

# **Appendix E** – Environmental management plan



Verdant Minerals Ltd  
Ammaroo Phosphate Project  
Environmental Management Plan

October 2017

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# 1. Introduction

## 1.1 Overview

The Ammaroo Phosphate Project (the Project) by Verdant Minerals Limited (VRM) is located in the Georgina Basin, approximately 220 km southeast of Tennant Creek. The project involves open cut mining of shallow phosphate deposits, beneficiation and production of phosphate rock concentrate.

This document outlines an Environmental Management Plan (EMP) Framework for the Project during construction and/or operations, and has been developed in coordination with the technical studies associated with the draft Environmental Impact Statement (EIS), including the specific safeguards and environmental controls that are required to avoid, minimise and/or control impacts arising from the project.

## 1.2 Purpose

This report provides an environmental management framework for the project to operate within.

A quality assurance approach to the management of environmental risks has been adopted for the project, including monitoring, auditing and reporting. The approach aims to support continual improvement of the EMP with the intention of reducing Project environmental impacts.

This report provides a framework only and will be finalised by VRM prior to commencement of construction and operations. The EMP framework has been developed in accordance with:

- NT EPA *Terms of Reference for the Preparation of an Environmental Impact Statement Ammaroo Phosphate Project, Rum Jungle Resources Ltd*, December 2014
- NT EPA Guideline for the Preparation of an Environmental Management Plan, January 2015.

## 1.3 Stakeholders

The key stakeholders identified for the Project include people or groups most likely to be impacted, influenced or have an interest in the Project, and are outlined in Table 1-1 below.

Table 1-1 Stakeholders

Stakeholder category	Representatives
Pastoralists	<ul style="list-style-type: none"> <li>• Ammaroo Station</li> <li>• Elkedra Station</li> <li>• Murray Downs Station</li> <li>• Neutral Junction Station</li> </ul>
Northern Territory Government	<ul style="list-style-type: none"> <li>• Department of the Chief Minister</li> <li>• Department of Trade, Business and Innovation</li> <li>• Department of Health</li> <li>• Department of Environment and Natural Resources</li> <li>• Department of Transport</li> <li>• Police, Fire and Emergency Services</li> <li>• Local Members of Parliament and key Ministers</li> </ul>
Councils	<ul style="list-style-type: none"> <li>• Central Land Council</li> <li>• Urapuntja Aboriginal Council</li> <li>• Barkly Regional Council</li> <li>• Minerals Council of Australia</li> </ul>
Residents and Traditional Owners	<ul style="list-style-type: none"> <li>• Ampilatwatja</li> <li>• Alyawarre</li> <li>• Traditional Owners</li> </ul>
Communities that could source labour or supplies, or where service providers are based	<ul style="list-style-type: none"> <li>• Tennant Creek</li> <li>• Alice Springs</li> </ul>
Environmental groups	Arid Lands Environment Centre
Regional associations	NT Cattlemen's Association
Local businesses, services providers and Aboriginal Corporations	<ul style="list-style-type: none"> <li>• Aherrenge Store</li> <li>• Urapuntja Aboriginal Corporation</li> </ul>
Business	<ul style="list-style-type: none"> <li>• NT Chamber of Commerce</li> <li>• NT Industry Capability Network</li> <li>• Individual businesses</li> <li>• Regional Economic Development Committees</li> <li>• Mining Summit</li> </ul>
Australian and Northern Territory Government regulators and departments	<ul style="list-style-type: none"> <li>• NT EPA</li> <li>• Australian Government's Department of the Environment and Energy</li> </ul>
Employment and training agencies	My Pathway which operates in Ampilatwatja and Arlparra

## 1.4 Assumptions

This report: has been prepared by GHD for Verdant Minerals Ltd and may only be used and relied on by Verdant Minerals Ltd for the purpose agreed between GHD and the Verdant Minerals Ltd as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Verdant Minerals Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by Verdant Minerals Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

## 2. Environmental management plan

### 2.1 Scope

The EMP is based on the management principle of “plan, do, check and act”:

- Plan – and define the organisations policy commitments by setting objectives and processes needed to achieve the results in accordance with policy.
- Do – implement the plans.
- Check – monitor, measure and evaluate performance against relevant policy, legal requirements, objectives and plans.
- Act – take actions to ensure continued improvement in environmental performance.

### 2.2 Objectives

The EMP framework has been produced in coordination with the draft EIS, in order to capture mitigation measures arising out of the environmental assessment process and provide a practicable management framework for addressing potential environmental impacts of the Project. The objectives of the EMP are to:

- Outline an environmental management system including structure, roles and responsibilities, environmental training and education.
- Establish management objectives and contingency measures for areas of key environmental risks.
- Develop sub plans that describe the do and check components of the EMP.
- Summarise environmental monitoring across the Project including frequencies, analytes, quality assurance (where relevant) and reporting requirements.
- Summarise previous period performance including internal reporting, external reporting, internal auditing, complaints register and a summary of sub-environmental management plan performance compliance (in future reviews of the EMP).

### 2.3 Legal and other requirements

Acts, guidelines and plans relating to the management of environmental impacts are outlined in the draft EIS. The EMP will contain a register of related approvals, licenses and approval conditions. This register is the key source for VRM managers and staff for the relevant legal, regulatory and other associated requirements in relation to environmental risk and performance of the Project.

### 2.4 Structure and responsibility

VRM will have overall responsibility for the environmental management of the project. The structure and responsibilities of key personnel will be determined prior to the commencement of the Project and will be defined in the revision of this EMP.



## 2.5 Environmental management system

### 2.5.1 Training, awareness and competence

Effective implementation of the EMP requires all staff to receive appropriate training to have an awareness of their roles and responsibilities. All staff and contractors have a cooperative responsibility to minimise adverse environmental impacts and to understand the compliance requirements of the EMP and the environmental assessment/approval conditions.

The training program will outline processes for:

- Identifying training needs
- Development of appropriate training programs
- Maintaining training records

Details of training requirements, content, dates and personnel involved shall be documented for the Project. Training will include, but not be limited to, Environmental Awareness Inductions, formal presentations, Toolbox meetings, Job Safety Environment Analysis (JSEA's) and Execution Plans.

### 2.5.2 Communication and reporting

Internal communication and reporting mechanisms will be developed to facilitate:

- Communication with employees and contractors regarding the EMP requirements, the identified environmental impacts, objectives, and other relevant environmental issues.
- Communications and liaison with stakeholders in relation to environmental policy and EMP.
- Reporting internally to management and staff on environmental performance and emergencies.

### 2.5.3 Emergency preparedness and response

The definition of an emergency is a situation that poses a serious threat to life, health or the environment and requires immediate attention by site staff and possibly more resources than the Project personnel have available at the time of the incident.

In the event of an emergency, Project personnel and subcontractors are to follow the procedures in a Project Emergency Preparedness and Response Plan (to be developed). If required, emergency services and the General Manager are to be contacted immediately following an incident.

A record of dangerous goods, chemicals and fuels stored and used on the site will be developed. Specific management and handling procedures will be developed for each storage facility.

In the event of an incident which has a direct or indirect environmental impact the following steps would be undertaken:

- Make the site safe and secure.
- Isolate the source or cause of pollution or environmental damage, if possible.
- Follow incident management protocols in an Emergency Response Plan and Environmental management plan (whichever is appropriate).

#### 2.5.4 Emergency contact register

The contact names and phone numbers of key Project personnel, other relevant authorities, and off site emergency services telephone numbers will be displayed on site. Emergency procedures and contact telephone numbers will be displayed in a noticeable position.

#### 2.5.5 Emergency procedure

After an environmental incident is caused or becomes identified by a person, the following should be followed:

1. Ensure the site is safe by considering personnel safety and if it is safe to do so, prevent further environmental impact from occurring.
2. Notify the emergency services and General Manager as required.
3. Follow the VRM Emergency Response Procedure (to be developed).

There is a requirement for all employees and contractors to report all environmental incidents. These include, but are not limited to:

- Injury to, or deaths of, threatened fauna/flora.
- Spills of hydrocarbons, chemicals or any other potentially toxic substance greater than 25 litres.
- Uncontrolled release of tailings.
- Uncontrolled release of contaminated wastewater.

Department of Primary Industry and Resources (DPIR) may present a written request for further details in relation to any incident / matters if it is not satisfied within the report provided. VRM will provide further details to the DPIR within the time specified in the request.

#### 2.5.6 Monitoring and measurement

Key performance indicators (KPIs) provide the basis for monitoring and reporting on environmental performance.

The methodology for measuring, reviewing and reporting on environmental KPI's to determine progress towards environmental objectives will be outlined in environmental aspect specific procedures.

#### 2.5.7 Non-conformance and corrective and preventative action

Non-conformances relating to the EMP objectives will be reported (and investigated) to ensure continual improvement of environmental performance. An EMP non-conformance is defined as a failure to:

- Meet the nominated environmental objectives within a two year period.
- Comply with environmental approval conditions, environmental legislation or other requirements.
- Comply with EMP procedures.

Once a non-conformance has been identified, corrective and preventative action is implemented to minimise risk of reoccurrence. Emergencies or incidents, monitoring or measurement, unforeseen environmental impacts, audit findings or other review may cause required changes or improvement opportunities to emerge for the EMP, and will be documented accordingly.

#### 2.5.8 Review, records and audits

The EMP will be revised and updated prior to construction and operation. Updates are likely to occur following:

- Formal review of the draft EIS and any Supplementary reporting by the Northern Territory Environmental Protection Agency (NT EPA).
- Provision of an NT EPA Assessment Report.
- Mining authorisation processes within the Department of Primary Industry and Resources (DPIR).

The EMP will be reviewed annually as part of internal annual reporting requirements, internal auditing plan and Project authorisation (Mine Management Plan) documentation.

Environmental audits will be conducted during construction, prior to operations and regularly during operations. Audit results will be fed back into the review process and contribute to continual improvement of environmental performance.

Where the audit identifies the need for corrective action, the EMP procedures and EMP will be amended accordingly. The EMP will be reviewed and updated on an as-needs basis depending on any non-conformance issue or incident. Review may also be initiated by a change in operating strategy or production process, or by any amended license or approval and associated conditions.

An internal audit of compliance with the EMP will be undertaken on a quarterly basis. The findings of this audit will be recorded and referred to when applying continuous improvement processes and subsequent changes to operational activities.

#### 2.5.9 Environmental reporting

Site and Management Personnel will be made aware of issues regarding the Project's environmental performance. A written report of non-conformance will be reported to the General Manager. Details provided will include the date, type and location of the non-conformances, how the non-conformances occurred and the corrective action employed.

The General Manager should monitor environmental performance based on reports received from the Environmental Team and other personnel.

#### 2.5.10 Environmental sub-plans

This section contains sub-plans that identify key risks and adopt the mitigation measures necessary to avoid or reduce or control the impact.

The EMP framework has been developed to be a strategic guidance document for environmental management for the Project during the construction, operation and rehabilitation phases. Specific sub-plans will be updated prior to each phase of the Project, to tailor the management and mitigation measures for specific activities.

A final EMP document will be prepared at the conclusion of the assessment process, taking into account specific activities, comments on the Draft EIS, an EIS Supplement and Assessment Report recommendations

## 2.6 Air quality management plan

The air quality section contains sub-plans that address environmental aspects related to air quality, including noise and dust.

### 2.6.1 Air quality (Noise)

A Noise Management Plan will be implemented to maintain predicted noise levels as per the draft EIS, i.e. no impact on sensitive receptors (e.g. the accommodation camp).

Air (Noise)	Description
Objectives	To avoid, minimise or control the impacts from the generation of noise and vibration during construction and mining operations
Management Actions	<ul style="list-style-type: none"> <li>• Fixed and mobile equipment fleet selection will prioritise newer and silenced equipment where practicable. All equipment used on site will be in good condition and good working order</li> <li>• Machines found to produce excessive noise compared to normal industry expectations will be removed from the site or stood down until repairs or modifications can be made</li> <li>• Scheduled maintenance as per operating manual requirements</li> <li>• Plan to use equipment, which is fit for the required tasks in terms of power requirements</li> <li>• All engine covers will be kept closed while equipment is operating</li> <li>• Broadband reversing alarms (audible movement alarms) should be used for all site equipment, subject to meeting occupational health and safety requirements.</li> <li>• A complaint management system will be implemented during construction and operation of the project</li> </ul>
Performance Indicators	<p>Number of complaints recorded in the complaint management system for noise concerns.</p> <p>A permanent site contact number will be established and made available to residents at potentially noise sensitive receptors so that noise related complaints can be received and addressed in a timely manner.</p>
Monitoring	Conduct noise and/or vibration monitoring (as applicable) at the complainant's location if the complaint is deemed justified. Monitoring will be undertaken and reported within five days (or as practicable and reasonable) of receiving a complaint in order to provide a written response within seven days.
Reporting	<p>Investigation of complaints and reporting to General Manager</p> <p>If exceedances are detected, corrective actions will be implemented, included in the response to the complainant and recorded.</p> <p>Provision of an email response to an electronic complaint within two days if the complaint cannot be resolved by an initial response.</p> <p>Results of audits and use of complaints management system to be reported in MMP.</p>
Corrective Actions	Investigation as to whether any unusual activities were taking place at the time of the complaint that may have generated higher noise levels than usual.

## 2.6.2 Air quality (Dust and gaseous pollutants)

The nearest sensitive receptor is the accommodation camp, to the north east of the mine site. The nearest non-mining sensitive receptor is the Davenport Ranges SOCS, 5 km north of the mine site at its northern boundary. The pollutants of concern are primarily particulate pollutants related to dust generated by mining activity, specifically, PM<sub>10</sub>. The application of dust control measures will significantly reduce the extent of particulate impacts on the nearest sensitive receptors.

Air (Dust)	Description
Objectives	Avoid, minimise or control impacts on air quality associated with dust and other emissions resulting from construction, operation or rehabilitation of the Project
Management Actions	<ul style="list-style-type: none"> <li>• Water trucks will water the haul road at a rate to prevent dusts at sensitive receptor location exceeding criterion</li> <li>• Progressive rehabilitation mined areas to minimise exposed material and dust generation</li> <li>• Minimise time between top soil stripping and construction/mining operations</li> <li>• Sprays used on ore stockpiles (ROM and low grade or long term) to limit dust generation</li> <li>• Crushing and conveying equipment for dry material shall have dust controls</li> <li>• An Erosion and Sediment Control Plan will be developed and implemented</li> <li>• Monitor vehicle speeds</li> <li>• Ongoing dust deposition monitoring program at nearby sensitive receptor locations (dust deposition gauges)</li> <li>• Scheduled vehicle and heavy equipment maintenance as per Original Equipment Manufacturer (OEM) requirements</li> </ul>
Performance Indicators	<p>Maintain air quality at sensitive receptor locations within national environment protection measure (NEPM) assessment criterion</p> <p>Number of reports and/or complaints of dust or pollutant impacts at sensitive receptors</p> <p>Dust deposition gauges exceed 4 g/m<sup>2</sup>/month at sensitive receptor locations</p>
Monitoring	Dust deposition gauges to monitor effectiveness of the Management Plan and the contribution of the mine against dust assessment criteria
Reporting	Air quality performance will be reported in the annual mine management plan.

## 2.7 Biodiversity management plan

The Biodiversity Management Plan includes sub-plans that address environmental aspects related to biodiversity such as fauna and habitat, weeds and fire. Other activities that cause environmental harm and may indirectly result in disturbance to flora and fauna and their habitat, such as rehabilitation, erosion and sedimentation, dust, and pollution of soil or water are outlined in other sub-plans including dust management, closure and rehabilitation, erosion and sediment control and hazmat sub plans.

### 2.7.1 Biodiversity (Fauna and habitat management plan)

Fauna and habitat within and adjacent to the Project site may be impacted or temporarily disrupted through activities such as vegetation clearing, trenching, and bushfires.

Biodiversity	Description
Objectives	<p>Avoid, minimise or control the impact of project activities on biodiversity</p> <p>Avoid, minimise or control the impact of project activities on sensitive vegetation and listed threatened species of flora and fauna</p>
Management Actions	<ul style="list-style-type: none"> <li>• Construction personnel will be briefed during inductions regarding the conservation value of surrounding habitats and their responsibilities with regard to protecting these habitats during construction and operations</li> <li>• Vegetation Clearing Procedure will be developed in association with the Biodiversity Management Plan and include:               <ul style="list-style-type: none"> <li>– Procedures for demarcating the limits of clearing</li> <li>– Staged clearing of vegetation to minimise areas of bare ground</li> <li>– Use of already-disturbed areas wherever possible (e.g. lay down areas for construction)</li> <li>– Strict fire prevention / ignition source management protocols to prevent wildfire during clearing activities</li> <li>– Development and implementation of a land stabilisation and sediment and erosion control strategy</li> <li>– Progressive rehabilitation of cleared land as project activities are completed.</li> </ul> </li> <li>• Vehicle speeds limited and use of authorised access tracks only</li> <li>• Procedure for the event that a listed threatened species is encountered within the project footprint during construction or operations:               <ul style="list-style-type: none"> <li>– Notify DENR and (if relevant) DoEE.</li> <li>– Undertake sufficient fieldwork by an expert on the species to assess the significance of the occurrence and the degree to which project activities will likely impact upon the species</li> <li>– Develop, in consultation with DENR/DoEE an appropriate strategy for minimising any impact to the local occurrence of the species</li> <li>– Implement the strategy.</li> </ul> </li> </ul> <p>During trenching for the gas pipeline, trenching mitigation measures include:</p> <ul style="list-style-type: none"> <li>• A Trench Inspection Procedure will be implemented in open trenches prior to commencing daily activities and include prompt relocation of fauna unable to exit the trench by a suitably qualified person</li> </ul>

Biodiversity	Description
	Progressive backfill of the trench as installation is completed
Performance Indicators	No incidents of clearing outside approved project clearing areas No incidents of fire started as a result of project activities No incidents of native fauna injury or death in trenches or by vehicle strike
Monitoring	Trench inspection and clearing as required Use photo monitoring points to help determine success/failure of rehabilitation
Reporting	Trench Inspection Report

### 2.7.2 Biodiversity (Fire management plan)

Bushfires are significantly influenced by climate conditions and by wind, aspect and slope. Fire management refers specifically to bushfires which have the potential to impact site personnel, adjacent land users and the environment.

Biodiversity (Fire)	Description
Objectives	Avoid, minimise or control project activities that would provide an ignition source for bushfire
Management Actions	<ul style="list-style-type: none"> <li>All construction activities, including establishment and operation of temporary camps, will occur within a cleared project footprint to minimise the risk of ignition sources coming into contact with flammable material</li> <li>Establishment and maintenance of fire breaks around high-risk areas and/or activities e.g. vegetation clearing activities</li> <li>Strict fire prevention management protocols implemented to prevent wildfire during clearing activities</li> <li>Fire ratings and warnings will be monitored with liaison with Bushfires NT as required</li> <li>All welding, cutting and grinding works undertaken will require approval via an internal hot works permit system</li> <li>Installation / implementation of fire detection and suppression systems including dedicated fire extinguishers</li> <li>All site personnel will be required to undertake fire control training, including the correct use of extinguishers</li> <li>All heavy mobile equipment to be fitted with fire suppression system</li> <li>All vehicles are required to carry a fire extinguisher;</li> <li>Emergency response procedures, team and equipment</li> <li>Establishment of a means of managing fire risks on site, comprising mobile and fixed equipment as needed</li> <li>Undertake active fire management and the use of cool-season control burns if needed.</li> </ul>
Performance Indicators	Zero incidents of uncontrolled bush fires within the Project site, or off site as a result of project activities
Monitoring	<ul style="list-style-type: none"> <li>Fire control training and vehicle / mobile equipment fire suppression equipment will be documented and audited</li> <li>Fire weather monitoring will be documented</li> <li>Hot works permits will be monitored</li> <li>Regular fire break maintenance will occur</li> </ul>

Reporting	Fire control training and performance will be reported annually
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### 2.7.3 Biodiversity (Weed Management Plan)

A Weed Management Plan will be developed to limit both the introduction of new weeds within the Project site and the spread of existing weeds during Project activities.

Biodiversity (Weeds)	Description
Objectives	Avoid, minimise or control new weed introduction to the Project areas and/or spread of existing weeds from one part of site to another during Project activities
Management Actions	<ul style="list-style-type: none"> <li>• The Weed Management Plan will contain up to date information regarding type and location of weeds of concern within the Project site</li> <li>• Hygiene procedures will be implemented for machinery, equipment, and personnel moving from weed areas into clean areas</li> <li>• Regular inspections and the use of vehicle wash down stations</li> <li>• Keep vehicles to established / authorised tracks and roads</li> <li>• Areas supporting existing weed infestations, or vulnerable to weed infestation, will be avoided where practicable</li> <li>• Topsoil or vegetative material from weed affected areas will be stockpiled in a designated area with appropriate signage and bunding.</li> <li>• Weed infested stockpiles will then be treated as required to eradicate weeds prior to re-spreading in rehabilitation areas</li> <li>• Ongoing control of new weed outbreaks</li> <li>• All staff and contractors will be informed of weed hygiene measures and weed reporting requirements during the site induction.</li> </ul>
Performance Indicators	Zero incidents of new weed introduction within Project site Zero incidents of spread of existing weeds due to Project activities
Monitoring	Weed mapping Routine monitoring of the Project site (including stockpiles and rehabilitated areas) and surrounding vegetation to identify new weed populations and monitor the effectiveness of weed control measures Monitoring will occur in response to rain events and weed germination
Reporting	Weed management and monitoring activities will be reported annually and weed management planning will also be reported for next 12 months



## 2.8 Waste and Hazardous materials

A Hazardous materials (Hazmat) Management Plan and Waste Management Plan are required to manage the transport, storage and handling of hazmat, including spills management

### 2.8.1 Hazmat Management Plan

A Hazmat Management Plan will be developed that outlines chemical spill response management and management of chemicals, wastewater and fuels in proximity to water.

Spills	Description
Objectives	Avoid, minimise or control impact on human health or the environment from hazardous substances spills, or uncontrolled release of hazmat.
Management Actions	<ul style="list-style-type: none"> <li>• Site inductions</li> <li>• Hazardous materials to be appropriately stored in bunded areas</li> <li>• Hazmat to be labelled in accordance with code of practice</li> <li>• Hazmat inventory will be kept</li> <li>• Dedicated refuelling areas to include spill kits to allow for immediate clean-up of small spills</li> <li>• Bunding to have a storage capacity of 150% of the volume of hazardous materials being stored within</li> <li>• Inspection regime to monitor bunding capacity</li> <li>• Appropriate equipment available to remove fluids from bunding and secondary containments</li> <li>• chemical spill response management procedure implemented including</li> <li>• Incident response procedures</li> <li>• Incident reporting (internal and external notification)</li> </ul>
Performance Indicators	No long term impact or environmental harm from the release of hazardous substances
Monitoring	Monitor chemical storage/removal
Reporting	Annual reporting on incidents / releases of contaminants or spills

### 2.8.2 Waste Management Plan

Waste that is not hazardous waste or recyclable will be managed on site in land fill. Hazardous waste that is listed under the waste management and pollution control Act will be removed to a licenced facility.

Waste	Description
Objectives	Avoid, minimise or control impact of inert and municipal solid waste on the environment
Management Actions	<ul style="list-style-type: none"> <li>• Food waste will not be available for fauna</li> <li>• Waste will not be burned</li> <li>• Landfill will be operated as a non-hazardous waste facility and hazardous substances will not be disposed of to landfill</li> </ul>
Performance Indicators	Zero environmental incidents associated with landfill and waste collections areas

Monitoring	Review of waste management procedures annually Monitor waste generation and storage/removal/disposal
Reporting	Annual reporting on incidents of waste related environmental concerns

## 2.9 Traffic and Transport

The development of a detailed Traffic Management Plan (TMP) will be required to support the project and include an assessment of road safety (e.g. sight distances and appropriateness of turning treatments at intersections), and road maintenance and inspection requirements

### 2.9.1 Traffic Management Plan

A Traffic Management Plan will be developed and implemented to minimise and mitigate the effects of increased road traffic associated with project activities on road infrastructure and the health and safety of workers, the community, and fauna populations.

Traffic	Description
Objectives	Avoid, minimise or control impacts associated with the contribution of additional road traffic to the public road network by the project activities
Management Actions	<ul style="list-style-type: none"> <li>• Traffic planning prior to construction and operations will include:               <ul style="list-style-type: none"> <li>– An on-site road safety review of intersections will be undertaken prior to construction or operation activities to assess sight distances, grade and any other associated road safety issues and to confirm BAR/BAL treatment is appropriate.</li> <li>– Swept path analysis will be undertaken on-site at affected intersections to ensure heavy vehicles are able to make required turning movements at those intersections.</li> <li>– A road maintenance and inspection program will be developed in consultation with the NT Government to address pavement wear issues associated with the project</li> </ul> </li> <li>• During construction activities, upgrade and utilise existing vehicle tracks where available</li> <li>• Reduce speed limits and install speed reduction infrastructure such as whoa-boys and speed humps</li> <li>• Provide road safety and awareness training to all staff and contractors with respect to safe driving in areas where native wildlife/cattle occurs</li> <li>• enforce speed restrictions in high-use areas</li> <li>• Limit the movement of vehicles at night (between the period of one hour before dusk to one hour after dawn) where possible</li> <li>• Spill kits to be carried by fuel tankers to assist in immediate containment of small spills.</li> <li>• Monitor road pavement condition throughout life of project</li> </ul>
Performance Indicators	No road safety incidents associated with project activities
Monitoring	Speed limit monitoring Fauna injury or death monitoring and reporting Public road network pavement condition assessment
Reporting	Annual reporting on incidents

## 2.10 Water management plan

A detailed Water Management Plan will be developed prior to construction and operation of the project. A water management plan framework, including the mitigation measures and monitoring related to water management that will be considered for all phases of the Project is included at Appendix A.

## 2.11 Historic and Cultural Heritage

The Cultural Heritage Management Plan (CHMP) identifies the cultural heritage environment including cultural exclusion zones, historical heritage sites and archaeological sites and artefacts. It describes the potential impacts on these, and the management and mitigation framework for reducing the likelihood and significance of these impacts. A draft CHMP is available at Appendix B.

## 2.12 Social and Economic Impact

An Economic and Social Impact Management Plan (ESIMP) that addresses social and economic risks and mitigation measures associated with the project is included at Appendix C. The ESIMP will require review and update prior to Project activities commencing.

# Appendices

# Appendix A – Water management plan



Verdant Minerals Ltd  
Ammaroo Phosphate Project  
Water Management Plan

October 2017

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# A. Water management Plan

## A.1 Purpose

The purpose of this Water Management Plan (WMP) is to address water management for the Ammaroo Phosphate Project (Project) which includes the mine site, beneficiation site, borefield, accommodation village and access corridor. The Project phases include construction, operations, rehabilitation and decommissioning.

The WMP has been developed to:

- Establish surface water, groundwater, stormwater, processing water (onsite water storage), and sediment sampling regimes and procedures.
- Determine baseline conditions and operational impacts on the surrounding environment
- Implement and assess rehabilitation goals

## A.2 Term of plan

The WMP will be reviewed and updated prior to Project construction. The WMP will be amended regularly as a part of mining authorisation, and may be reviewed following an incident or significant change to operations

## A.3 Guidelines

This WMP has been developed with reference to the Australian and New Zealand Environment and Conservation Council (ANZECC) guidelines, including:

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000a)
- Australian Guidelines for Water Quality Monitoring & Reporting (ANZECC/ARMCANZ, 2000b)
- Australian Drinking Water Guidelines (NHMRC/ARMCANZ) (2004)
- Guidelines for Groundwater Protection in Australia (ANZECC/ARMCANZ, 2013)

## A.4 Project description

### A.4.1 Water requirements

The Project has significant water requirements during operations for mining, beneficiation and other uses. The main water requirement will be:

- Raw water for dust suppression and primary ore processing.
- Treated water for general process plant use, pump gland sealing, power station, fire water and wash down requirements.
- Potable water for domestic use and safety showers.
- Treated Fire water, safety shower water and wash down requirements.

Water requirements for processing will be driven by the amount of ROM feed to the processing plant. The raw water demand for 1Mtpa phosphate rock concentrate production is approximately 220m<sup>3</sup>/hr and approximately 440m<sup>3</sup>/hr for 2Mtpa concentrate production.

#### A.4.2 Water management infrastructure

The Project proposes the following water infrastructure to address water requirements:

- Beneficiation process plant including process water, surface tailings storage facility and reagent tank farm.
- Water supply bore field and 12 kilometre water pipeline.
- Utilities such as water treatment, stormwater collection and treatment.
- Waste water treatment plant for utility oily water and process contaminated water.

Raw water will be sourced from ground water resources using a series of bores. The water supply system will have the following components:

- Bore field water supply to the process plant.
- Main raw water supply to the process plant and accommodation facilities.

### A.5 Current Conditions

#### A.5.1 Local and regional hydrology

The Project is located within the Southern Georgina Basin, in the northern section where the Cambrian basin sediments thin and onlap the Proterozoic basement rocks of the Tennant Creek Block. The lower sediments of the Georgina Basin are the host to the phosphate deposit, and are approximately 30 metres to 50 metres thick at the project site. The Georgina Basin sediments thicken to the south of the site.

Watercourses within the vicinity of the Project site typically include mobile deep sand deposits about 50 metres wide with banks that show signs of active erosion. Some of these channels include a low-flow channel about one metre deep with a base width of about five metres. During infrequent, intense rainfall events out-of-bank flow can be expected leading to temporary and short-term flooding of adjacent lands.

The regional drainage system drains towards the east via the Elkedra and Sandover Rivers and their tributaries. The site area is gently undulating to flat, sloping at about 0.25 per cent southwest.

#### A.5.2 Environmental values

There are no identified groundwater dependant ecosystems within 60 km of the proposal. The depth of water of the water table in proximity to the proposal is too deep to support groundwater dependent ecosystems.

According to existing land system and land unit mapping and aerial imagery, only part of the Project site intersects a major seasonal watercourse and associated alluvial floodplains. This is Taylor Creek on Neutral Junction Station, which is situated on the western part of the proposed infrastructure corridor. There are no large wetlands within the Project site; however, several small seasonal swamps occur in the vicinity of the infrastructure corridor, of which none are intersected by the Project.

#### A.5.3 Water quality objectives

Water quality objectives based on the ANZECC guidelines will be adopted if the Project requires a Waste Discharge License from the NT EPA. However, the Project does not propose any waste water discharge.

## A.5.4 Climate

### *Rainfall and evaporation*

The mean annual rainfall is approximately 315 millimetres. Regionally, most of the rain is associated with thunderstorms during the monsoonal wet season cyclonic activity. Over some drought years there is minimal or no rainfall. Average monthly rainfall totals range from about 5 millimetres in August to about 70 millimetres in February. Average three-monthly rainfall totals range from about 22 millimetres in June/July/August to about 178 millimetres in December/January/February. However, any month can receive relatively large rainfall totals, or little or no rain at all.

Evaporation is greatest during months of higher mean rainfall with the highest average evaporation occurring in December and January at about 12 millimetres per day and 11 millimetres per day respectively. Rates of evaporation are significantly lower from May to August corresponding with lower average rainfall.

### *Temperature and humidity*

Typical of central Australian arid climates, the Project site has high summer maximum temperatures (average of 37°C) and low minimum winter temperatures (average 6°C). The hottest months are November to March with monthly average daily maximum temperatures above 35°C, and monthly daily minimum temperatures not dropping below 20°C. The coolest months are May to August with monthly average daily maximum temperatures remaining at or below 25.4°C and monthly average daily minimum temperatures not rising above 12.9°C.

The average humidity at the Project is 39% at 9 am, and 24% at 3 pm. This is consistent across the year with monthly morning readings being higher than the afternoon readings. The highest levels of humidity are experienced in June at 53%, which coincides with lower temperatures.

### *Wind*

The winds at the Project are mainly in a south easterly direction throughout the year. The average wind speeds range from 12.8 km/h to 19.7 km/h, with an annual average of 17.3 km/h at 9 am and 15 km/hr at 3 pm.

## A.6 Site water management

### A.6.1 Water classification

Water onsite is classified into four types:

- **Clean water:** Runoff generated from undisturbed catchment areas. This water will be diverted around the Project using levees or diversions, or maybe captured and reused on site.
- **Raw water:** Externally sourced water used as potable water (with suitable treatment) and process water make-up.
- **Dirty water:** Runoff generated from disturbed catchment areas, excluding the process water system, including runoff from temporary waste rock dumps WRDs and some infrastructure areas. This water will be collected within sediment dams for settling and discharge, or reuse on site.
- **Process water:** Water which has been in contact with or used within the processing plant, including tailings decant water. Process water will be recycled, collected and reused within the process plant.

## A.6.2 Water management system

Each water type is to be managed with a separate water management system.

### *Clean water management system*

The clean water management system will generally include clean water diversions and flood protection levees that will be designed and constructed to safely manage the flows generated by the 100 year ARI critical duration design storm event, and include suitable bed and bank scour protection measures.

### *Flood protection levees*

A flood assessment and modelling was undertaken for the mine site to establish potential flood related impacts. Modelling of the 100 year ARI flood event for the current conditions and with proposed infrastructure was undertaken. The maximum modelled flood extent and depths for the 100 year ARI flood event are provided in the draft EIS.

Flood protection levees will be constructed along the northern and eastern sides of the open cut pit as required, to divert clean water away and prevent inrush during flood events. Infrastructure areas, including the ROM Pad and out of pit TSF will be constructed above the 100 year ARI flood level.

### *Access corridor*

The access corridor will include a rail line that will be raised above the 25 year ARI flood level.

The rail line will be designed and constructed to include sufficient crossing structures (i.e. culverts) to minimise changes to flood levels within the upslope and downslope environments.

Each crossing structure will include appropriate energy dissipation downstream of the culverts.

### *Raw water system*

Raw water will be sourced from the borefield, and transferred to site via a dedicated pipeline. Potable water would be treated to meet Australian Drinking Water Guidelines (NRMMC 2011).

### *Dirty water management system*

The dirty water management system would be constructed to manage sediment laden runoff generated from disturbed catchment areas which are located outside of the processing plant and tailings storage facilities.

The dirty water management system would generally consist of:

- **Catch drains** to intercept runoff generated from disturbed catchment areas; and
- **Sediment dams** where required to temporarily store sediment-laden runoff.

Catch drains are typically designed to safely convey the peak runoff generated by the catchment during the 20 year ARI critical duration design storm event. Ideally, flow velocities would be below about 1.5 metres per second to minimise scouring and avoid the need to place scour protection measures within the catch drains.

Sediment dams would be sized to safely manage runoff generated by the 100 year 72-hour design storm event (IECA 2008), and maintained in a generally drawn-down state. Water captured within the sediment dams may be transferred (by pump) to other storages on site for reuse, or treated if needed and discharged off-site. During large rainfall events or periods of extended wet weather, the sediment dams would overtop and discharge (via a constructed spillway) into the downstream environment.

## Process water management system

Treated (softened) water from the borefield is used in the process water management system. The process water system manages water that is used in (and recaptured from) the process water system, including the tailings storage facilities, processing plant and process water storage. Process water storages will be turkey's nest dams (i.e. have no external catchment) in order to minimise intercepted external water volumes. The process water storages will be managed to maintain a minimum freeboard equivalent to the total inflows expected during a 100 year ARI 72 hour design storm event. Where a process water storage is used as a receiving dam for a number of other storages across the site, additional freeboard storage may be required.

Runoff from the processing plant will be directed towards sumps or dams prior to being pumped to the process water dam for reuse on site. Runoff generated within the tailings storage facilities would be collected and managed with recovered tailings water for reuse within the processing plant.

No discharge of process water would occur without suitable treatment. During extreme flood events, all reasonable efforts to avoid discharging of process water would be undertaken. This would include the transfer of process water into the open cut pits, if necessary.

## A.7 Groundwater

### A.7.1 Introduction

Groundwater extraction will occur at the Project via the proposed production bores. The water supply will be utilised throughout the life of the Project and following the closure of the Project groundwater extraction will cease.

### A.7.2 Groundwater management

Groundwater will be managed at the Project in accordance with ANZECC/ARMCANZ (2013). Management of groundwater across the Project will be aligned with the six underlying principles:

- 1. Protection of specified environmental value:** The current and future land use of the area is considered to be pastoral (cattle). Application of stock water and irrigation ANZECC values and reference to drinking water values will be used whilst local site specific groundwater trigger values are established.
- 2. Risk-based approach:** The EIS risk assessment assessed the risks posed by the proposed infrastructure and informed mitigation measures. Locations which are likely to provide a groundwater contamination source will be constructed to reduce risks to groundwater include:
  - Fuel stored in self-bunded above ground storage tanks (ASTs)
  - Chemical storage shed with internal bunding.
- 3. Polluter pays principle:** The site will be constructed, operated and rehabilitated in accordance with the *Mining Management Act* (MM Act). The MM Act requires the Proponent to report environmental data to assess and understand potential impacts from the Project to the Department of Mines and Energy (DME). In accordance with the MM Act, a security bond will be provided as part of the initial grant and maintaining Mine Authorisation. The security bond reinforces the polluter pays principle whereby the bond will be returned to the Proponent following successful rehabilitation or utilised by DME to complete rehabilitation (if the Proponent is not able to due to unforeseen circumstances).

4. **Intergenerational equity:** Currently the predominate use for groundwater in the immediate vicinity of the mine site and processing site is for pastoral use (i.e. stock drinking water). The development of the Project will be undertaken with consideration of current and potential future generations of pastoralists.
5. **Precautionary principle:** Hydrogeological modelling has been undertaken to assess the potential impact of the Project on surrounding groundwater resources. In accordance with the risk-based approach and implications of the polluter pays principle, the site will be operated under a precautionary principle.
6. **Ecologically sustainable development:** The Project will be managed in accordance with the above principles to promote ecologically sustainable development.

#### ***Declaration of beneficial uses***

The access corridor passes through the Western Davenport Water Control District (WCD). WCDs are proclaimed areas where the Department of Environment and Natural Resources (DENR) have identified a need to manage water resources (surface and groundwater) to avoid stressing groundwater reserves, river flows or wetlands. The mine site is not located within a WCD.

Mining is exempt from licencing under the *Water Act*. However, extraction and dewatering activities are governed under the MM Act, administered by the Department of Primary Industry and Resources (DPIR) who have a memorandum of understanding with the DENR to manage activities so they do not affect other water users.

#### **A.7.3 Groundwater modelling**

A class 1 numerical groundwater model was developed to simulate aquifer conditions for the existing conditions and to estimate the potential groundwater impacts as a result of the Project up to 100 years post closure. During the 25 year operational life of the mine, the groundwater model used an annualised groundwater extraction rate of about 4.4 gigalitres per year, although with water recycling the net usage is likely to be significantly less.

The model used inferred rates for groundwater recharge of the licensed groundwater bores surrounding the Project, and included the production test bore established in the proposed borefield. Tertiary stresses included recharge (diffuse and direct) and evapotranspiration.

The groundwater modelling indicated no appreciable change to regional groundwater flows.

The groundwater modelling indicates that no appreciable groundwater inflows into the pit are expected as the phosphate ore body is above the water table.

#### ***Drawdown***

The drawdown at the epicentre of the borefield is estimated to be between 5 metres and 17.2 metres. The drawdown-rebound is expected to be a typical log-linear response, recovering to a one metre drawdown about 35 years after mine closure.

#### ***Modelled impacts***

The hydrogeological model indicates that there will be groundwater drawdown due to extraction at the borefield. Levels of drawdown range are dependent upon distance from the extraction site including:

- Hagen's bore (RN010717) is likely to experience a drawdown of between 1.5 metres and 3.5 metres after 25 years of mine operations.

- Ampilatwatja community bores (RN011454 and RN011455) are likely to experience a drawdown of between 0.6 metres and 2.7 metres after 25 years of mine operations.

### **Validation**

Validation of the groundwater model will require ongoing monitoring, including flow gauges to be installed on extraction bores. The monitoring program detailed in Section A.10 has been designed to provide sufficient information to progress this model to a class 2 or class 3 in accordance with the Australian Groundwater Modelling Guidelines (Barnett et al, 2012).

#### A.7.4 Groundwater quality

Groundwater sampling has been undertaken across the Project from seven locations. Additional regional water quality data was obtained from the NT Land Information System.

Groundwater is generally fresh to brackish (ie TDS of between 500 mg/L and 3000 mg/L), and is typically not suitable for use as a potable water supply (TDS < 1000 mg/L).

Within the vicinity of the mine, the aquifer is dominated by sodium, magnesium, carbonate and chlorine, and is considered to be marginal to non-potable, suitable for stock watering.

## A.8 Preliminary conceptual site model

### A.8.1 General

A Conceptual Site Model (CSM) is a representation of site-related information regarding potential surface and groundwater impacts, receptors and potential exposure pathways.

The development of a preliminary CSM provides the framework of identifying potential source-pathway-receptor linkages and associated monitoring techniques. Once detailed site specific information (monitoring data) is evaluated, the CSM will be refined and used as a decision tool to identify requirements for contingency management measures.

### A.8.2 Key aspects

#### **Surface watercourses**

Watercourses are generally dry and do not exhibit flows for the majority of the year. Flows only occur during exceptional rainfall events and can flood existing watercourse banks.

#### **Monitoring benchmarks**

Groundwater chemistry generally exceeds assigned environmental values (stock water, irrigation water and drinking water ANZECC values). Site Specific Groundwater Trigger Values (SSGTV) will be established throughout the construction phase (24 months) at nested wells at the mine site and the processing site. The SSGTV will be used to provide a definitive dataset to be assessed against during operation, care and maintenance and/or rehabilitation.

#### **Mine pit groundwater inflow**

As the pit floor is to remain above the local water table, no groundwater inflows are expected for the life of the project.

#### **Nil discharge**

The Site has been designed, as far as practical, to be a no discharge site with respect to process and dirty water, however during heavy rainfall events (i.e. rainfall events exceeding the 100 year ARI design rainfall event) and under exceptional circumstances (i.e. widespread flooding) there may be some discharging of untreated process and dirty water. AMD potential is

considered low and during these events the considerable dilution within adjacent drainage lines will substantially reduce potential contaminant concentrations.

Regular water quality sampling will be undertaken, with additional sampling being undertaken when discharges occur. The sampling data will be used to assess if any additional management measures are required.

### **Borefield**

During operation of the borefield, drawdown has the potential to impact local groundwater flow direction.

Regular groundwater level monitoring will be undertaken to confirm that observed groundwater impacts are consistent with the modelled impacts.

## **A.9 Potential water impacts**

### **A.9.1 Contamination sources**

The Project has a number of potential contamination sources (Table A-1)

**Table A-1 Potential sources of contamination**

Source / Area	Contaminant of Potential Concern (CoPC)
Pit, ROM Pad, ore stockpiles, temporary waste rock dumps, surface TSF	Metals, primarily zinc
Fuel Farm (diesel / petrol storage)	Metals (including cadmium, chromium, copper, lead and nickel) and hydrocarbons (BTEX, BaP, total PAH and TRH).

**Note:** BaP: Benzo[a]pyrene  
 BTEX: Benzene, Toluene, Ethylbenzene and Xylenes  
 TRH: Total Recoverable Hydrocarbon  
 PAH: Polycyclic Aromatic hydrocarbons

### **A.9.2 Potential receptors**

The Project site is currently utilised as a pastoral lease for cattle grazing. The mine site located outside of any Water Control District, however the western end of the access corridor is located within the Western Davenport Water Control District, which is used for irrigation, stock water and drinking water. Therefore, the current receptors are considered to be:

- Human Health
  - Drinking water
- Environment
  - Irrigation and stock water

### **A.9.3 Future land use**

Following the cessation of mining activities, the Project area will be rehabilitated to return the land to its original use as a pastoral lease for cattle production. Water use at and surrounding the Project is likely to continue to be required for use as drinking water, irrigation and stock water.



#### A.9.4 Potential operation source-pathway-receptor linkages

Preliminary source, pathway and receptor linkages has been developed to establish potential linkages and is detailed below. A summary of potential source, pathway and receptor linkages is provided in Table A-2. Monitoring will be undertaken to assess potential linkages and to inform additional management measures. The monitoring plan is provided in Section A.10.

Table A-2 Conceptual site model summary

Source	Pathway	Receptor	Possible Link and Associated Management Measure(s)	Monitoring
Open Pit	Vertical migration of pit lake water into saturated zone and horizontal migration.	Sandover River Pastoral Bores	Unlikely The pit is not expected to intercept local groundwater.	Nested monitoring bores with quarterly sampling to assess potential impact against the groundwater baseline and up-gradient monitoring wells.
ROM Pad	Overland flow from stockpile bases entering drainage pathways and ultimately infiltrating into the aquifer. Vertical migration through unsaturated zone into saturated zone and horizontal migration.		Unlikely The ROM Pad and Stockpile Pad will be constructed with impermeable bases ( $1 \times 10^{-8}$ m/s) with surface drainage captured within stormwater retention ponds.	Surface water sampling within watercourses during flow events. Sampling of discharges in accordance with the Emergency Overflow Procedure.
Ore Stockpile				
TSF	Overflow from structure and entering creeks and ultimately infiltrating into the aquifer. Vertical migration through unsaturated zone into saturated zone and horizontal migration.		Unlikely Out of pit TSF constructed with capacity to capture a 100 year 72 hour ARI. Contingency measures will be available to transfer excess water to alternative storage/pit.	Surface water sampling within watercourses during flow events. Sampling of discharges in accordance with the Emergency Overflow Procedure. Nested monitoring bores with quarterly sampling to assess potential impact against the groundwater baseline and up-gradient monitoring wells.
Fuel Farm	Vertical migration through unsaturated zone into saturated zone and horizontal migration.		Improbable Fuel stored in self-bunded Above Ground Storage Tanks (ASTs) and Fuel Inventory (Loss Management) monitoring in accordance with the Hazardous Substances Management Plan.	Spills or sabotage will be managed in accordance with the Emergency Response Management Plan (ERMP) including the Environmental Investigation Procedure.

**Note:** Scales of Likelihood include improbable, unlikely, possible and probable.

## A.10 Monitoring program

### A.10.1 Multiple before-after control-impact

Monitoring will be undertaken in accordance with the Multiple Before-After Control-Impact (MBACI) approach due to the large scale and potential for permanent and/or long term water related environmental impacts. The monitoring program has been designed to include:

- Control Sites: upstream / up gradient monitoring sites which monitor background concentrations. Multiple control sites will be utilised.
- Adjacent: monitoring points situated adjacent to potential point sources of contamination (i.e. locations storing process water and dirty water), often called 'point of discharge'.
- Impact Site: downstream / down gradient monitoring sites. Multiple impact sites will be utilised.

All monitoring sites will be located and installed in locations where the future Project footprint will enable monitoring consistency throughout the Project life.

### A.10.2 Sampling periods

Water quality monitoring combines surface water, sediment and groundwater which will occur upstream/up gradient, adjacent and downstream / down gradient of the Project. The construction period will be used as the baseline period to capture a robust groundwater, sediment and surface water (where available) dataset.

The basis of each phase of monitoring is provided in Table A-3.

Table A-3 Sampling period and basis

Sampling Period	Duration	Basis
Baseline	30 month	Establish existing conditions at the Project for surface water, sediment and groundwater. Baseline period monitoring will be used to establish a definitive dataset from which potential impacts can be assessed during operation, care and maintenance and/or rehabilitation.
Operation	Life of mine	Assess monitoring data against baseline to determine if an impact has or is occurring. If significant differences between baseline and operation monitoring periods occur further management measures will be investigated and implemented as required.
Care and Maintenance	-	Assess Project impact to the surrounding environment through care and maintenance activities (i.e. minimal activities and/or management occurring). If significant differences between baseline and care and maintenance monitoring periods occur further management measures will be investigated and implemented as required.
Rehabilitation	-	Utilise baseline sampling data as the ultimate rehabilitation goal for groundwater, sediment and surface water.

### A.10.3 Monitoring summary

The monitoring program has been designed to capture both baseline conditions and assess potential impacts from the operation. Monitoring will ultimately be utilised to assess if the Project is impacting the surrounding environment and to inform rehabilitation goals. A summary of monitoring program is provided in Table A-4 and Table A-5.

The number and location of the monitoring points, sampling frequency and analyte suite will be finalised following the detailed design.

Table A-4 Baseline monitoring

Monitoring	Number of Locations	Matrix	Frequency / Date	
			Field Measurements	Field and Laboratory
<b>Mine Site</b>				
Surface Water	<i>tbc</i>	Water	-	Early flows and late flows
Groundwater	<i>tbc</i>	Water	Biannual	Quarterly
Groundwater – up-gradient	<i>tbc</i>	Water	Monthly	Monthly
Sediment	<i>tbc</i>	Sediment	-	Annually
Photopoint Monitoring	<i>tbc</i>	n/a	Six Monthly	-
<b>Borefield</b>				
Groundwater	<i>tbc</i>	Water	Quarterly	Biannual
Production Wells	<i>tbc</i>	Water	Quarterly	Biannual

Table A-5 Operational monitoring

Monitoring	Number of Locations	Matrix	Frequency / Date	
			Field Measurements	Field and Laboratory
<b>Mine Site</b>				
Surface Water	<i>tbc</i>	Water	-	Early flows and late flows <sup>#</sup>
Stormwater Retention Ponds	<i>tbc</i>	Water	Monthly	Quarterly
Groundwater	<i>tbc</i>	Water	Quarterly	Quarterly
Sediment	<i>tbc</i>	Sediment	-	Annually
Photopoint Monitoring	<i>tbc</i>	n/a	Annual	-
Open Pit	<i>tbc</i>	Water	Monthly	Quarterly
Surface Tailings Storage Facility	<i>tbc</i>	Water	Monthly	Quarterly
<b>Borefield</b>				
Groundwater	<i>tbc</i>	Water	Monthly	Quarterly

## A.11 Quality assurance and quality control

Quality Assurance (QA) involves all of the actions, procedures, checks and decisions, undertaken to ensure the representativeness and integrity of samples and accuracy and reliability of analytical results (NEPC 1999). Quality Control (QC) involves protocols to monitor and measure the effectiveness of QA procedures.

The QA/QC procedures will be based on AS 5567.1 – 1998 and will be implemented during sampling.

## A.12 References

ANZECC / ARMCANZ (2000a) *Australian and New Zealand guidelines for fresh and marine water quality, Volume 1, the guidelines*. National Water Quality Management Strategy Paper No. 4, Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

ANZECC / ARMCANZ (2000b) *Australian guidelines for water quality monitoring and reporting*. National Water Quality Management Strategy Paper No 7, Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

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IECA (2008), *Best practice erosion and sediment control*. International Erosion Control Association (Australasia), Picton NSW.

NEPC (1999) *National environment protection (assessment of site contamination) measure*, National Environmental Protection Council.

NRMMC (2011) *Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy*. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra.

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# Appendix B – Cultural heritage management plan



Verdant Minerals Limited  
Ammaroo Phosphate Project  
Cultural Heritage Management Plan

October 2017



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## B. Cultural heritage management plan

### B.1 Introduction

#### B.1.1 Purpose

The purpose of this CHMP is to provide a framework for management of cultural heritage for the Project site. The plan has been developed in accordance with Northern Territory legislation and agreements relating to culture heritage management.

#### B.1.2 Objectives

This CHMP has been developed to protect the identified cultural heritage values in the Project site, and to guide the management of additional, as yet unknown heritage materials that may be identified during the life of the mine, inclusive of construction, mining, decommissioning and rehabilitation.

The CHMP has been designed to achieve this objective through the following processes:

- Avoid impact to significant areas of cultural value.
- Implement ongoing protection measures of key areas.
- Provide specific guidelines for the mitigation of impacts to known heritage values that will be directly and indirectly impacted by the Project.
- Develop procedures for the management of discovery of heritage items during the course of the Project.

Traditional Owners will be given the opportunity to review the CHMP prior to implementation, and following any significant changes.

#### B.1.3 Legislative Context

Commonwealth and Territory legislation relevant to the protection and management of Aboriginal and historic heritage in the Northern Territory is summarised in Table B-1 below, including examples of their application to specific heritage values within the Project site.

Table B-1 Legislative context

Legislation	Description	Examples
<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1986 (Cth).</i>	<p>Preserves and protects significant Aboriginal areas, objects and classes of objects from threats of injury or desecration; If it appears that State or Territory Laws have not provided effective protection.</p> <p>The government can make special orders, called declarations, to protect significant Aboriginal areas, objects and classes of objects from threats of injury or desecration.</p>	Stone artefact scatters, quarries.
<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth).</i>	<p>Protects natural, Indigenous and historic places that are of outstanding heritage value to the nation, or are owned or controlled by the Australian Government. Establishes the National Heritage List and Commonwealth Heritage List.</p>	INone on site
<i>Sacred Sites Act 1989 (NT).</i>	<p>Protects sacred sites in the NT that are ‘<i>sacred and otherwise of significance in the Aboriginal Tradition</i>’ whether the location of the sites are known or not, and is administered by the Aboriginal Areas Protection Authority (AAPA), which is responsible for issuing Authority Certificates.</p> <p>The Certificates set out conditions for carrying out proposed works or using land in the vicinity of sacred sites within the subject land.</p>	Rock formations, soakages and hills
<i>Heritage Act 2011 (NT).</i>	<p>Provides protection to nominated areas, places, sites, buildings, shipwrecks and heritage objects on the NT Heritage Register from accidental and deliberate damage or harm.</p> <p>The Act allows for processes to approve works and maintenance for a heritage place.</p> <p>Provides ‘blanket’ or ‘presumptive’ protection for Aboriginal and Macassan archaeological places and objects across the NT until a decision by the Minister to either permanently protect these places or approve their disturbance or destruction.</p>	<p>Stone artefact scatters, stone artefact quarries</p> <p>Illumric Bore</p>

## B.2 Heritage values

### B.2.1 CLC exclusion zones

There are 25 cultural exclusion zones previously identified by the CLC within, and partially within, the Project site. There has been no additional information provided regarding the nature or features within these sites.

### B.2.2 Archaeological Sites

The archaeological investigation identified a total 110 archaeological sites, including

- 34 archaeological sites
- 29 artefact scatters
- two artefact scatter/quarries
- three artefact scatter/knapping floors

- 76 isolated artefacts.

Sites and isolated artefact that are contained within the proposed Project footprint is detailed in Table B-2.

Table B-2 Archaeological sites/scatters within the proposed Project footprint

Proposed Infrastructure	Archaeological Site	Isolated Artefact
Transport corridor	APP-13	APP-ISO-53, APP-ISO-54, APP-ISO-55, APP-ISO-68
Processing plant area and tailings storage facility	APP-14	APP-ISO-42, APP-ISO-43, APP-ISO-44A, APP-ISO-44B
Mine site	APP-12, APP-20	APP-ISO-27, APP-ISO-28A, APP-ISO-28B, APP-ISO-32, APP-ISO-31
Borefield	APP-06, APP-07	APP-ISO-16

### B.2.3 Historical heritage sites

There are no historic (non-Aboriginal) sites, places or objects with heritage significance identified within the surveyed area of the Project. The nearest registered historic items are Barrow Creek Hotel, Barrow Creek Telegraph Station, and Neutral Junction Homestead (Old), which are approximately 50 km south of the transport corridor, and 110 km west of the mine site.

There is one item of potential heritage significance relating to past land use. This is the Ilburnic Bore, an abandoned government bore in the north east of the Project site. This includes associated objects such as remnants of a water pump, discharge pipe and storage tank, and Mark BD-C Southern Cross diesel engine. These objects are roughly contemporaneous with the sinking of the bore in the late 1940s to early 1950s. They have limited research value and are unlikely to yield new or further substantive information that would contribute to an understanding of the Northern Territory's cultural history.

## B.3 Potential impacts

The Project will have varying potential direct and indirect impacts on identified cultural heritage sites.

### B.3.1 Direct impacts

There will be direct impacts on a number of identified sites located in key areas of the Project footprint.

There are no archaeological sites or isolated artefacts of high scientific significance. Sites with moderate scientific significance within the curtilage of proposed infrastructure are listed in Table B-3. These sites feature artefact scatter/quarry, and artefact scatter/knapping floor. There are five isolated artefacts of moderate scientific significance (Table B-3). These involve artefacts such as grindstone and flake.

No direct impact to CLC exclusion zones is predicted

Table B-3 Archaeological sites within project the project footprint

Location	Archaeological site			Isolated artefacts			Total
	Value	Low	Moderate	Total	Low	Moderate	
Borefield	1	1	2	1	-	1	3
Mine site	1	1	2	5	-	5	7
Processing plant and tailings storage facility	1	-	1	4	-	4	5
Transport corridor	1	-	1	3	1	4	5
Total	4	2	6	13	1	14	20

### B.3.2 Indirect impacts

Indirect impacts have the potential to occur during pipeline construction, vegetation clearing, waste removal, vehicle movement and construction of access roads. Disturbance or partial destruction of archaeological sites may result from impacts such as dust and vibration, minor construction and fencing, storage of materials, and passing through areas in light vehicle.

In total, 61 archaeological sites and isolated artefacts are located outside the proposed infrastructure footprint and have potential to be indirectly impacted by the Project.

There are no archaeological sites or isolated artefacts of high scientific significance. Five sites have moderate scientific significance and all feature artefact scatters. Seven isolated artefacts have moderate scientific significance.

Table B-4 Archaeological sites/scatters outside the direct project footprint

Location	Archaeological site			Isolated artefacts			Total
	Value	Low	Moderate	Total	Low	Moderate	
Outside proposed infrastructure footprint	15	5	20	34	7	41	61

## B.4 Mitigation and management

The mitigation and management measures nominated for cultural heritage sites within the Project site are based on:

- Projected impacts to archaeological sites
- Assessed scientific significance and where known, overall heritage significance
- Legislative requirements and the planning approval framework
- Heritage best practice in accordance with the principles of *The Australia ICOMOS Charter for Places of Cultural Significance, 2013* (The Burra Charter).

The opportunity to avoid detrimental impact to identified sites will be considered and exercised where reasonably practicable. However, the construction phase of the Project cannot completely avoid harm to archaeological sites. Where sites are unable to be avoided, it is imperative to ensure appropriate procedures are followed. Where necessary, and prior to carrying out works, an Application to Carry Out Work on Heritage Place or Object will be submitted to the Director of the Heritage Branch, Department of Lands, Planning and

Environment (DLPE) for approval. It is noted that approval may not be granted or that approval may be granted with conditions.

Various mitigation measures and procedures have been identified based on the type of site, site features, level of impact (direct or indirect), and significance of the site in Table B-5.

Should changes to proposed works result in a direct impact to heritage sites where currently an indirect impact is noted, additional mitigation measures would be required. This is also the case for impacts on heritage sites where there is no impact currently determined.

Table B-5 Cultural heritage impact mitigation framework

Site Type	Heritage Significance	Impact	Mitigation Measure
Cultural exclusion zone	High	Indirect	<p>Delineate with temporary fencing or mark with signage for the duration of the construction phase of the mine and maintain a minimum buffer distance of 50 m to avoid accidental impacts.</p> <p>Complete Ground Disturbance Permit for all activity in the vicinity.</p> <p>Consultation and engagement with Traditional Owners and custodians</p>
<p>Archaeological site / isolated artefact</p> <p>Artefact scatter</p> <p>Artefact scatter/quarry</p> <p>Artefact scatter/knapping floor</p>	Moderate/Low	Direct	<p>Consultation with Traditional Owners</p> <p>Works Approval from Heritage Branch prior to works commencing for destruction of the low significance portion of the site.</p> <p>Recording and salvage, or no further action, to be determined following consultation with the Heritage Branch, Traditional Owners and an archaeologist.</p> <p>Consultation and engagement with Traditional Owners and custodians</p>
archaeological site	Moderate/Low	Indirect	<p>Delineate with temporary fencing or signage, if required, for the duration of the construction phase of the mine and maintain a minimum buffer distance of 50 m to avoid accidental impacts.</p> <p>Complete Ground Disturbance Permit for all activity in the vicinity.</p> <p>Code of behaviour.</p> <p>Cross-cultural training as part of induction.</p> <p>Consultation and engagement with Traditional Owners and custodians</p>
Unexpected finds	Unknown	Direct	<p>Pre-clearing / disturbance visual investigations</p> <p>Procedure to manage discovery of unexpected surface or sub-surface items</p> <p>Consultation and engagement with Traditional Owners and custodians</p>

#### B.4.1 Accidental Impacts

In the event that an exclusion zone is accessed or interfered with inadvertently, an emergency response would apply.

In the event of an accidental impact to a historic or cultural heritage item, the following steps would be undertaken:

- Cease all works and contact the Environmental Manager immediately
- The site would be immediately inspected by the Environmental Manager to assess the impact and determine a suitable response, which may include:
  - Inform the Heritage Branch
  - In consultation with the Heritage Branch and Traditional Owners, identify remediation works or appropriate corrective actions to aid in mitigating the impact
  - Reporting the incident detailing the circumstances under which it occurred, corrective actions taken, and lessons learned
- Toolbox talks would be implemented by the Environmental Manager, where the incident is discussed and additional controls identified to avoid the risk of the event occurring again
- Actions taken would be noted within the monthly Reporting Process
- To ensure avoidance of accidental impacts occurring in the future, the CHMP would be reviewed and updated as required, by the Environmental Manager

#### B.4.2 Unexpected Finds

Unexpected finds and human remains procedures will apply across the Project site. These procedures will be explained in the site induction, which is compulsory for all personnel.

#### B.4.3 Consultation

VRM has an ongoing and established relationship with Traditional Owners and was responsible for organising Indigenous stakeholder consultation for the purposes of archaeological surveys.

The provision of this CHMP to Traditional Owners will occur for review purposes prior to implementation, and following any significant revision or modification. Approval will be sought prior to submitting a work approval application for archaeological mitigation or permission to disturb Aboriginal archaeological places and objects within the Project site.

#### B.4.4 Education and Training

To ensure compliance with Commonwealth and Territory legislation relevant to the protection and management of cultural heritage in the Northern Territory, a focus would be on education and training of all personnel on site.

The main purpose of education and training is to emphasise the cultural significance of the area and the value of what is located near site, and how site personnel should or should not interact with these areas. All personnel would be made aware of their legal obligations under the relevant legislation. Education and training would be delivered during site inductions and toolbox talks / presentations.

The key aspects of the training will include:

- The location and types of heritage sites, sacred sites and exclusion zones
- Land title systems in the area
- Cultural background for the Project



- How to identify heritage sites or items
- Conditions of a sacred sites clearance certificates
- The roles and responsibilities of personnel in protecting and managing cultural heritage
- Procedures for ground disturbance
- Procedures for accidental impacts to identified heritage site or sacred sites
- Procedures for unexpected discoveries
- Procedures for human skeletal remains discovery

Specific training will be provided for staff in key positions, dependant on their responsibilities in their roles. The Environmental Manager or delegate will conduct this training.

## B.5 Monitoring

Inspections of identified heritage sites, restricted works areas and exclusion zones by the Environmental Manager will occur for the duration of the Project, to ensure the effectiveness of protection and mitigation measures. Regular processes will include the following:

- Monthly inspections of signage, and flagging or barriers protecting exclusion zones by the Environmental Manager.
- Quarterly inspections of temporary fencing protecting archaeological artefacts and sites by the Environmental Manager.
- Additional monitoring of identified archaeological artefacts and sites by the Environmental Manager if an issue is identified or a complaint is made, as required.

Register of issues identified through inspections will be maintained to ensure that any issues are recorded for future action. The Heritage Site Inspection Register (to be developed) will be used to complete inspections.

## B.6 Reporting

Reporting will be undertaken by the Environmental Manager, and will include

- A Monthly Environmental Performance Report
- Half-Year Report
- Annual Performance Review.

Each report will detail relevant training, inspections, and consultation undertaken for the reporting period relating to heritage management of the Project.

## B.7 Review

This CHMP will be maintained over the life of the Project, and will be reviewed annually to achieve the goal of minimising impacts on cultural heritage. It will be updated as required, and any changes recorded in the document control section of each revision.



# Appendix C – Economic and Social Impact Management Plan



**TrueNorth**  
*strategic communication*

**AMMAROO PROJECT  
DRAFT ECONOMIC AND SOCIAL  
IMPACT MANAGEMENT PLAN**

**DRAFT**

**DOCUMENT and VERSION CONTROL**

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Recipients are responsible for eliminating all superseded documents in their possession

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DRAFT

## 1. Executive summary

This Economic and Social Impact Management Plan (ESIMP) provides an outline of key risks and opportunities identified in the Economic and Social Impact Assessment (ESIA) for Verdant Minerals' Ammaroo Project.

It is intended to be a stand-alone document to guide the company's social performance for the life of the project, including mitigation of negative impacts and enhancement of potential opportunities. It outlines how these will be monitored and managed for the life of the project and sets up a framework for reporting against commitments made. It includes indicators by which management can track changes in the baseline conditions outlined in the Economic and Social Impact Assessment (ESIA) and any emerging issues, a grievance procedure so the community can continue to raise issues and an ongoing engagement and communication strategy.

In general, the Ammaroo project is assessed as being of a smaller scale than many other regional mines given that it will use strip-mining techniques and a relatively small workforce.

The (ESIA) identifies that the key opportunities from the project will arise from procurement of local services and supplies (which should provide a good match with local capabilities), and jobs for local Aboriginal people (as long as expectations remain realistic about the likely take-up rates).

Key negative risks arise from increased industrial traffic on poor local roads (albeit for a limited period during construction), which may have some implications for pastoral productivity, other road users and road safety for both mine workers and the public. On the other hand, any upgrading of local infrastructure such as roads will deliver social and economic benefits.

This assessment finds a total of eight opportunities of significance and 27 potentially negative risks (this does not include pressure on road transport and road safety risks which are covered under Transport and Human Health and Safety).

The four opportunities with a HIGH rating were:

- benefits from local businesses winning work
- jobs for local people
- jobs drawing on traditional knowledge
- legacy infrastructure.

Of the negative potential risks, there were none with an overall HIGH or EXTREME rating, eight attracted a MEDIUM significance risk rating and 19 were assessed as LOW. The eight medium ratings were:

- local content targets not met due to lack of capacity or skills (#40)
- increased pressure on emergency services, particularly from road trauma (#43)
- not meeting expectations of local Aboriginal jobs (#44)



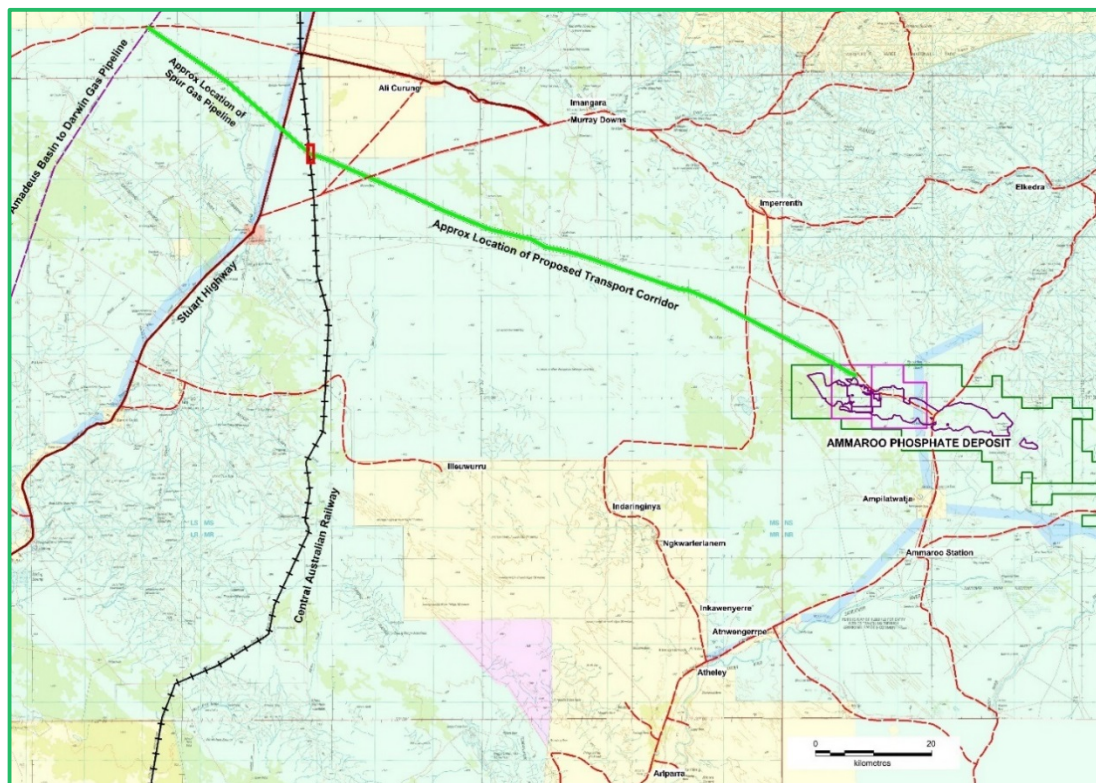
- mental health issues for workers living away from home (#49)
- reduced community cohesion and tensions over distribution of royalties and benefits, including from rumours (#52)
- increased crime, vandalism and thefts from company facilities or in the region as a result of project mobilisation (#57)
- destruction of sacred sites or special cultural areas leading to reduced spiritual or cultural connections (#77)
- pressure on transport infrastructure during construction (#118).

This ESIMP lists all economic and social risks and opportunities, their residual risk ratings and suggested mitigation and on-going management measures, including commitments by Verdant Minerals in relation to its ongoing social performance.

## 2. Outline of the project

Verdant Minerals Limited is an ASX-listed, Darwin-headquartered company exploring phosphate, potash and silica deposits in the Northern Territory, South Australia and Western Australia. Its flagship Ammaroo Phosphate Project is mid-way between Tennant Creek and Alice Springs in the Northern Territory.

The project covers a large phosphate deposit on pastoral land in the Georgina Basin about 220 kilometres (km) south-east of Tennant Creek. Verdant also has exploration licences on nearby Elkedra and Derry Downs pastoral leases, with Ammaroo offering potential for later expansion.



Recovery of the rich phosphate deposit is expected to be relatively low cost, due to shallow ore which can be extracted without the need for drilling and blasting, with progressive strip-mining of about 30 hectares at a time. Topsoil will be removed from shallow pits and stored for later rehabilitation. The \$300 million first stage of the project is expected to produce 1-2 million tonnes a year (Mtpa) of phosphate rock concentrate for export to Asian fertiliser markets.

This ESIMP covers construction of the mine and supporting infrastructure, then the extraction, beneficiation and transport of concentrate by rail to Darwin. It includes initial construction and workforce traffic along the Murray Downs Road, a workers' accommodation village near the proposed mine, a railway spur line to the Adelaide to Darwin Railway and associated mine buildings and infrastructure.

### 3. Plan

This Social Impact Management Plan (ESIMP) is intended as a stand-alone document that summarises significant impacts of the Ammaroo Project and outlines management plans to guide the company's long-term social performance. In essence, it covers impacts from the perspective of the people whose lives, livelihoods and lifestyles are affected by the project.

The plan summarises key findings of the Social Impact Assessment (ESIA) and outlines the management measures Verdant Minerals will take to avoid or minimise negative impacts and enhance potential benefits of the project.

The ESIMP assumes:

- ongoing community input to the company's social performance, such as through a local advisory group involving traditional owners, local government, government, pastoralists and other local people where community stakeholders can raise issues;
- ongoing measurement against key indicators so progress can be monitored on issues such as local content and jobs, incidents involving worker behaviour, pressure on government services such as housing, implementation of commitments programs, and operation of grievance procedures;
- annual public reporting to both the community and Verdant's Board against these indicators in a simple format, such as an annual report card or sustainability report;
- management will be held accountable for the company's ongoing social performance, by reporting to Verdant Minerals' Board against agreed management plans and commitments and associated key performance criteria.

The ESIMP is intended to be a practical, succinct and readable document. It allows for a flexible, adaptive approach to identify and respond to emerging issues and considers long-term legacies of the project over the life cycle of the mine.

### 3.1 Methodology

Scoping for the ESIA informed a multidisciplinary risk and opportunities workshop, adopting methodology in line with the *AS/NZS ISO 31000:2009 Risk Management – Principles and guidelines*, with ratings further refined after fieldwork.

The ESIA profiled the communities affected by the project, gathered baseline data, then used qualitative data from interviews to complete the picture of the project's economic and social context and predict likely risks and opportunities. The impacts are both positive and negative, direct and indirect and long and short-term. Some impacts may be unintended or difficult to manage. Ratings are higher where there is uncertainty or potential loss of life.

Based on an initial issues analysis, potential impacts were then categorised, using as guidance the International Association for Impact Assessment (IAIA) Principles (Vanclay, 2003) and Guidelines (Vanclay et al., 2015) description of social impacts as those that impact on:

- **people's way of life:** how they live, work, play and interact with each other
- **their culture,** or shared beliefs, customs, values, language or dialect
- **their political systems,** or the extent to which people can participate in decisions that affect their lives
- **their environment,** including the quality of air and water, food, the level of hazard, dust and noise, physical safety and access to natural resources
- **their health and wellbeing,** which is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity
- **their personal and property rights,** including a violation of their civil liberties
- **their fears and aspirations,** including perceptions of safety, fears about the future of their community and aspirations for their future and the future of their children.

### 3.2 The concept of social sustainability

The concept of social sustainability is based on ensuring a positive legacy beyond the life of a project. For a project to be 'sustainable' it must be economically, technically, environmentally and socially beneficial for both the company and the community, taking particular account of impacts on vulnerable or disadvantaged peoples.

### 3.3 Community consultation

Community consultation for EIS and ESIA spanned March to June of 2017 in Darwin, Alice Springs, Tennant Creek, Ampilatwatja and Arlparra, with additional interviews by phone. Findings incorporated a briefing from the company about a series of earlier meetings with traditional owners between 2011 and 2016.

Consultation was guided by a community consultation and communication strategy and materials that helped explain elements of the project to diverse audiences.

(See Community Consultation Report at Appendix F for more detail.)

### 3.4 Requirements of the Northern Territory Environment Protection Authority

The NTEPA's guidelines for preparing an Economic and Social Management Plan stipulate that the plan will:

- establish the roles and responsibilities of the proponent, government, stakeholders and the community in mitigating and managing impacts and making the most of opportunities through the life of a project;
- include an outline of current and proposed stakeholder engagement strategies;
- prioritise potential economic and social impacts predicted in the ESIA;
- outline mitigation and management strategies for identified risks, including a register of agreed activities and commitments;
- monitoring, reporting and review mechanisms, including the ability for stakeholders to raise new issues;
- mechanisms to resolve new and emerging issues as they transpire and to amend the ESIA;
- a communication strategy.

#### 4. Key findings of the ESIA

In general, the Ammaroo project is assessed as being of a smaller scale than many other regional mining projects given that it will use strip-mining techniques and a relatively small workforce.

The ESIA identifies that the key opportunities from the project will arise from procurement of local services and supplies (which should provide a good match with local capabilities), and jobs for local Aboriginal people (as long as expectations remain realistic about the likely take-up rates).

Key negative risks arise from increased industrial traffic on poor local roads (albeit for a limited period during construction), which may have some implications for pastoral productivity, other road users and road safety for both mine workers and the public. On the other hand, any upgrading of local infrastructure such as roads will deliver social and economic benefits.

This assessment finds a total of eight opportunities of significance and 27 potentially negative risks (this does not include pressure on road transport and road safety risks which are covered under Transport and Human Health and Safety).

The four opportunities with a HIGH rating were:

- benefits from local businesses winning work
- jobs for local people
- jobs drawing on traditional knowledge
- legacy infrastructure.

Of the negative potential risks, there were none with an overall HIGH or EXTREME rating, eight attracted a MEDIUM significance risk rating and 19 were assessed as LOW. The eight medium ratings were:

- local content targets not met due to lack of capacity or skills (#40)
- increased pressure on emergency services, particularly from road trauma (#43)
- not meeting expectations of local Aboriginal jobs (#44)
- mental health issues for workers living away from home (#49)
- reduced community cohesion and tensions over distribution of royalties and benefits, including from rumours (#52)
- increased crime, vandalism and thefts from company facilities or in the region as a result of project mobilisation (#57)
- destruction of sacred sites or special cultural areas leading to reduced spiritual or cultural connections (#77)
- pressure on transport infrastructure during construction (#118).

For those negative impacts considered unlikely, risk ratings may remain high simply because of the consequences of them occurring, particularly where there is loss of life or sacred sites.

Many impacts are intangible and hard to control, with the level of uncertainty reflected in some ratings.

#### 4.1 Population and communities

Risks and opportunities for people and communities				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Reduced community cohesion due to demographic changes	46	Low	Work with the community to plan for any influx of people.	Demographic data and trends, including age and gender profiles, mobility.
Reduced community cohesion through distribution of benefits	52	Medium	Work with the CLC and communicate well to manage expectations.	Number of complaints; Feelings of safety and wellbeing; Reports of conflict.
Reduced community amenity from alcohol and low-level crime	47	Low	Worker code of behaviour, controls over use of alcohol in the workplace; Security.	Levels of reported crime; Feelings of safety and wellbeing
Reduced participation and volunteering (including sport), from workers being away or on shift.	59	Low	Share site resources; Rostering to cater for major sporting events.	No of employees who held voluntary positions in local communities; Level of volunteering.

##### 4.1.1 Key findings relating to population and communities

- there is unlikely to be a noticeable impact on the populations of regional towns, given the relatively small scale of the project, the distance of towns from the project and the unlikely relocation of a significant number of families;
- however, there could be an in-migration of Alyawarre families to Ampilatwajta to access jobs and benefits from the project, given the high level of mobility and relatedness of people dispersed across the region, which could generate friction between families;
- the interaction of external workers and the local community will be minimised, with strict controls over alcohol consumption, while FIFO workers will be transported direct to site which will minimise opportunities for 'binge' drinking in regional towns;

- the key impact on community participation and volunteering is likely to be localised, particularly if young footballers seek jobs at the mine and are then unavailable for training and games.

#### 4.1.2 Management and mitigation

Mitigation and management measures to minimise disruption to local and regional community cohesion include:

- limiting interaction between FIFO workers and local and regional communities;
- a strict Code of Behaviour for all workers;
- strict controls over the consumption of alcohol and any associated misbehaviour in the workers' village;
- limiting cash payments and working with the Central Land Council (CLC) to distribute royalty money in the form of investment in community development and social infrastructure and education;
- good communication to manage expectations about jobs and 'money' matters.



## 4.2 Economic contribution and impacts

Risks and opportunities for economic				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Contracts to local businesses delivers economic benefits and capacity building	1	Op High	Work with ICN, NT Government, Chamber, REDCs to package and promote tenders to suit local capacity.	Number of local contracts awarded; Value of local contracts awarded.
Payments to contractors and workers stimulates the regional economy and GSP	4	Op Medium	Work with ICN, NT Government, Chamber, REDCs to package and promote tenders to suit local capacity.	Number of local contracts awarded; Value of local contracts awarded; Change in regional GSP.
Increased pastoral productivity (new bores, infrastructure, upgraded roads)	9	Op Low	Work with pastoralists to align project infrastructure with their needs, where possible.	Extent of new areas opened up for grazing; Value of new infrastructure shared with pastoralists
Mobilisation of workforce leads to relocation of families to the region, increasing economic activity	5	Op Low	Recruitment provides incentives for families to relocate to Alice Springs or Tennant Creek.	Number of families who relocate; Duration of families' stay in regional centres.
Reduced pastoral productivity because of impacts on groundwater	3	Low	Rigorous modelling to ensure bores are not impacted by drawdown; Rigorous monitoring to provide early warning of any impact.	Aquifer levels; Pumping rates for bores.
Reduced pastoral productivity because of traffic, dust, noise, weeds, erosion.	25	Low	Traffic, noise, dust, weed management plans; Liaison with pastoralists,	Traffic counts; Noise, dust and weed levels; Number of complaints;

			particularly during mustering.	Satisfaction levels (survey).
Impacts on productivity from loss of staff to the project and difficulties backfilling.	48	Low	Look at joint training opportunities.	Number of staff coming from other local jobs; Job vacancies.
Inflationary pressures through scarcity of goods, pressure on housing affordability and availability	51	Low	Balanced use of local short-term accommodation; Monitor impacts of company procurement.	Regional CPI, basket of goods surveys; Cost and availability of private housing in Tennant Creek and Alice Springs; Cost of other key services (eg child care).
Local content targets not met due to lack of capacity or skills	40	Medium	Work with ICN, NT Government, Chamber, REDCs to package and promote tenders to suit local capacity, boost skills, prepare businesses for competitiveness and standards required by Verdant.	Number of local contracts awarded; Value of local contracts awarded; Complaints from local companies.
Short-term construction causes 'boom-bust', with over-capitalisation by small companies to win work	60	Low	Ensure companies tendering for work don't over-extend; Good communication about timing and scale of contracts.	Business failures.
Displacement of sectors such as tourism by FIFO workers taking up short-term accommodation in towns and seats on planes	50	Low	Manage number of FIFO workers taking up short-term accommodation and flights; Fly or bus workers direct to site.	Occupancy rates of short-term accommodation; Number of bed nights used by the project in regional towns; Number of seats taken up on regional flights; Cost and availability of regional flights.

#### 4.2.1 Key findings

It was assessed that:

- the nature and scale of the project is likely to suit the experience and capacity of small businesses in Alice Springs and Tennant Creek, leading to good local content outcomes, however good communication will be important in flagging Verdant's procurement standards and managing any unrealistic expectations;
- it is unlikely that non-Aboriginal families will move to the region because of the project, given the distance of towns such as Tennant Creek and Alice Springs from the project;
- pastoral productivity could be disrupted by aspects of the project, most particularly traffic on local roads, but to a lesser extent by dust, noise, vibrations and weeds;
- the likelihood of the project's use of water having a detrimental impact on pastoralists' bores is low given the size of the Georgina Basin aquifer, modelling of drawdown cones and long lead-time that would be provided by monitoring results should any impact be detected;
- displacement of tourism from the project is unlikely given the limited use of short-term accommodation in Tennant Creek and the generally insignificant impact in Alice Springs (although care will be needed to take account of high occupancy rates at peak periods);
- the project is unlikely to create inflationary pressures given its distance from towns, the lack of commercial accommodation in Ampilatwatja (apart from that run by the Aherrenge Store) and scale of change for local services and supplies;
- major resource projects can have a 'boom bust' effect on regional areas through exponential change at the start and end of projects including, on a smaller scale, local businesses over-investing in plant and equipment in expectation of contracts; however this risk should be manageable with good communication and ensuring business capabilities match contracts.

#### 4.2.2 Management and mitigation

Opportunities will be enhanced and risks reduced by:

- working closely with the ICN, Chamber of Commerce and Governments to package tenders in a way that suits local businesses (where this is commercially reasonable), communicate opportunities and manage expectations;
- Verdant will prepare a Local Industry Participation Plan as part of its obligations under the Project Development Agreement with the NT Government (as a result of being awarded major project status);
- in assessing tenders, Verdant will clearly communicate the timing and scale of contracts to minimise the risk of businesses over-capitalising in equipment;

- Verdant will contribute to regional training programs that enhance the skills of potential staff but which may also help other employers backfill positions of staff moving to work at the mine;
- Verdant will work closely with pastoralists to share water monitoring data and discuss where production bores might be located to the mutual benefit of both Verdant and pastoralists;
- Verdant will liaise with other short-term projects, such as Jemena's Northern Gas Pipeline, to sequence works where possible;
- Verdant will work closely with Government, Barkly Regional Council, pastoralists and communities to maximise any common user infrastructure that will have broader social and economic benefits for the region, such as roads and improved telecommunications.

### 4.3 Employment and education

Risks and opportunities for employment and education				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Mobilisation leads to jobs for locals, particularly Aboriginal	2	Op High	Work with employment and training providers to provide advance notice of jobs; Workforce planning that reduces structural and cultural barriers to work.	Number of locals who win jobs; Retention rates for local workers; Local Aboriginal proportion of workforce.
Progressive rehabilitation provides jobs that draw on traditional knowledge and connections to country	3	Op High	Work with CLC and traditional owners to explore opportunities for land management and cottage industries; Explore commercial opportunities such as bush foods in revegetated areas.	Number of jobs in rehabilitation and support areas; Number of people working in land management as a result of the project; Number of contracts or business opportunities generated.
Failure meet expectations for local jobs due to lack of work-readiness, structural and cultural issues.	44	Medium	Workforce planning to address barriers to employment; Support structures for local staff; Good communication on jobs available, including site visits; Good communication on reasons why expectations have not been met; Collaboration with the community, NT and Australian Governments, employment and training providers.	Number of locals who win jobs; Number of unsuccessful local applicants; Number of training courses attended by local people; Retention rates for local workers; Proportion of workforce that is local/Aboriginal.

#### 4.3.1 Key findings relating to employment and education

It is assessed that:

- while educational outcomes remain poor among Aboriginal students in the region, there are encouraging signs of improvement, more students going to boarding school, applying for apprenticeships and completing Year 12, with potential to work with schools to link VET programs to jobs at the mine;
- there are high levels of unemployment and disengagement among Aboriginal people in the region, but this does not mean a ready pool of workers due to the barriers of disadvantage, family and cultural obligations and willingness to work at a remote mine;
- there are virtually non-existent levels of unemployment among non-Aboriginal residents in the region, many of whom are transient, come to the region for jobs and leave either for other work or because their children have reached school-age and they move back to live closer to family;
- however, the project offers great opportunities for local jobs and the mine is likely to meet expectations as long as they are realistic, Verdant implements a workforce plan, cooperates with other employment and training providers to link VET courses and MyPathway workers to jobs, provides support to workers and implements an employment mix that includes labour hire and cottage industries that accommodate cultural and family obligations;
- local employers find it difficult to attract and retain both Aboriginal and non-Aboriginal workers and expect to lose good staff to the project, which means employing and training to back-fill these positions;
- some of the key opportunities are likely to be jobs on country during rehabilitation, which also provides opportunities for seed-gathering, nurseries, and planting bush foods on revegetated land, which would also draw on local traditional knowledge.

#### 4.3.2 Management and mitigation

In order to maximise the opportunities and minimise failure on employment and training issues, it is suggested Verdant:

- develop a workforce development plan, including support mechanisms;
- establish a training committee, with all relevant parties, once the timing of construction is known, to maximise training and work-readiness;
- run driving courses to help local people get jobs driving buses or heavy equipment;
- use a labour hire system for some jobs;
- work with the community to develop business opportunities and communicate the range of opportunities available;
- develop policies for workers, including mentoring and inductions, to provide a safe and welcoming workplace for Aboriginal men and women.

## 4.4 Infrastructure and social services

Key risks and opportunities for infrastructure and social services				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Legacy infrastructure that benefits the community	6	Op High	Work with government to deliver upgraded roads.	Money spent up upgraded road; Improved telecommunications; Other users for railway spur line.
Community infrastructure enhanced as a result of benefits agreement or sponsorship	7	Op Medium	Work with the community and CLC to identify community infrastructure that would benefit the community.	Number and expenditure on community infrastructure projects.
Pressure on social infrastructure (health, education)	42	Low	Likely to be minimal, given Verdant will maintain its own health services.	Project staff presenting to local health services; Number of medical evacuations requiring Health triage.
Pressure on public housing as a result of families moving back to Ampilatwatja	45	Low	Work with NT Government to forecast and prepare for any increased demand for public housing.	Population of Ampilatwatja; Level of overcrowding; Number of residents moving back, including families (if possible to measure) because of the project.
Pressure on transport infrastructure during construction	118	Medium	Upgraded road; Traffic management plan.	Volume of traffic on local roads; Percentage increase of industrial traffic; NT Government budget or beef roads funding allocated to upgrading Murray

				Downs (and proportion that is an increase).
Increased pressure on policing services as a result of crime and alcohol consumption	41	Low	Worker code of conduct to control alcohol consumption and behaviour; Controls over any alcohol leaving site.	Reported alcohol-related crimes; Perceptions of safety; Reported alcohol-related incidents involving workers.
Increased pressure on emergency response capabilities	43	Medium	Project to have its own emergency response capabilities; Fire breaks to reduce the risk of bushfires.	Number of incidents requiring emergency services respond; Number and severity of road trauma incidents involving project vehicles.

#### 4.4.1 Key findings relating to Infrastructure and services

It is assessed that:

- there is likely to be minimal impact on health services, given that Verdant will provide its own, while increased demand for education services from families moving back should be absorbed;
- the key potential impact on social infrastructure would come from families moving back to Ampilatwatja, straining already overcrowded public housing;
- demand for police services may increase slightly as a result of alcohol abuse and crime, however police believe they have the capacity to absorb this and Verdant will have a strict Code of Conduct for workers;
- the condition of local roads and potential for increased road trauma would, however, put pressure on local emergency response capacity, while the incidence of bushfires is unlikely to increase given firebreaks and careful controls;
- the project could contribute positively to social infrastructure, particularly road upgrades that would provide social, safety and economic benefits to other users including pastoralists, the community, tourists, government services and tradespeople visiting communities;
- sponsorships and community benefits distributions could improve community infrastructure, but the extent of investment is largely a matter for agreement-making with traditional owners which is confidential.



#### 4.4.2 Management and mitigation

Management and mitigation measures:

- work with the community to identify ways they can benefit from common user or shared infrastructure;
- work with the Northern Territory Government to seek funding for upgraded local roads and regular maintenance;
- traffic management plan to enhance safe driver behaviour by project transport;
- Verdant to have first response medical capability to reduce pressure on local health clinics;
- Verdant will liaise with the Department of Housing and Community Development to forecast any predicted increase in the population of Ampilatwatja as a result of the project to provide forward planning of the need for increased public housing;
- encourage local workers to live at the accommodation village while on shift, particularly single workers;
- Verdant to have trained emergency response teams on site;
- Verdant to install appropriate firebreaks and safety precautions.

## 4.5 Health, wellbeing and safety

Risks and opportunities for health, wellbeing and safety				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Road safety risks to the public (linked to emergency services risk #43 and transport risk #114)		Medium High	Traffic management plan; Upgraded local roads.	Number of road trauma incidents involving property damage, death or injury.
Road safety risks to workers (Transport risk #117 and Human Health and Safety Risk #84)		Low Medium	Traffic management plan; OH&S plans.	Number of incidents involving death or injury of workers while in transit.
Crime and antisocial behaviour	53	Low	Reduce interaction of external workers with community; Worker code of behaviour.	Incidence of crime and anti-social behaviour involving workers.
Thefts and vandalism of project equipment	57	Medium	Good security of all site venues, including inhalants.	Incidence of thefts or vandalism of project property
Mental health issues involving workers	49	Medium	Good human resource practices and mentoring for Aboriginal staff.	Incidence of self-harm involving workers.
Fears and negative perceptions, eg chemical spills and contamination	32	Low	Good communication; Appoint liaison officer to identify any emerging issues.	Level of community concern (as measured in a survey).
Amenity issues as a result of noise, reduced air quality from dust, vibrations and light.	#62 #64 #70 #82	Low	Management plans controlling noise, vibrations, dust affecting nearby populations and traffic.	Number of complaints on amenity issues; Level of community concern (survey).

#### 4.5.1 Key findings relating to health, wellbeing and safety

It is assessed that:

- the key health, safety and wellbeing risk is likely to arise from road trauma, because of poor roads, the likely volume and mix of traffic and the consequences of any incident (this is largely covered elsewhere);
- the risk also applies to workers travelling by bus from flights and while on site, although the likelihood will be reduced by banning the use of private vehicles to travel to site;
- crime and anti-social behaviour can reduce feelings of safety and wellbeing and could be increased by workers drinking on days off, spending wages on alcohol, or smuggling alcohol from the proposed 'wet' mess in the workers' accommodation village, however there will be a strict policies covering worker behaviour, controls on alcohol consumption and limited transit of workers through nearby towns on their days off;
- FIFO work and living in workers' accommodation away from home and family can give rise to loneliness and mental health issues for workers, which will be addressed with human resource plans;
- unlike more contentious resource projects, the Ammaroo project is relatively low impact, so it is considered unlikely to generate community alarm over contamination or waste disposal;
- amenity impacts such as noise, dust and vibrations are likely to be minimal given the distance of the project from station homesteads and communities, however dust from project traffic is likely to be an amenity issue for other road users during construction.

#### 4.5.2 Management and mitigation

These issues will be addressed by:

- strict policies covering worker behaviour;
- human resource policies that focus on worker welfare;
- drug and alcohol policies at the worksite;
- health promotion programs at the worksite;
- good mentoring and support;
- good communication with the community;
- management plans to control amenity issues.

## 4.6 Culture and heritage

Risks and opportunities for culture and heritage				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Loss of sacred or cultural sites	79	Medium	Appropriate clearance certificates; Inductions for workers; Clearly marked restricted work areas; Code of Conduct for workers regarding respect for cultural sites; Work with traditional owners on surveys before any ground disturbing work.	Number of incidents involving damage to or trespass on sacred or cultural sites; Community satisfaction with respect shown (survey); Number of staff completing inductions.
Reduced access to site or loss of habitat important for traditional activities such as camping, hunting, gathering bush foods or medicine.	#58	Low	Environmental management plan; Arrangements to ensure continued access.	Complaints about reduced access; Size and proportion of areas where habitat is lost or reduced.

### 4.6.1 Key findings on culture and heritage

It is assessed that:

- any destruction or damage to sacred sites or sites of special significance would cause distress to traditional owners and cause a loss of cultural and spiritual connections to country;
- although this can be controlled through proper clearances, working with the Central Land Council and Aboriginal Areas Protection Authority, consulting with traditional owners, cultural inductions, good management plans and marking sites, any deliberate or inadvertent damage would be serious;
- Verdant will liaise with traditional owners to ensure continued access to areas supporting traditional activities and implement control measures in Environmental Management Plans to monitor any loss of habitat (through clearing, erosion or changed groundwater flows) that is important for traditional activities.

#### 4.6.2 Management and mitigation

This risk will be reduced with:

- inductions;
- policies covering worker behaviour;
- observance of the terms of clearance certificates and restricted works areas;
- involving traditional owners in all surveys and seeking advice before any potentially disturbing activities;
- continued access to land for hunting and traditional activities;
- Environmental Management Plan.

## 4.7 Environment

Risks and opportunities for environment				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Negative perceptions about use of water	54	Low	Good communication to clearly explain project's use of water and expected impacts; Share results of water monitoring.	Concerns about projects use of water (survey); Complaints.
Reduced connections to place and recreational activities	81	Low	Code of conduct for workers covering offsite activities; No use of private vehicles.	Complaints about worker behaviour.

### 4.7.1 Key findings on environment

It is assessed that:

- any impacts on biodiversity, ground or surface water could have implications for groundwater dependent systems with cultural, recreational and aesthetic value, however these are considered unlikely;
- while there are many conservation areas and recreational and camping areas in the Davenport Ranges to the north, these are considered too far from the project site to give rise to likely impacts.

### 4.7.2 Management and mitigation

These issues will be managed by:

- good communication on all water and ecological issues;
- involving the community in monitoring and rehabilitation activities.

## 4.8 Human rights

Risks and opportunities for human rights				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Breaches of human rights, through racism, inequitable work practices, breaches of labour laws, native title holders not providing free, prior and informed consent	55	Low	Good HR practices and awareness; Inductions; Land Council identifying native title holders; Culturally-appropriate communication.	Complaints about breaches of human rights; Complaints about lack of free, prior and informed consent.

### 4.8.1 Key findings on human rights

It is assessed that:

- impact assessment is paying increased attention to potential intentional or inadvertent breaches of human rights, from breaches of labour laws, racism, recruitment and workplace practices that may create inequitable opportunities or burdens for women workers;
- while unlikely for this project, the issue is raised to allow for proactive management;
- not obtaining free, prior and informed consent from native title holders is the responsibility of the Central Land Council, however Verdant can contribute through transparent and appropriate communication on the project.

### 4.8.2 Management and mitigation

- Central Land Council identifying native title holders with a right to negotiate and managing negotiations on their behalf;
- inductions for all workers, including management;
- consideration of potential human rights issues in human resource planning and practice;
- codes of behaviour that address any issues that could lead to breaches;
- appropriate grievance procedures and remedies for workers to raise any concerns;
- good communication to traditional owners about all aspects of the project timing, scale, likely disruption and implications.

## 4.9 Cumulative impacts

Risks and opportunities for cumulative social impacts				
Risks and opportunities	#	Residual rating	Mitigation or enhancement	Indicators
Cumulative social impacts with other projects	56	Low	Working with other proponents to sequence work, if possible, and take account of cumulative impacts.	Number of projects operating in the region at the same time.

### 4.9.1 Key findings

It is assessed that:

- cumulative impacts may arise when multiple projects are operating in an area at the same time, including competition for staff, compounding pressure on services and multiple and interacting pressures on the environment;
- however, Verdant will have little control over cumulative impacts other than to liaise with other projects to provide joint planning or sequencing of activities if possible or to transition workers and contractors from one project to the next (eg from the Northern Gas Pipeline).



## 5. Commitments Register

A summary of Verdant Minerals' commitments

<b>Commitment</b>	<b>Responsibility</b>	<b>Accountability</b>
1. Establish community advisory group	Verdant to discuss format with Central Land Council, traditional owners and other community leaders, including proposed governance and leadership; Verdant to facilitate.	Annual report to advisory group and submitted to Verdant's Board.
2. Agree on indicators to be monitored	Advisory group to discuss risks and opportunities identified in this ESIMP and agree on indicators to be measured, how often and reporting.	Annual report to include measurement of agreed indicators against baseline data in ESIA.
3. Grievance register	Verdant to establish a register to be maintained by site management, with agreed protocols and response times for responding to complaints and escalation flow chart. Verdant to commit to appropriate responses in the event of complaints: from communication to redress and remedy or compensate.	Number and type of complaints to be reported on in community advisory group annual report, together with an outline of how complaints were resolved.
4. Management plans	All issues raised in this ESIMP to be addressed in other appropriate management plans where relevant: <ul style="list-style-type: none"> <li>• Environmental, health and safety plan;</li> <li>• Workplace and employment plan;</li> <li>• Traffic Management Plan;</li> <li>• Waste Storage Management Plan;</li> <li>• Accommodation Plan;</li> <li>• Code of Conduct for workers;</li> <li>• Local Industry Participation Plan</li> </ul>	Any reportable economic and social issues covered by other management plans to be covered in annual ESIMP reports.
5 Aboriginal employment	Workplace and employment plan to include provisions to enhance Aboriginal employment and retention and coordination with government and service providers.	Report to community reference group on progress.
6 Industry Participation Plan	As part of Project Development Agreement, Verdant to product an Industry Participation Plan outlining how it will work with the NTICN, Chamber of Commerce and NT	Annual report on value and number of local contracts.

	<p>Government to maximise local content for the project.</p> <p>Verdant to work with business groups to identify local capacity and capabilities before packaging tenders.</p> <p>Good communication on opportunities and expected standards.</p>	
7 Sponsorship and community investment	<p>As part of any benefits agreement negotiated through the CLC, Verdant will seek opportunities to invest in community development, community infrastructure, sport and education and scholarships for young people.</p>	<p>Annual report on sponsorships to community advisory group.</p>
8 Worker policies	<p>Verdant will prepare worker policies covering the behaviour of staff, contractors and sub-contractors to address all issues raised in this ESIMP. This includes issues such as bans on private vehicles, firearms and pets, not leaving the worksite except for authorised work purposes, respecting all sacred and cultural sites, drug and alcohol tests, limits on alcohol consumption, not taking alcohol offsite and general standards of behaviour.</p>	<p>Policies will be public documents.</p>
9 Cultural inductions	<p>All staff, including management and contractors, will attend cultural inductions before starting work.</p>	<p>HR records of attendance at these inductions.</p>
10.Rehabilitation	<p>Verdant will work with the advisory group and local people to plan its land management and rehabilitation activities and look at opportunities to hire staff or award contracts to local people, including potential commercial opportunities for seed gathering, nurseries and revegetation.</p>	<p>Verdant will report on the success of this to the community advisory committee.</p>
11. Monitoring results	<p>Verdant will share monitoring results of interest to the community, such as water monitoring.</p>	<p>To be reported in the community advisory committee annual report.</p>
12. Communication and engagement	<p>Verdant will maintain good communication and engagement with the community through the following:</p> <ul style="list-style-type: none"> <li>• community updates on the project, distributed by email to key stakeholders and placed on community noticeboards;</li> <li>• posting regular updates and community reports on a project page of the company's website;</li> </ul>	<p>Communication and engagement activities to be reported to advisory committee.</p>

	<ul style="list-style-type: none"> <li>• holding annual site visits/open days for the community, particularly for the families of staff;</li> <li>• conducting annual satisfaction surveys with key stakeholders;</li> <li>• maintaining a well-publicised inquiry line and email;</li> <li>• encouraging school visits and work experience by students from nearby schools;</li> <li>• open and honest communication of any incidents in breach of these commitments.</li> </ul>	
13. Cultural access	Verdant will ensure that traditional owners have access to all cultural or significant sites on its minerals leases.	Liaison with project management and recording of requests.

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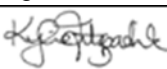
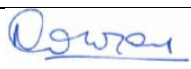
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