



# **NORTHERN MINERALS LIMITED**

**EPENARRA PROJECT**

**FINAL SURRENDER REPORT**

**18 January 2010 to 8 January 2013**

**Exploration Licence EL27382**

**Operated by**

**NORTHERN MINERALS LIMITED**

DUE DATE: 17 MARCH 2012

PREPARED BY: C SHERIFF

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## **1.0 SUMMARY**

Exploration licence EL27382 lies approximately 250km by road east of the township of Tennant Creek. The licence was granted to Northern Minerals Limited in 2010 for a period of 6 years.

EL27382 originally comprised 398 blocks, covering an area of approximately 1292 km<sup>2</sup>. The first fifty percent reduction of EL27382 on 18 January 2012 covered an area of 646.5 km<sup>2</sup> (199 blocks).

Northern Minerals Limited targeted Cambrian phosphorite deposits within the Georgina Basin. The data review and compilation suggest that EL27382 is in an area considered prospective for phosphate mineralisation. The Cambrian Gum Ridge Formation and the Middle Cambrian Wonarah Formation are interpreted to underlie the tenement. These rocks host significant regional phosphate resources and are considered to be a potential host for phosphate mineralisation.

Despite the prospectivity of the tenement for economic phosphate mineralisation, as indicated by the data review and compilation, the area covered by tenement EL27382 effectively remains untested. Due to Northern Minerals focus on other commodities, the tenement has been surrendered.

## **2.0 INTRODUCTION**

This report details exploration activities conducted by Northern Minerals Limited (“Northern Minerals”) on the surrendered EL27382 between 18 January 2010 and 8 January 2013.

Northern Minerals Limited targeted phosphorite deposits of the Middle Cambrian within the Georgina Basin. Major phosphate deposits within the Georgina Basin include the Wonarah deposit, which is Australia’s largest undeveloped phosphate resource. Other deposits include Arruwarra, Alexandria and Alroy which are also hosted by the Middle Cambrian Wonarah Formation. The Wonarah Formation is interpreted to underlie EL27382.

## **3.0 LOCATION, ACCESS and CLIMATE**

Exploration licence EL27382 lies approximately 250km by road east of the township of Tennant Creek (Figure 1). The Dalmore Downs Pastoral Lease covers the southern 2 graticule (block) lines of EL27382.

Vehicular access to the tenement area is via the Stuart, then Barkly, then Tablelands Highways. Access to the exploration area is by sealed and unsealed tracks. As most of the exploration area is flat with minor drainage, off-road access is possible. All streams flow intermittently during the ‘wet’ season and only minor amounts of rain are necessary to prevent vehicle access across ‘black soils’.

The Epenarra region has long, dry and hot summers with cooler winter periods. Rainfall is limited but can be heavy in the monsoon season (November through to March), and particularly when associated with cyclone activity. During winter strong easterly winds predominate.

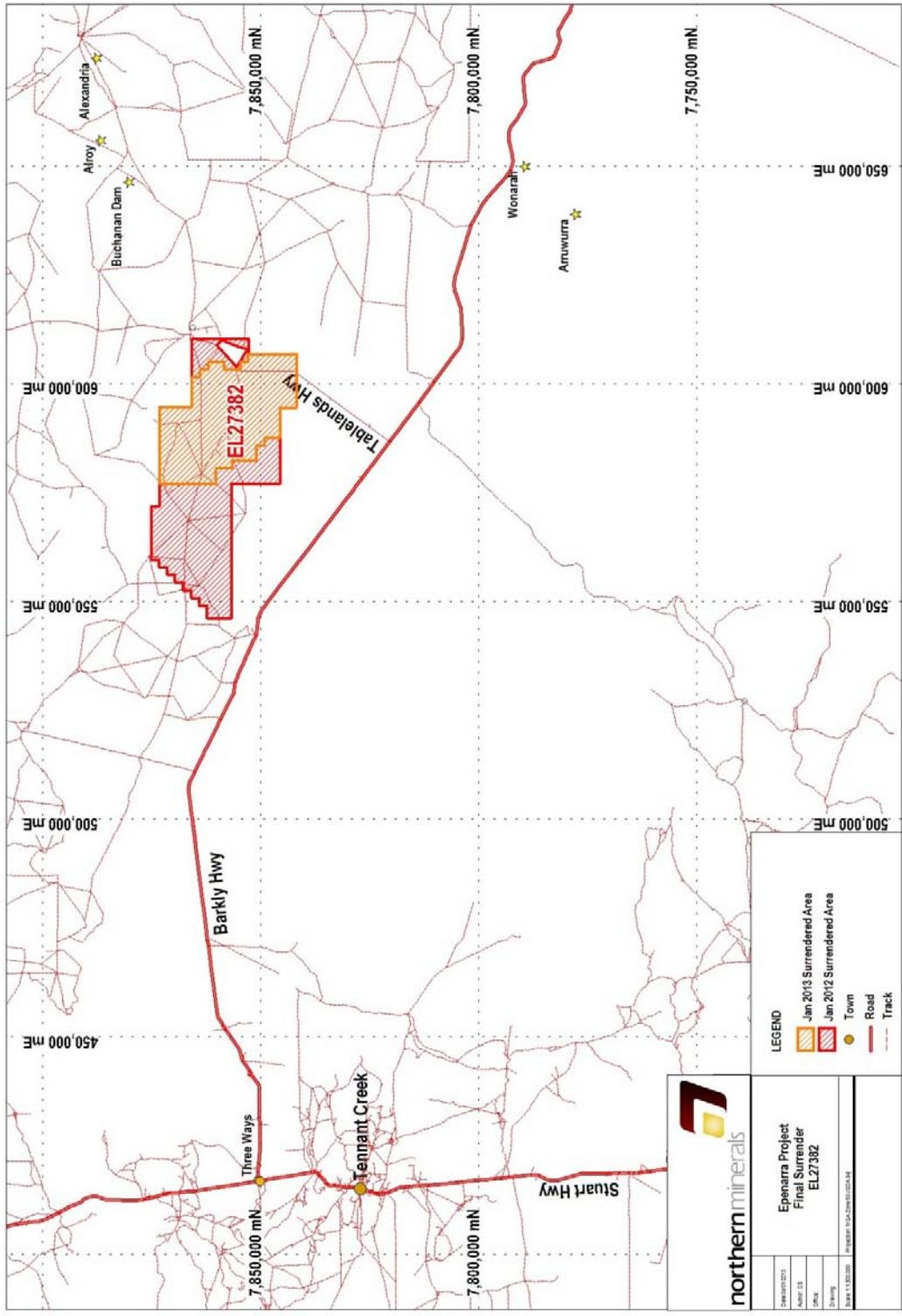


Figure 1: Tenement Location and Access Map

#### 4.0 TENURE

EL27382 originally comprised 398 blocks, covering an area of approximately 1292 km<sup>2</sup>. The licence was granted to Northern Minerals on 18 January 2010 for a period of 6 years. The partial surrender had two separate areas of 552.2 km<sup>2</sup> (173 blocks west of the retained portion) and 84.3 km<sup>2</sup> (26 blocks east of the retained portion).

Final surrender of the remaining 199 blocks comprising EL27382 was made on the 8<sup>th</sup> January 2013.

Tenement	Tenement No.	Blocks Retained	Blocks Surrendered	Grant Date	Expiry Date
Epenarra Project	EL27072	199	199	18/01/2010	17/01/2016
	Area km <sup>2</sup>	645.3	646.5		

**Table 1: Tenement Schedule**

#### 5.0 REGIONAL GEOLOGY

EL27382 is on the Alroy 1:250,000 map sheet. The majority of the licence area is covered by Quaternary soil, sand and alluvium cover interpreted to overlie the Cambrian rocks known to host phosphate mineralisation (Figure 2).

The Paleozoic rocks in the region are of Cambrian age and include the shallow marine and sub-aerial sediments which overlie the earlier lithologies in the north-western part of the Georgina Sedimentary Basin. The Cambrian sediments extend east towards the Barkly Tablelands.

The Gum Ridge Formation, comprising chert, shale, sandstone, conglomerate, limestone and dolomite phases at subsurface, is the oldest Cambrian unit. The Wonarah Formation overlies the Gum Ridge Formation and is considered to be slightly younger in age. Chert, oolitic chert and silicified coquinite lithologies are the main lithologies of the Wonarah Formation.

Underlying these Formations is the Helen Springs Volcanics documented south of the tenement area. Rocks of the Mesoproterozoic South Nicolson Group are interpreted to be the basement rocks.

The Lower Proterozoic rocks, including the Warramunga and Hatches Creek Groups and intrusive granite/gneiss, are located west of the tenement area towards Tennant Creek. The Warramunga Group is dominantly yellow-red-purple colored thin bedded sandstone, greywacke and siltstone. The Hatches Creek Group overlies the Warramunga Group and comprises a grey-pink-brown, coarse grained thin to medium bedded quartz sandstone, quartz greywacke, quartzite, siltstone, shale, pebble conglomerate, basic and acid lavas.

Areas of known historical phosphate mineralisation on the Alroy 1:250,000 sheet are the Wonarah, Arrywurra, Alroy and Buchanan Dam occurrences. Wonarah is Australia's largest undeveloped rock phosphate project. Indicated and Inferred resource estimates total 1,552Mt @ 11.9% P<sub>2</sub>O<sub>5</sub>. Mineralisation is controlled by palaeo-highs and is hosted by the lowermost sedimentary units of the Georgina Basin; which also hosts the producing mine at Phosphate Hill to the east in the Mt Isa district. Historic drill intersections for some of the other known phosphate locations include 6.1m @ 25.0% P<sub>2</sub>O<sub>5</sub> from 12.2m (Buchanan Dam), 6.1m @ 15.6% P<sub>2</sub>O<sub>5</sub> from 48.8m (Alexandria) and 4.6m @ 15.5% P<sub>2</sub>O<sub>5</sub> from 17.4m (Alroy).

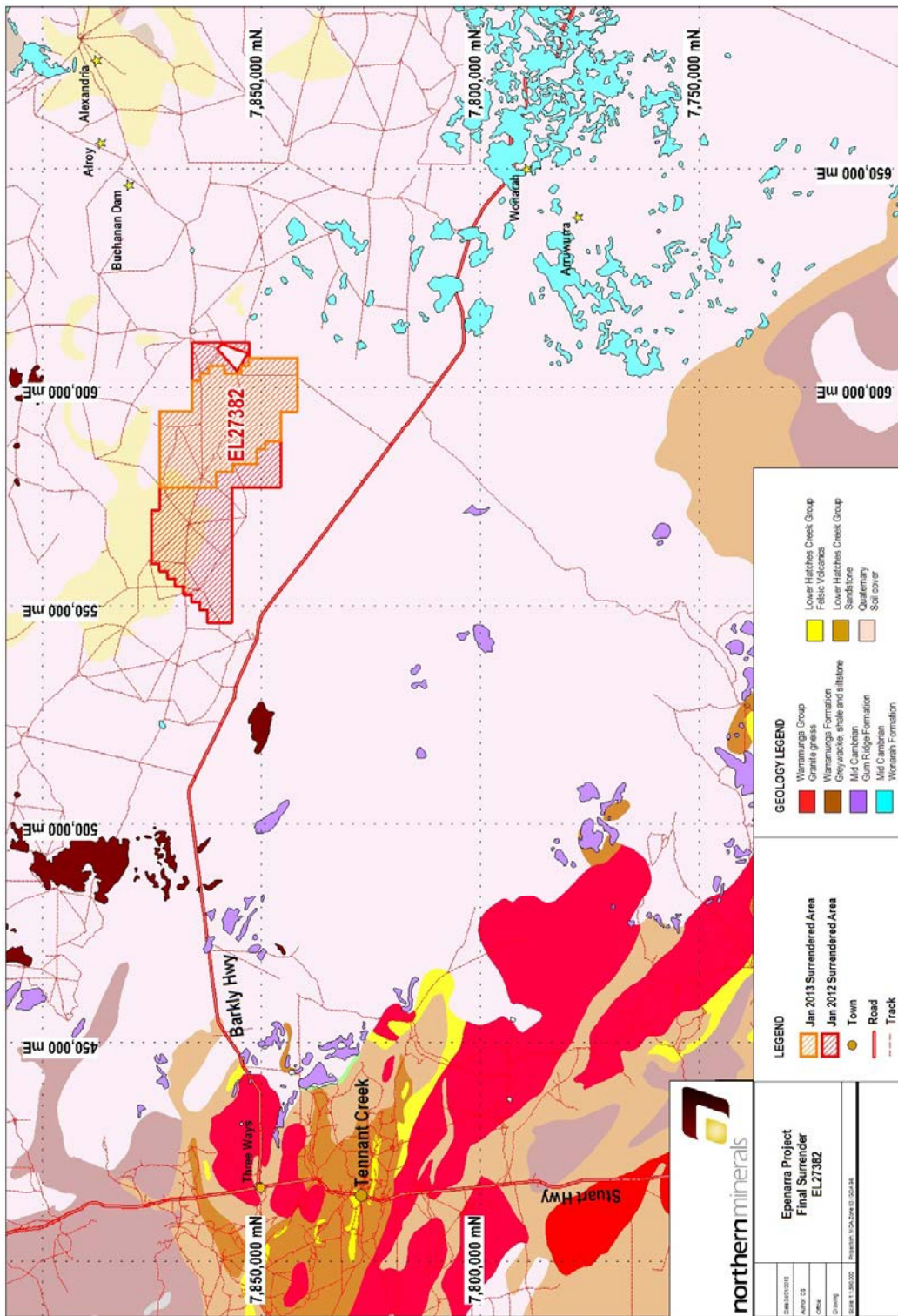


Figure 2: Regional Geology Map

## **6.0 WORK COMPLETED**

Exploration work undertaken by Northern Minerals Limited (formerly Northern Uranium Limited) during 2010-12 included the compilation of publicly available regional data sets such as aeromagnetics, radiometrics, gravity and geological mapping. Interpretation and analysis of this data was completed in order to determine initial targets and areas for on-ground investigation.

A fifty percent reduction in the tenement holding was due before work was completed on the ground.

The data review and compilation suggest that EL27382 is in an area considered prospective for phosphate mineralisation.

## **7.0 CONCLUSIONS**

Despite the prospectivity of the tenement for economic phosphate mineralisation, as indicated by the data review and compilation, the area covered by tenement EL27382 effectively remains untested. Due to Northern Minerals focus on other commodities, the tenement has been surrendered.

## **8.0 REFERENCES**

Alroy, NT 1:250,000 Geological Series Explanatory Notes 1966, Sheet SF 53-15

Kruse PD (2008), *Georgina Basin Stratigraphic Drilling 2002-2006 and Petrography 2000-2007* Northern Territory Geological Survey record 2008-001

Minemakers Ltd website (March 2012) <http://www.minemakers.com.au>

Phosphate Australia Ltd website (March 2012) <http://www.phosphateaustralia.com.au/projects/alexandria/>