EL29191
Second Annual Technical Report and Surrender Report for the Period
12 September 2013 to 1 September 2014
October 2014

Brett Townsend
PROJECT DETAILS

DATE 1 September 2014

PROJECT NAME Ranken

REPORT TITLE Second Annual Technical Report and Surrender Report for EL29191

TENEMENT HOLDERS Century Hill Pty Operator: Consolidated Global Investments Ltd

TENEMENT NO. EL29191

KEYWORDS Georgina Basin, Cambrian, phosphate,

COMMODITY (TARGET) Phosphate

TECTONIC UNIT Georgina Basin

GEOLOGICAL AGE Paleozoic, Cenozoic

NEARBY TOWNS Tennant Creek

Geological Maps Ranken 1:250,000 map sheet (SE5316), Ranken 1:100,000 sheet

Author Brett Townsend
ABSTRACT

EL29191-Ranken, lies within the Georgina Basin and was acquired for its potential to host rock phosphate. The Permit was granted on 12 September 2012 and was surrendered on 1 September 2014. This report covers the exploration activities carried out during the entire period of tenure.

During the reporting period the following work was carried out:

- Acquisition of publically available geological digital data
- Acquisition of publically available gravity and geophysical data
- Acquisition of Open File Reports of previous exploration activities
- Review of all data and evaluation of the potential for phosphorite deposits within the holding.
- Preparation of base maps

Planned exploration for year 2 included a detailed interpretation of all geophysical data be carried out with reference to the tenor of the Wonarah Palaeohigh and the available drilling information held, the objective being to identify similar palaeohigh features on EL29191 suitable as drill targets.

Contraction of funding sources during year 2 along with the lack of success of joint venture initiatives led to a decision by the company to allocate funds elsewhere and surrender the tenement.

No exploration work was carried out on the tenement during the current year.

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1.0 Introduction

EL29191, the subject of this report, is held by Century Hill Pty Ltd which is a wholly owned subsidiary of Consolidated Global Investments Limited (CGI), A.C.N 009 212 293.

Tenure

Tenement details are given in Table 1.

Table 1

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1.1 Project Location, Relief & Vegetation

EL29191 is located on the Barkly Tablelands of the Northern Territory on the Ranken 1:250,000 map sheet (SE5316). The south western corner of EL 29191 is located approximately 315 km east of Tennant Creek via the Barkly Highway. The area of the tenement is 339 km². The general area has a sub-tropical climate with a wet season occurring from November to March. Vegetation is reported as dominated by flat, almost treeless black soil country, with some mulga scrub growing along intermittent creeks. Project location is depicted in Figures 1 and 2.
Figure 1: CGI Project Locations

Figure 2: EL29191 Location
1.2 Setting

The majority of phosphate deposits worldwide (130+) are of Neoproterozoic-Cambrian in age with the most abundant being in the early-to-middle Cambrian with later deposit peaks during the Middle Permian, Late Cretaceous-Palaeocene and the Mesozoic. These phosphogenic occurrences occur as a result of an up-welling of phosphate-rich deep ocean waters. Phosphate Rock occurs as an agglomeration of apatite either as fluoroapatite FP2O5, aphanic apatite, microcrystalline apatite and crystalline apatite.

Phosphate rock is the basis for a major world industry for the manufacture of phosphate fertilizers and phosphorous-based chemicals. Within Australia phosphorite deposits are widespread in the Proterozoic and Cambrian sediments, with middle Cambrian rocks of central and northern Australia hosting several major phosphate deposits in Queensland which include:

- Duchess-Phosphate Hill
- Lady Annie
- D Tree

Whilst within the Northern Territory the Georgina Basin is host to the following Phosphorite deposits:

- Wonarah
- Alexandria
- Alroy
- Highlands Plains

Middle Cambrian shallow marine sediments close to basin edges or basinal highs are likely targets for phosphorite mineralisation. Both the Georgina and Daly Basins shallow marine sediments were laid down in the Middle Cambrian.

Exploration has discovered a number of phosphate deposits within the Georgina Basin however little to no phosphate exploration has been carried out within the Daly Basin.

With the completion of the Darwin to Alice Springs Railway line bulk commodity mineralisation within reasonable trucking distance of the railway line makes the possibility of a phosphate development more feasible from the Northern Territory.

The Wonarah Phosphate deposit is owned by Minemakers Limited and contains JORC resources Measured 300 Mt @18.2% P2O5 and Inferred 542 MT @18% P2O5 with a 10% cut-off. The project lies 80km north-east of the Minemakers Arruwurra Phosphate deposit of 135mt @ 18.6% P2O5. Minemakers plan to develop the new Improved Hard Process technology to cost effectively produce high value products including superphosphoric acid (Minemakers Limited Corporate Presentation August 2013).
2.0 Regional Geology

The Georgina Basin is a sedimentary basin containing lower and middle Palaeozoic and Mesozoic sediments extending in a belt trending north-west from Western Queensland into the northern part of the Northern Territory. The basin is bounded to the north, east, west and south-west by Precambrian rocks, with the north-western and south-eastern margins covered by Mesozoic sediments.

The Ranken Project is located in the central part of the Cambrian/Ordovician Georgina Basin which is underlain by Archaean basement of the North Australian Craton. The intra cratonic Georgina Basin is dominated by a thick sequence of carbonate sediments and is bounded by Proterozoic lithologies to the north, west and southwest and by the Great Artesian Basin to the south and east.

2.1 Project Geology

The area of our interest contains mainly sediments of Middle Cambrian age. The principal Middle Cambrian units in the tenement area mapped by IMC between 1967 and 1969 were the Wonarah Beds, Burton Beds and Anthony Lagoon Beds. These are generally regarded as lateral equivalents, with similar lithologies mainly consisting of siltstone, sandstone, chert, limestone and dolomite. Surface exposures are reported as low and the beds deeply weathered. Black soil is common in the area and this may be a residual of the youngest Cambrian unit in the region. Quaternary sand, soil and alluvium are widespread throughout the region as well. Figures 4 and 5 show the geology of the project area and the Cambrian stratigraphy of the Georgina Basin sediments.
Figure 4: Geology of the Project Area Showing EL29191 and Wonarah Mining Lease ML27244

Figure 5: Cambrian Stratigraphy
2.2 Wonarah Deposit Geology

The Wonarah deposits occur along the flanks of the Alexandria – Wonarah High. There are two mineralised rock types at Wonarah – Mudstone Phosphorite and the Chert Breccia Phosphorite. The Mudstone Phosphorite contains most of the mineralisation, forming friable and fine grained beds 2 metres to 10 metres thick with grades up to 40% P$_2$O$_5$ but typically between 20% and 30% P$_2$O$_5$. The Chert Breccia Phosphorite occurs beneath the Mudstone Phosphorite with a gradational boundary and contains discrete clasts of chert breccia in a phosphorite matrix. The grade ranges from 5% to 20% P2O5 but is typically between 10% and 15% P$_2$O$_5$. The distribution of the phosphatic material is greater around the margins of the Precambrian basement and over basement highs.

![Modelled palaeosurface at Wonarah at the time of phosphate deposition, showing drilling and tenure.](source - Minemakers Limited website)

3.0 Exploration Activity

3.1 Open File Research

IMC Development Corporation (IMC) took up Prospecting Authorities in 1967 in the Alexandria Region including the Wonarah PA. The Wonarah PA included what was subsequently to become ML27244 containing the Wonarah phosphorite deposit, as well as the area of EL29191. Scout drilling in the region was designed to expediently identify prospective targets for near-surface phosphorite deposits. During 1967 two drilling programs were carried out for a total of 3374 feet. Some 28 drill holes were completed. These included W2 which included a phosphatic intersection of 17.5 feet at 19.5% P$_2$O$_5$ between 125 – 145 feet. Assays greater than 5% P$_2$O$_5$ were obtained from siltstone-chert lithologies in A60, W2 and W4 in the Wonarah area.
By April 1969 a further 98 holes aggregating 12,586.5 feet had been drilled for an overall total of 126 drill holes aggregating 15,886 feet by IMC in the Alexandria Region. On a regional basis drilling results had shown a favourable series of clastic sediments surrounding Precambrian basement highs in the north-east and in the south and west (Wonarah area). These sediments mainly belong to the Wonarah Beds, Burton Beds and Anthony Lagoon Beds of Lower Middle Cambrian age and in part consisted of siltstone, sandstone and chert. The distribution of the phosphatic material is greater around the margins of the mapped Precambrian basement and over probable basement highs. The favourable environment appears to have been silt-chert deposition in shallows on the margins of the Middle Cambrian phosphatic sea. The most favourable results were from the Wonarah authority where significant sections in excess of 20% $P_2O_5$ had been intersected in holes W2, W20 and W37 suggesting a major phosphate deposit. Figure 7 shows IMC drill hole locations in the vicinity of the Ranken project area.

During the latter part of 1969 pattern drilling was carried out at the Wonarah prospect where a further 101 holes were drilled aggregating 13,472.5 feet, resulting in a non-JORC reserve of 669 Mt of 15.73% $P_2O_5$ at 10% $P_2O_5$ cut-off being reported.

Subsequent scoping studies carried out by IMC were unfavourable and consequently the prospect was relinquished.

Between 1978 and 1999 the ground was held by a variety of companies which included ICI, CRAE, Indo Mines (JV with Rio Tinto-RTE), with these companies carrying out drilling, metallurgical test work and feasibility studies.

After additional infill drilling in 2001, a new resource estimate was undertaken which reported an Inferred Mineral Resource of 72Mt at 23% $P_2O_5$ (at a cut off grade of 15%).

RTE withdrew from the joint venture in 2002 due to the remoteness of the project and Indo sold the project to Minemakers in 2006. The current resources are quoted as JORC resources Measured 300 Mt @18.2% $P_2O_5$ and Inferred 542 MT @18% $P_2O_5$ with a 10% cut-off. The project lies 80km north-east of the Minemakers Arruwurra Phosphate deposit of 135mt @ 18.6% $P_2O_5$. Minemakers plan to develop the new Improved Hard Process technology to cost effectively produce high value products including superphosphoric acid (Minemakers Limited Corporate Presentation August 2013).

In 2003 De Beers Australia Exploration Limited explored EL22980 to the west of E29191. A drill hole RNN001 approximately 2 km to the south-east of EL29191 encountered 14 metres of “sediment siltstone” from 34 m, with limestone logged to 117m.

In 2007 the present EL29191 tenement area was granted to Phosphate Australia. No on-ground activities were conducted before relinquishment in 2011.

Detailed Drill Cuttings Logs for the Wonarah deposit drilling (W39 to W135) are now held by Century Hill.

A summary of the IMC drilling in the region is presented in Table 2 below.
Table 2

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Figure 7: IMC Geological Map showing Wonarah Beds in horizontal hatch, and drill hole locations (CR19690022).
3.2 Gravity

The gravity over EL29191 shown in Figure 8 clearly shows a prominent north-east south-west trending gravity high. The coincidence of gravity high features and Middle Cambrian shallow marine sediments may provide excellent targets for phosphate mineralisation.

![Figure 8: Gravity Image](image)

3.3 Airborne Geophysics

The airborne magnetic image in Figure 9 shows magnetic highs in the north-west corner, the central south, and adjacent to the south-west boundary of the tenement. These features which are coincident with the Wonnarah Beds mapped by IMC (Figure 7) could indicate excellent interbasinal ridges (highs) for the development of phosphatic sediments.
4.0 Future Work

It is established that Cambrian sequences are present on EL29191 with Camooweal Dolostone and Wonarah Beds mapped by NT Geological Survey and IMC Development Corp. (Australia). The Wonarah phosphate deposit lies 15 kilometres to the west of EL29191 demonstrating the development of significant thicknesses of phosphorite around the margins of the Precambrian basement and over basement highs.

IMC drilled two drill holes on the tenement, one of which (W22) intersected 2.5 metres of phosphorite assaying 2.5% from 155 feet. Another drill hole (W38) intersected 2.5 metres at 2.5% from 67.5 feet. Both phosphatic intersections were in siltstone.

Airborne geophysics indicates magnetic highs in the north-west corner, the central south, and adjacent to the south-west boundary of the tenement. These appear to be generally coincident with the Wonarah Beds mapped by IMC.

It was previously recommended that detailed interpretation of all geophysical data be carried out with reference to the tenor of the Wonarah Palaeohigh and the available drilling information held, the objective being to identify similar palaeohigh features. Further gravity surveying may have been required to finalise drilling targets.

However, after contraction of funding sources during the current year and the lack of success of joint venture initiatives, the company elected to allocate funds to other projects and EL29191 was surrendered on 1 September 2014.
5.0 References

- Geological Survey Record-NT-2007/003-M Khan, PA Ferenczi, M Ahmad, PD Kruse- Phosphate testing of water bores and diamond drill core in the Georgina, Wiso and Daly basins, Northern Territory


- PJ Cook & JH Shergold 1986-(reprinted 2005)- Phosphate Deposits of the World-Volume 1

- Open File Company Records-NT Geological Survey


- Minemakers Limited Web Page

6.0 Copyright Statement

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