



**VERDANT MINERALS ANNUAL  
GENERAL MEETING  
NOVEMBER 2018**



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- Verdant Minerals (ASX: VRM) is focussed on developing its 100% owned long life, low cost Ammaroo phosphate project:
  - Australia's largest phosphate JORC mineral resource. Potential to be a multi generational project
  - Ultra low cadmium rock. Ideally suited as feedstock for the production of phosphoric acid
  - Low strip ratio, low cost mining operation
  - Simple flotation beneficiation
  - Located in Northern Territory of Australia close to underutilised rail, road and gas infrastructure
  - Advantaged access to key Asian markets through the port of Darwin
  - Granted major project status by the Northern Territory Government
  - Engaging with the Federal Government's Northern Australia Infrastructure Development Fund to put in place indicative terms for a substantial portion of the project debt

At the 2017 AGM we said we would complete the following over the ensuing 12 months:

- Feasibility Study for the production of an initial 1 million tonnes per annum of phosphate rock concentrate, followed by a subsequent expansion to produce 2 million tonnes of phosphate rock concentrate after year 5 - **Completed**
- NT Government environmental assessment process - **Completed**
- Federal Government environmental approval under the EPBC Act – **Completed**
- Native Title Agreement and subsequent grant of mineral leases - **Pending**
- Offtake MOUs for up to 450,000 tonne per annum of phosphate rock concentrate – **conversion to binding agreements pending**

# Our near term focus for the Ammaroo Project

- Focus is on completing the basic ‘project building blocks’ and commercialisation of the Project:
  - Completion of Ammaroo Native Title Agreements and grant of Mineral Leases
  - Confirming and optimising the process flowsheet design
  - Advancing final regulatory licences i.e Mine Management Plan
  - Securing project financing arrangements with the Northern Australia Infrastructure Fund, commercial debt providers and/or export credit agencies
- Ramp up of engagement with the global fertiliser industry to establish binding offtake agreements and equity partnerships

# Corporate Overview of Verdant Minerals



## Capital Structure

Ordinary shares on issue	1,103.76m
Options on issue	171.22m
Share price	\$0.015
Market capitalisation	\$17m
Cash (at 30 Sep 2018)	\$1.8m

## Top 5 shareholders

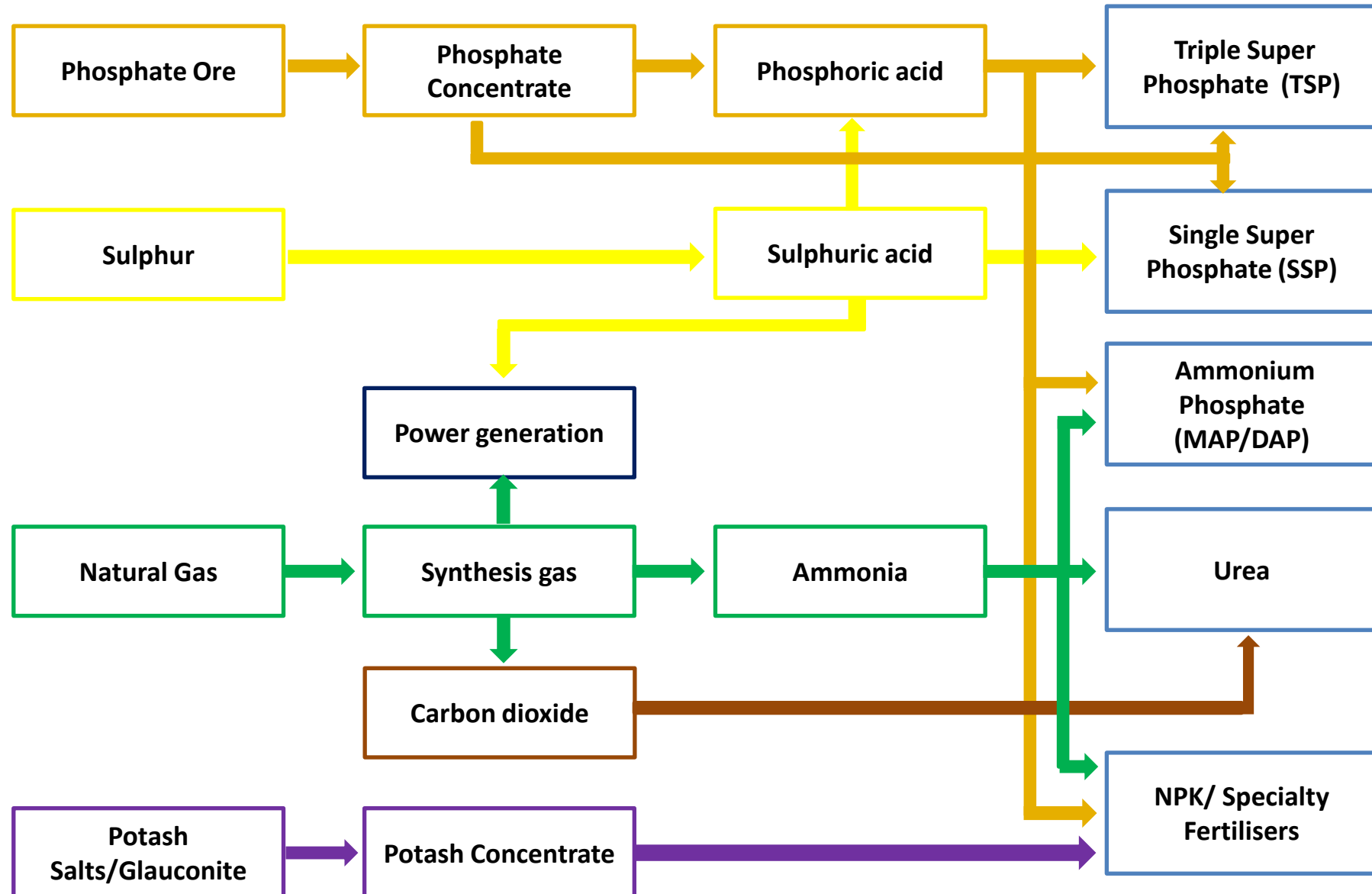
		% held
1	Washington H Soul Pattinson and Company	33.4%
2	Merrill Lynch (Australia) Nominees	4.5%
3	Farjoy	3.7%
4	J P Morgan Nominees	3.5%
5	Citicorp Nominees Pty Ltd	2.6%

## 12 Month Price History



# The development of Ammaroo could be an evolutionary step in creating an integrated fertiliser industry in Northern Australia

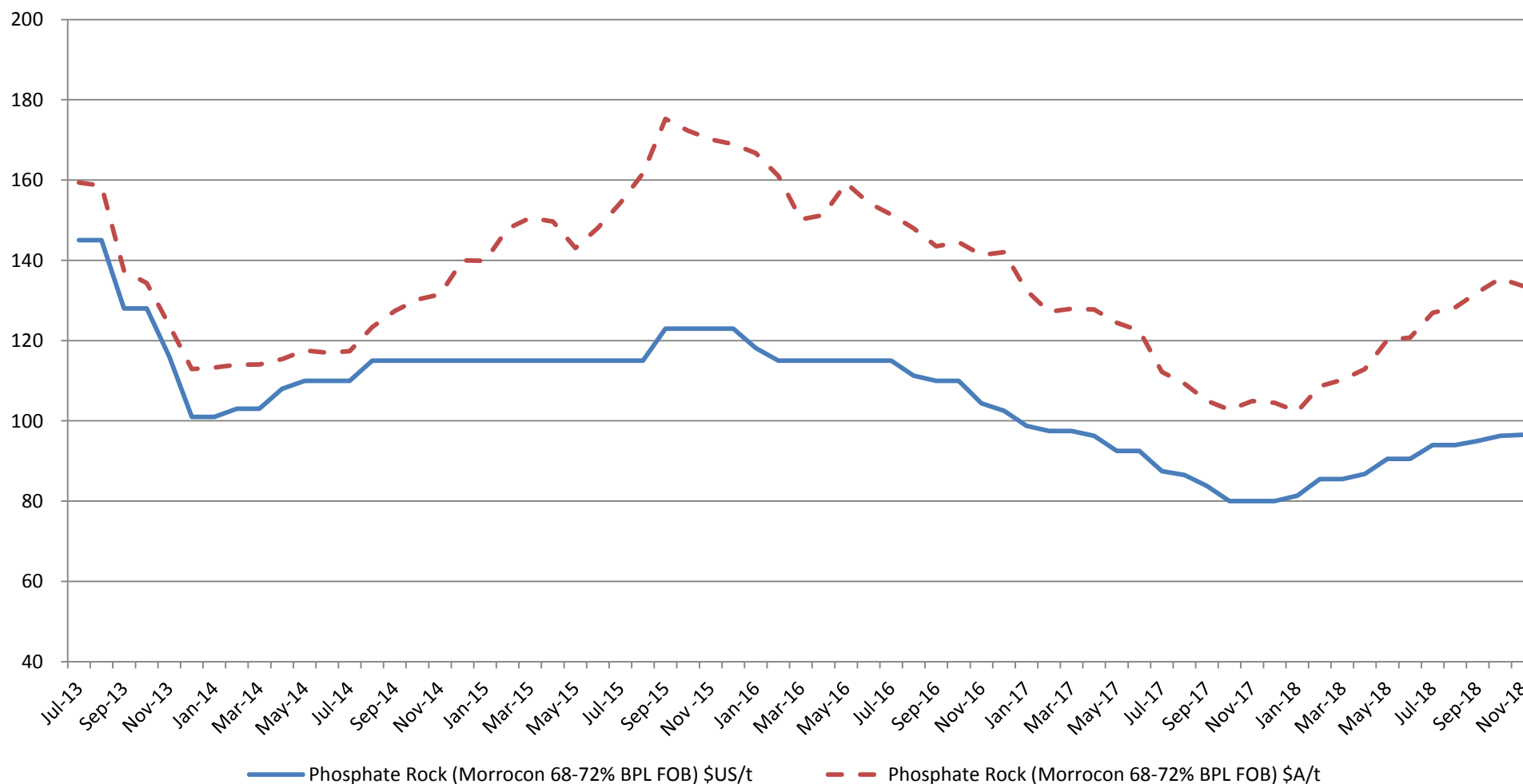
The Northern Territory of Australia is one of the few parts of the world where most of the key fertiliser ingredients are available within close proximity and with competitive access to a number of significant markets





# Phosphate Rock Prices are starting to rise off their lows in both US dollar and Australian dollar terms

## \$/t Phosphate Rock Concentrate Pricing July 2013 – November 2018



- Despite recent new downstream supply additions, prices are rising. Tighter than analyst consensus Supply and Demand (S&D) balance
- Demand growth primarily in Asia, South America and Sub-Saharan Africa
- Indian demand recovery and phosphate subsidy increases assisting price. “Make in India” policy supporting Phosphoric Acid and Rock demand
- Chinese supply reforms and environmental controls are contributing by reducing Chinese fertiliser exports. Potential for up to 4 million tonnes of Chinese DAP/MAP exports to exit the market over next 4 years this tightening S&D balance and holding up prices for downstream products
- Growth in African and South American demand absorbing much of OCP (Morocco) and Saudi capacity additions
- The application of lower Cadmium standards in Europe and potential flow on to other rock markets may be disruptive and offer opportunities for new supply



# AMMAROO PHOSPHATE



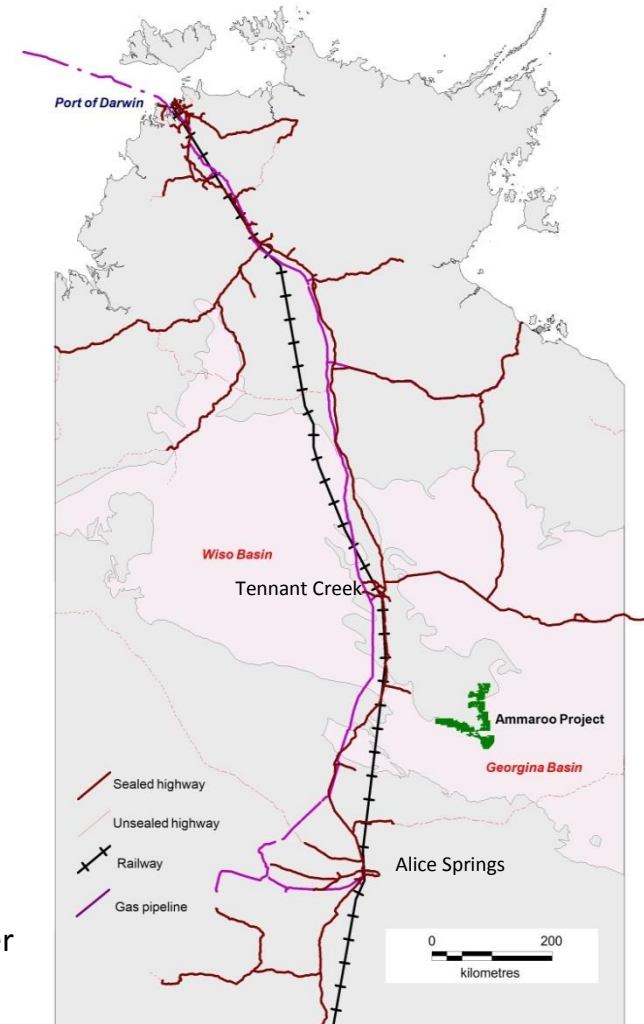
# Ammaroo Phosphate Project overview

The Ammaroo Phosphate Project is the largest JORC compliant rock phosphate resource in Australia

## Overview of the Ammaroo Phosphate project

- Feasibility study completed, environmental approvals process and native title agreement negotiations nearing completion to develop a 2 million tonne per annum phosphate rock concentrate production operation. Staged development planned in 1 million tonne increments
- Federal Government approval granted under EPBC Act. NT Environmental Impact Assessment in Final Phase. Final drafting underway and final sign off meeting with Native Title Holders on country pending
- Resource is shallow, free digging, moderate grade phosphate ore resulting in very low mining costs. Beneficiated to a 33%  $P_2O_5$  market standard rock concentrate. Low cadmium rock
- Mine plan developed for 20 years of mining utilising less than 10% of the known resource. Likely to be a 50 year plus operation. Regional exploration potential is significant and may underpin a major phosphate province
- Processing routes defined using existing and established technology that will minimise risks
- Rock concentrate specifications suit phosphoric acid and single superphosphate production markets in India, south east and north east Asia, Australia and New Zealand or alternately a local phosphoric acid plant. Shipping advantages from the port of Darwin to key markets
- Assets are strategically located in close proximity to the Amadeus gas pipeline, significant ground water resources and the Central Australian Railway, providing access to export markets through the Port of Darwin, and to domestic markets via existing rail networks

## Location of project





# Ammaroo Phosphate deposit is a very large, shallow, low strip ratio resource

The projects competitive advantage is derived from its very low mining and beneficiation costs



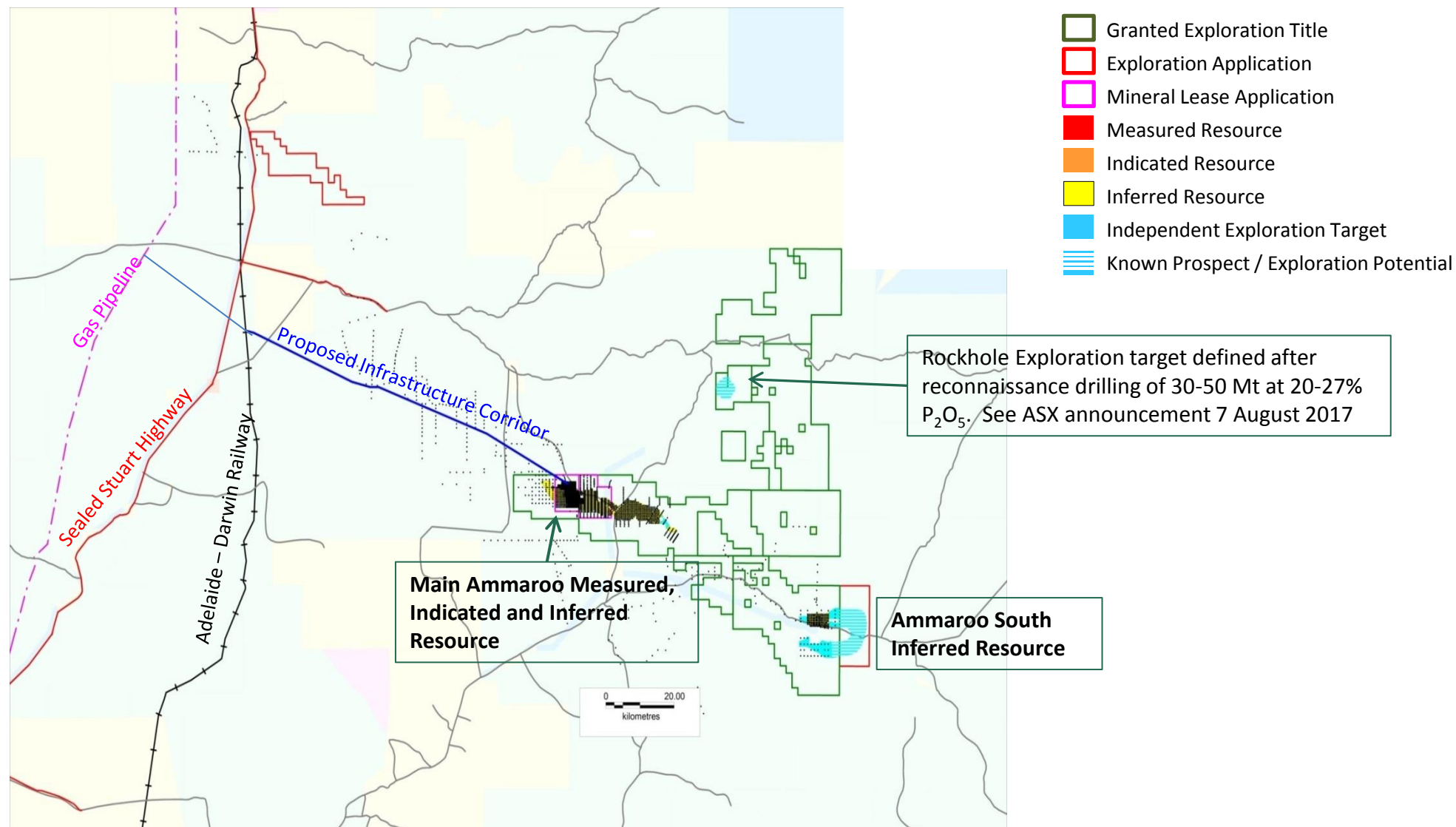
Ammaroo JORC Resource*			
Cut Off P <sub>2</sub> O <sub>5</sub> %	Category	Mt	P <sub>2</sub> O <sub>5</sub> %
10	Meas.	136	15.4
	Ind.	165	15.5
	Inf.	840	13.0
	<b>Total</b>	<b>1,141</b>	<b>14.0</b>
15	Meas.	61	18.5
	Ind.	72	19.0
	Inf.	200	17.0
	<b>Total</b>	<b>333</b>	<b>18.0</b>



\* As announced to the ASX on 15/3/17 (no material change since that date)

# Ammaroo is close to the necessary infrastructure

The Ammaroo Phosphate Project is proximate to existing gas and transport infrastructure, both of which have unutilised capacity. The area is also has significant exploration potential for other large phosphate deposits

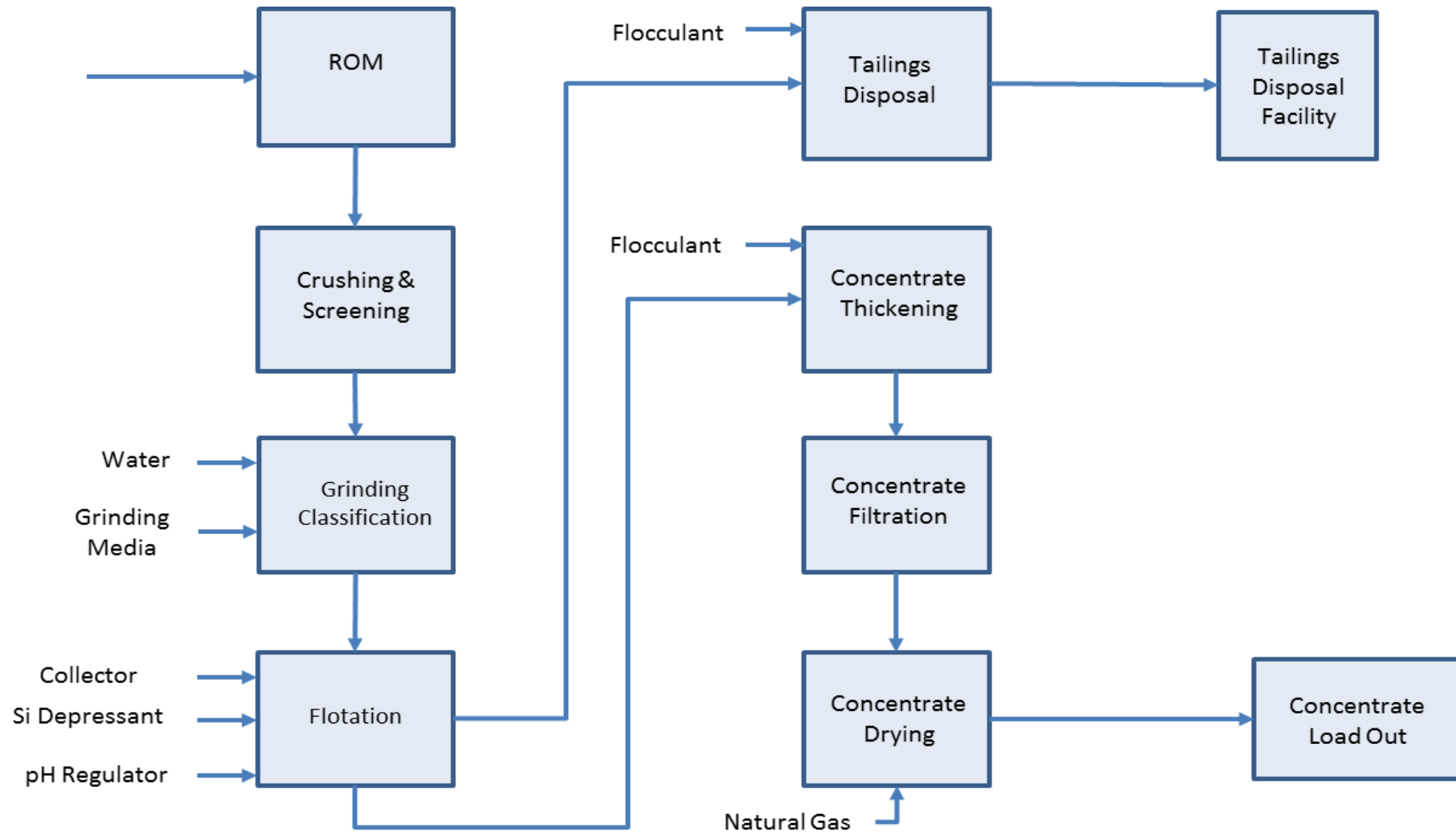


# Key Financial Parameters for first 20 years of mine life and export sales of Rock Concentrate

Stage 1 includes initial production of 1 Mtpa rock concentrate and enabling infrastructure. Stage 2 is an expansion to 2 million tonnes per annum of rock concentrate after year 5 of production

Parameter		Base Case
Stage 1 Total Installed Capital Costs	A\$m	368 (US\$276m)
Stage 2 Total Installed Capital Costs	A\$m	200 (US\$150m)
Total Revenue	A\$m	8625
Total Operating Costs	A\$m	4338
Total Royalties paid to NT Government	A\$m	645
Total Corporate Taxes paid	A\$m	722
Life of Mine nett cash flows	A\$m	1,973
Average EBITDA Stage 1 yrs 1-5	A\$m	74
Average EBITDA Stage 2 yrs 5-10	A\$m	166
Project NPV @10% nominal ungeared, post tax	A\$m	344
Project IRR, ungeared, post tax	%	18.1
Equity NPV @15% nominal geared, post tax	A\$m	169
Equity IRR, geared, post tax	%	24.9

# Simple Flotation process flowsheet





# Phosphate Rock Specifications

Range of Ammaroo Phosphate Rock Concentrate Specifications based on the sample provided to Prayon for Phosphoric Acid production tests in 2014 and the sample produced in the Feasibility Study by Corem in 2017

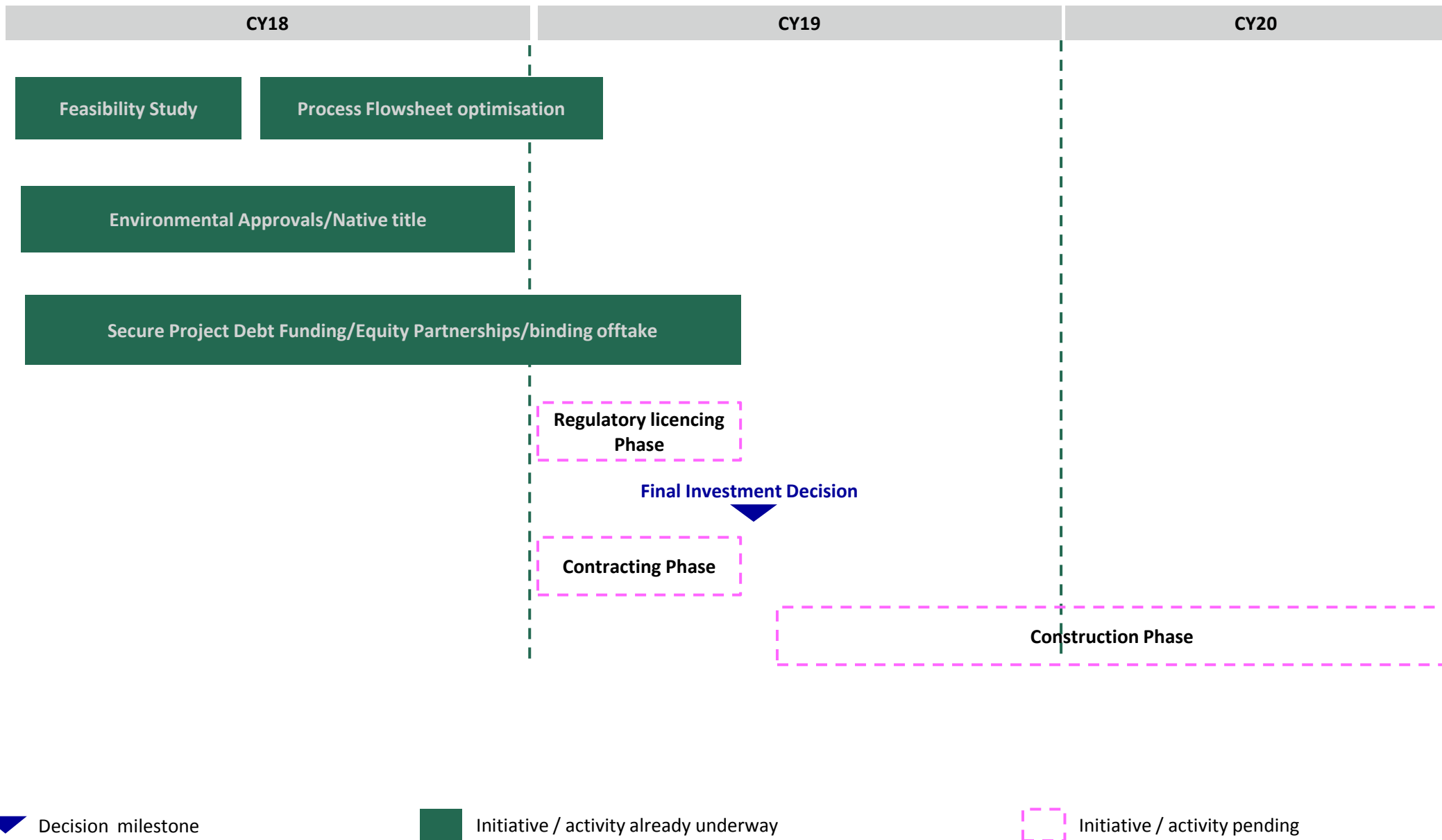
$P_2O_5$	%	32.5 - 33.8
CaO	%	45 – 48
F	%	1.5 - 3.4
$Al_2O_3$	%	1.1 1.3
SiO <sub>2</sub> total	%	7.2 – 12.2 (approx. 30% reactive silica)
Cd	ppm	3-4
Cl	ppm	<50
$Fe_2O_3$	%	1.1 – 1.2
MgO	%	0.2 – 0.25
As	ppm	7 – 11
$U_3O_8$	ppm	<22
<b>Ratio CaO/<math>P_2O_5</math></b>		<b>1.34 - 1.47</b>
<b>MER = (<math>Al_2O_3 + Fe_2O_3 + MgO</math>)/<math>P_2O_5</math></b>		<b>0.07 – 0.085</b>



# Maiden Ore Reserve

Category	Resource Classification	Tonnage (million tonnes)	P <sub>2</sub> O <sub>5</sub> (%)
Proved	Measured	11.8	18.91
Probable	Measured	4.1	18.92
	Indicated	16.4	17.51
Proved	TOTAL	11.8	18.91
Probable	TOTAL	20.6	17.79
Grand Total		32.4	18.20

# Target Ammaroo Phosphate High Level Project Development Timeline

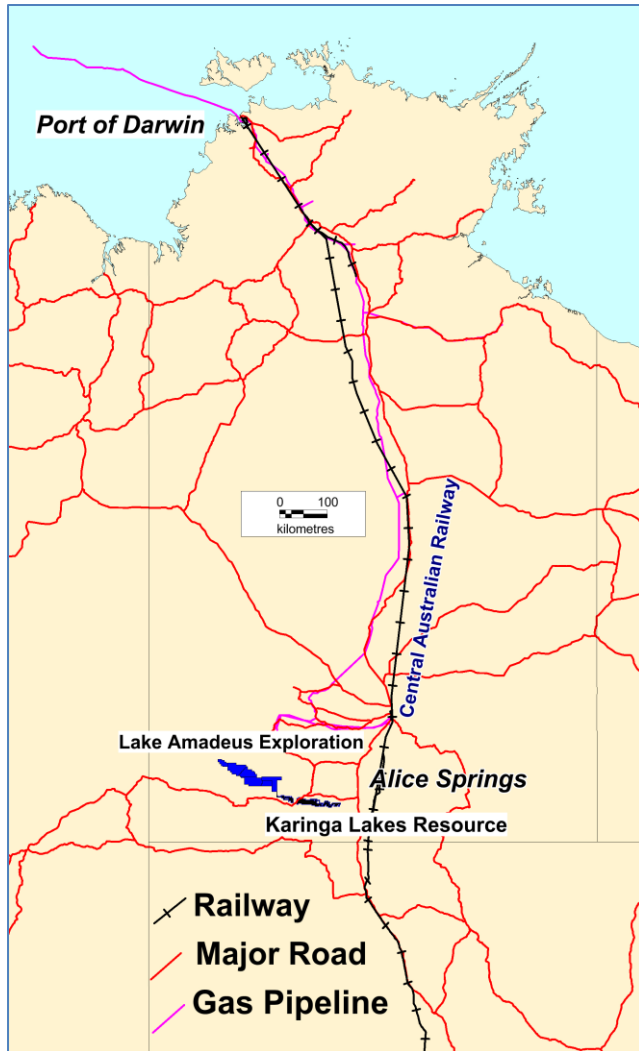


## Sulphate of Potash Projects



# A Portfolio of Sulphate of Potash Projects provide development options to create an integrated fertiliser industry

Verdant Minerals has a portfolio of sulphate of potash projects in central Australia. They are close to existing transport infrastructure, giving access to markets; and gas, which are both essential for a future SOP operation to be economic



Salt lake Exploration



Trial Brine Extraction Trench

# Summary of sulphate of potash projects

Verdant Minerals has a significant portfolio of sulphate of potash projects

## Overview of projects

### Karinga Lakes

- Measured, Indicated and Inferred in situ Brine Resource of 8.3Mt of  $K_2SO_4$  at an average aquifer thickness of 15m. Average dissolved Potassium Concentration  $4.76 \text{ kg/m}^3$  ( $10.77 \text{ kg/m}^3$  of SOP)
- This equates to a schoenite (potassium magnesium sulfate) resource of 19Mt
- Joint Venture, established with Consolidated Potash Corporation and its corporate affiliate Activated Water Technologies (AWT), continued to test the performance of the aMES™ technology on brine and salt samples sourced from the Karinga Lakes project. Promising results with SOP produced at lab scale

### Lake Amadeus

- Four contiguous ELs have been applied for covering  $1,920.5 \text{ km}^2$ , over almost all of Lake Amadeus in the NT, 320km southwest of Alice Springs and adjacent to the Lasseter Highway
- This lake is part of the Central Australian Groundwater Discharge Zone and has the potential to be a very large potassium resource
- Is located on Aboriginal Land and is currently in moratorium as the Traditional Owners exercised their right of veto over exploration and development.



## High Purity Quartz



# Dingo Hole Silica Project potential for high-purity quartz (HPQ) supply

## Project Overview

- Project covers approximately 117 hectares of silica outcrop
  - Outcrops located 10km from the Ammaroo Phosphate Project
- First-pass chemical analysis of visually-selected rock chip samples indicates potential to produce quartz that meets the industry IOTA standard for HPQ. The results show that:
  - All of Dingo Hole samples tested were found to contain greater than 99.94% SiO<sub>2</sub> before beneficiation tests
  - Initial processing tests confirmed that HPQ levels of purity could be reached but bubbles caused by small amounts of carbonate impurities in the substrate product would limit its utility
- Recent research conducted in conjunction with a Tier 1 Australian University successfully produced samples of clear glass substrate which may be suitable for use as LED/OLED glass substrate. The proprietary methods developed have enabled the removal of the bubbles associated with small quantities of carbonate elements within the silica which appear when melted at very high temperatures. The glass substrate samples, produced at laboratory scale, align with the high purity chemical and optical qualities required in this market

## Dingo Hole titles

- The Dingo Hole titles are contiguous with and north of the Ammaroo Phosphate Project
- A number of other tenements with chemically similar silica outcrops are under application

Tenement	Area km <sup>2</sup>	Sub-blocks	Grant date	Expiry
EL 30659	22.37	7	29/06/2015	28/06/2021
ELA 30792	3.20	1	App 13/03/2015	-
EL 30819	9.59	3	01/04/2008	31/03/2016



Visually selected Dingo Hole Silica from outcrop