OM Manganese Ltd

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EL29733
Lorella Project

Annual (Year 1) and Final Technical Report -
21st May 2013 to 21st May 2014

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Abstract

Exploration licence EL29733 consists of 30 blocks (graticules) located 15 km east of the Lorella homestead.

Exploration activity in 2013/2014 was restricted to office studies, review of satellite imagery and open file NTGS reports, and a project assessment.
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1 Introduction

Exploration licence EL29733 was granted on the 21st of May 2013 and covers an area of 99.16 km² (30 blocks). EL29733 is located 15 km to the east of Lorella homestead and about 70km northwest of Boorooloola.

EL29733 and EL29734 comprise the OM Manganese Ltd “Lorella Project” and are accessed from the Cape Crawford - Roper Bar Road via the Lorella Station Access Road. The Project is located to the south of Rosie Creek and partially within the Lorella pastoral property.

Figure 1. Lorella Project location plan.
Figure 2. Topography plan covering EL29733 and EL29734 and adjacent areas.
2 Geology

The Lorella Project exploration licence areas are comprised almost entirely of Paleo-Proterozoic Tawallah Group sediments.

The Yiyintyi Sandstone (Pty) is a thick siliciclastic unit which forms the base of the Tawallah Group and crops out as a rugged range covering the western and central axis of EL29734. It is overlain to the east by younger basaltic lavas of the Seigal Volcanics (Pts), which form a distinct depression, and the Sly Creek Sandstone (PtI) formation.

The Wununmantyala Sandstone (Ptn) consists of red-brown sandstone and siltstone units, previously referred to as the 'Masterton Formation', and crops out as low hills covering the northwest portion of EL29734 and most of EL29733. Cenozoic sand and clays overlay the Wununmantyala Sandstone and cover around one third of EL29733.

Adjacent stratigraphy includes the Meso-Proterozoic McArthur Group sediments which overlay the older Tawallah Group sediments, located in close proximity to the south west corner of EL29734, and low lying Cretaceous sediments located to the east and north of EL29733.

The McArthur Group sediments host the MacArthur River massive sulphide Zn-Pb deposit, mined 50km to the south of the project area. Local small scale Cu-Pb prospects located in close proximity to the south west corner of EL29734 include the Tawallah Pocket and Apollo Prospects.

Lower lying Cretaceous sediments including the Walker River Formation, host unit for GEMCO's Groote Eylandt manganese deposits, are located in close proximity to the north and east boundaries of EL29733. In the early to mid-1990's BHP Minerals Pty Ltd discovered and drilled the Cretaceous hosted South Rosie Creek manganese deposit, located around 5km to the north of EL29733.

The dominant regional structural features bounding the project area are the N-S trending Emu Fault Zone located 5-10 km east of EL29733, and the N-S trending Tawallah Range Fault Zone located around 5km to the west of EL29734.
Figure 3. Geology modified from NTGS 1:250k Mount Young sheet: PW Haines et al, 2013
3 Office Studies

Exploration activities undertaken in 2013/2014 period was limited to -

- Office studies consisting of data collation, review and project assessment.

3.1 Data Collected and Reviewed

Data was collected from readily accessed public sources.

Data reviewed included -

- NTGS Mount Young 1:250k geology mapping and explanatory notes
- NTGS References including Report 13 by Ferenzi, 2001 and Geology and Mineral Resources of the NT complied by Ahmad and Munson, 2013
- Topography maps and elevation models
- Satellite Imagery including Google Earth, Bing and Landsat
- Geophysical maps including magnetic, radiometric and AEM images
- Annual technical reports for BHP Minerals Pty Ltd and Consolidated Minerals, and a partial surrender report for Sandfire Resources NL.

3.2 Satellite Imagery

Satellite data reviewed included Google, Bing and Landsat imagery.

Google imagery was used to identify tracks and the drill sections associated with the South Rosie Creek manganese prospect, located approximately 4km north of the NW corner of EL20733. There are no visible tracks providing vehicle access to either exploration licence and detailed ground reconnaissance would necessitate access by helicopter.

The Bing imagery clearly outlines the extent of the range forming Yiyintyi Sandstone (Pty) and Sly Creek Sandstone outcrop on EL29734, with elevations ranging from around 100mRL to 295mRL at the southern end of the licence.

The Landsat PC2 54 17 image clearly outlines the extent of the Wununmantyala Sandstone (Ptn) outcrop on EL29733 and the northwest corner of EL29734, and the interpreted extent of shallow Cenozoic sand cover on EL29733 over that formation.
Figure 4. Bing Satellite Image (note: not shown at scale quoted for an A3 image).
Figure 5. Lansat PC2 54 17 Image (note: not shown at scale quoted for an A3 image).
3.3 Open File NTGS Annual Technical Reports

Annual and Final Technical reports sourced online from the GEMIS system, relevant reports included –

- CR2010-1162 Sandfire Resources Part Surrender - EL26833

The BHP report covered drilling and assay data, and an informal estimate of the resource potential for South Rosie Creek manganese deposit. The surface level of that deposit is around 55mRL and the drill tested mineralisation ranges from 40mRL to around sea level. The BHP report quotes an informal resource potential for the prospect of between 4.5 and 5.5 million tonnes at 25%.

Figure 6. AEM anomaly covering the South Rosie manganese deposit.
The Consolidated Minerals report covered an exploration update over the South Rosie Creek manganese deposit and adjacent areas.

Images of interest in the report included the Airborne EM over South Rosie Creek manganese deposit (figure 6), AEM covering adjacent areas (figure 8) and the interpreted Paleo-sea levels for the Cretaceous period (below).

![Interpreted Paleo-sea level]

3.4 Geophysical Imagery

NTGS sourced geophysical data was reviewed for aero-magnetic, radiometric and gravity surveys. The magnetic and gravity survey data was of limited use. The radiometric data was of incremental benefit when interpreting the satellite imagery.

The AEM survey reported in CR2004-0189 covers the South Rosie Creek manganese deposit and highlights a coincident EM anomaly over the deposit. Several EM targets appear to remain largely untested to the northwest of that deposit, but are at some distance from the OMM tenements. The AEM survey does not extend significantly onto the OMM tenure.
Figure 8. AEM Survey over EL23599 – Channel 12
3.5 *Project Assessment*

The two exploration licences were initially applied for on the basis of the proximity to the South Rosie Creek manganese deposit.

EL29733 has a significant area with Cenozoic sand cover. It was thought possible that this cover could obscure underlying Cretaceous sediments and associated manganese mineralisation.

On balance, following the review of satellite data sets and elevation models, it would appear likely the sand is shallow and covers Palaeozoic sandstone units. The exploration licence area is essential above the Cretaceous Paleo-sea level. The surface level ranges from around 75mRL at the northeast corner to 190mRL at the southern boundary.

South Rosie Creek manganese resource potential is in the authors view is much overstated. The grades quoted are for screened assays (+0.5mm) and the indicative deposit grade of 25%Mn quoted by BHP in CR1995-0362 reduces to less than 10%Mn when averaged using the original unscreened assay values for the same intervals. At least 2/3rds of the drill sample appears to be -0.5mm

The report also quotes that there is no pisolite manganese noted in the drill logs, as would be expected at Groote Eylandt. BHP concludes that the mineralisation is clearly uneconomic, and this author agrees with that assessment.

4 *Conclusions and Recommendations*

The Lorella Project area was initially targeted for South Rosie Creek style manganese deposits.

Following the data review, it is concluded that there is no significant prospectivity for manganese mineralisation due to -

- the lack of significant host Cretaceous sediment,
- the relatively elevated level of the two exploration licences,
- the significant amount of outcrop exposure, and
- a down grading of the South Rosie Creek deposit resource potential.

The base metal prospectivity both exploration licence areas was assessed by Sandfire Resources NL and recommended for surrender in 2010. Their work program included ALOS-ASTER interpreted geology, NTGS stream sediment data, ground geophysical surveys, and reprocessed airborne geophysical surveys with full or partial coverage. The Author has no additional base metal data.

EL29733 was recommended for surrender by OMM at the end of its first anniversary, 20\textsuperscript{th} May 2014.
5 References


