education, cultural maintenance, heritage retention and process, and although I am aware of the idea of a Knowledge Centre my focus is on heritage retention and cultural values.

Cultural values

Cultural values and imperatives concern our relationships with our lok, her nature, her children (flora and fauna) with her human beings. These values are embedded in our behaviors that some would say are reciprocal and connective, in that our care and human influence over the environment is considerate, compassionate and mindful for a future. Reciprocal in turn, is the nature of our lok providing us with security, nourishment, fresh flowing water and the ability to survive comfortably on rich and fertile lands filled with produce, this is the spirit of Mookununggunuk. The nature of reciprocity holds that we human beings are also endowed with collective concern for our mutual longevity across a broad spectrum of connections, relationships responsibilities and duty. These are the balances of our universe that synchronize lok and peoples’ continued existence and reproduction cycles. These values are sometimes lost because we have been colonized and this in many ways has distanced and distracted us from our loks’ lores and critical needs for we are the voice of our lok, we are her advocates and champions.

The sites within Ungurrookoolpum tell us of the direct relationship to Mookununggunuk, our cycle of life. The actions and activities of Mookununggunuk ensured that Natal Dreaming sites are highly intrinsic to safe and secured areas for our continued presence on lok. Without considering our place in the world particularly those of Ungurrookoolpum our survival and health will remain at risk. That is why I believe our starting point is with infrastructure to enable land care and management of these important sites and the heritage that flows across the landscape for all Koongurrukan. The infrastructure becomes the most effective way to house our projects and administer to working across our landscape in a systematic and organized manner in properly managing and restoring order from disorder and to facilitate balance from imbalance.

I provide what I believe will assist us in attending to those projects and programs and the administrative responsibilities of accountability, governance and visions that will emancipate heritage, culture, land care and ongoing lok maintenance. Please see the attached documents that attempt to speak to the vehicle that can make this possible.

Mooradoop, (Kathleen Mary Mills). May 2016
APPENDIX B: PROJECT PROPOSAL FOR MOOARDOOP
Ungurookoolpum - Koongurrukun Heritage, Land Care & Cultural Maintenance Infrastructure Project

Project Proposal

Prepared for: Mooradoop - Elder Traditional Owner - Rum Jungle Education, Training & Liaison Committee - Remediation & Rehabilitation
Prepared by: Helen Bishop
17 May 2016
EXECUTIVE SUMMARY

Objectives

In 2017 the Federal Resources and Energy department will provide a budget to the Ungurrookoolpum - Koongurrukun Heritage, Land Care & Cultural Maintenance Infrastructure Project, (the Project) to enable the full involvement of Koongurrukun Traditional Owners development in the heritage and cultural activities and responsibilities of the environmental restoration and rehabilitation area of land known as Ungurrookoolpum, (the Abandoned Rum Jungle Mine Site). The project includes the following objectives;

1. Reclamation of land for immediate cultural use,
2. Effective community infrastructure to support administrative maintenance of the following;
   a). Ongoing involvement of Traditional Owners in actively designing, shaping and contributing to the rehabilitation of the landscape, and care for the maintenance of sacred sites inside the area,
   b). Employment, training and building of sustainable partnerships throughout the district/region such as local Rangers Program, Weed Management,
   c). Advancement in cultural heritage in the provision of education and maintenance of sacred areas and their ongoing protection,
   d). Keeping place – historical and heritage records/library/archives pertaining to Ungurrookoolpum and Koongurrukun areas beyond,
3. Memorialise, Honour, Recognition and Respect for those who fought for our lok Koongurrukun and to recognise sacred sites as critical to enabling Mookununggunuk,
4. Recognition of those whose lives where lost across this site – transversing an historical spectrum, (Aboriginal and non Aboriginal).

Goals

1. Federal funding will meet the needs of the Project.
2. An identified area of uncontaminated land is negotiated and cleared for the Project.
3. Wetjey House will be completed in June 2018.

Solution

In order to support the active participation and involvement of the Traditional Owner group it is necessary to make provisions for an onsite or near site location to organise and manage the administrative responsibilities for meeting the objectives and developing the diverse strategies necessary in the ongoing rehabilitation and remediation of the site.
Project Outline

It is envisaged that the Department of Resources and Energy and other Federal agencies will provide funding for a permanent infrastructure accessible to the Traditional Owners to support the administrative responsibilities, functions and governances necessary to facilitate effective duty of care in Heritage, Land Care & Cultural Maintenance outcomes. The infrastructure makes it possible to meet in an organised and managed way, house cultural and heritage materials, design, plan and monitor projects such as Rangers and Fire Management Programs, sacred site and heritage maintenance and records, carry out functions of employment to meet the day to day duties arising out of the roles and responsibilities and for the regular use of the Traditional Owner - Rum Jungle Education, Training & Liaison Committee.

A permanent building (infrastructure) necessitates regulation to land clearance and the hardware to effectively manage waste. It is envisaged that the infrastructure will be environmentally friendly wherein a solar power station will generate all power requirements to the site. Additionally that two 90,000 litre rain water tanks will be installed inhibiting the need to connect to town water and further dig into country un-necessarily. Waste water management systems for Grey and Black water containment and treatment need to be installed so as to reduce further contamination to the area and redirect recycles waste water into garden grounds. Furthermore, hardware for ablutions need to replicate a reduction in waste such as low water toilets, taps and fittings.
BUDGET

Infrastructure - Wetjey House

The budget for the infrastructure is yet to be estimated. Therein the costs need to include for the clearing of an area of land to also include a memorial garden, and to situate several buildings, offices, conference room, fully functional kitchen, archives or heritage library space, internal ablutions, rangers building with external ablutions shower and toilet block, under cover car park and secure lockable shed for equipment. The attached architectural design holds colonial features that are appealing however would necessitate a redesign to incorporate those items mentioned here that were not included in the original plan. Additionally associated hardware to fully complete the infrastructure necessary needs to also include costs for internal and external treatments including, curtains, secured fencing, outdoor BBQ, furniture and fittings etc, these can fulfil this projects scope and focus.