



OM Manganese Ltd

Title holder /operator: OM Manganese Ltd (100%)
Tenement Manager: Australian Mining & Exploration Titles Services (AMETS)

EL28662 Bootu Creek Manganese Project

Annual Technical Report – Year 4 31st October 2014 to 30th October 2015

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Abstract

EL28662 surrounds the Bootu Creek Manganese Operation (located on ML24031) and replaced expired licences EL10412, EL22428, EL22940, EL25593 and EL28046.

Year 4 Exploration activity on EL28662 included a 227 infill soil sampling survey and updated World View II satellite imagery.

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File Name	File type	Content
EL28662_2015_A_01	pdf	This report
EL28662_201512_02_soils	txt	Soil sample data
EL28662_201512_03_logging_codes	pdf	Logging codes
BC_Sat_Image	pdf	Sat image plan
BOOTU_20150702_WV2	pdf,ecw	Report and imagery
EL28662_Soil_Sample_Locations	pdf	Soil sample locations
EL28662_Soil_Sampling_Results	pdf	Soil sample results

1 Location and Tenure

1:250,000:SE 53-10 HELEN SPRINGS

1:100,000:5760 Brunchilly

EL28662 granted 31/10/2011 105 blocks (297.24 Ha)

The south-west corner of EL28662 is located 2km east of Stuart Highway and 120km north of Tennant Creek, predominately within the Banka Banka West Pastoral station. The north and eastern portions of the EL extends into Helen Springs Pastoral station.

EL28662 was granted for a period of four years and consolidates/replaces expired licences EL10412, EL22428, EL22940, EL25593 and EL28046. It entirely encloses the Bootu Creek Manganese Project located on ML24031 and adjacent application for ML27445.

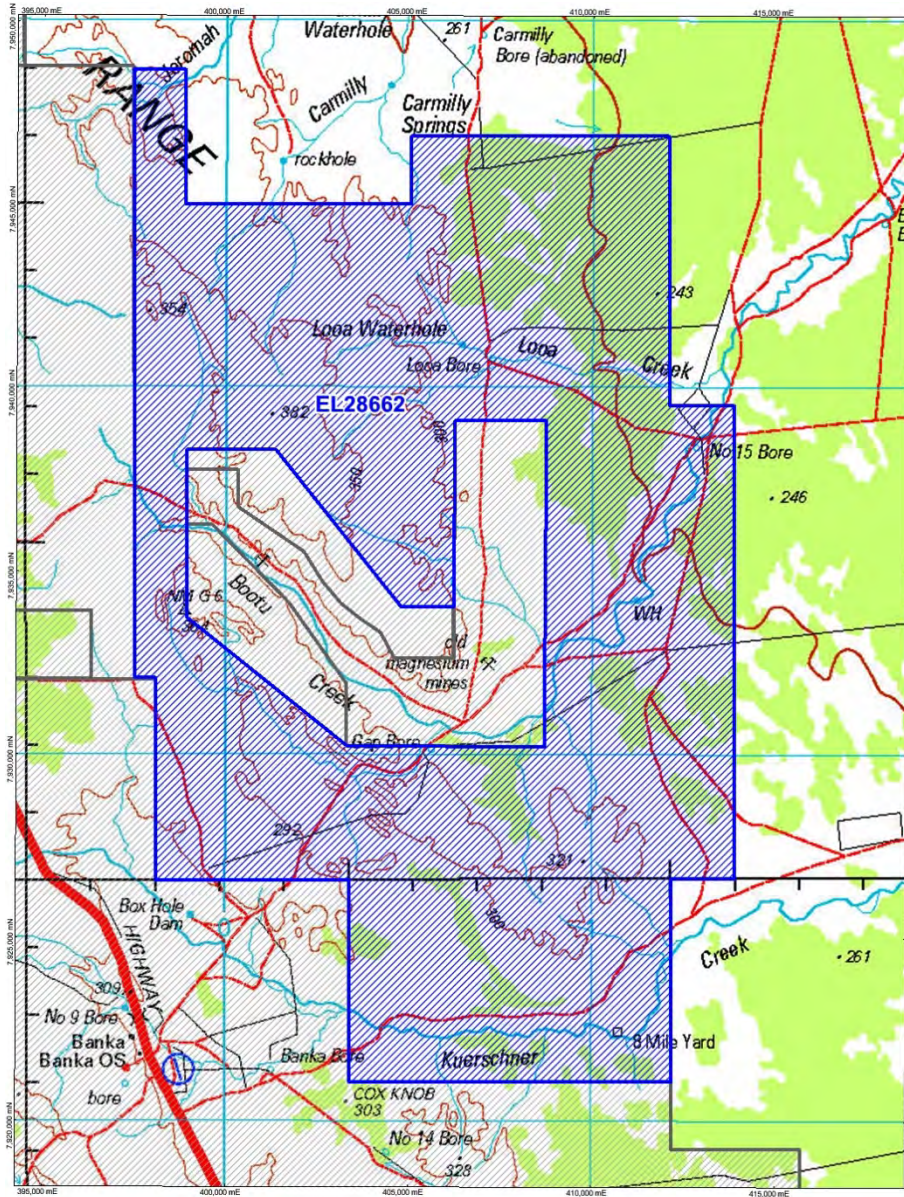


Figure 1. Plan shows location of EL28662 and adjacent OMM tenure.

2 Geology

The Bootu Creek area is part of the Ashburton Province of the Tennant Creek Inlier, which consists of Proterozoic platform cover of fluvial to shallow marine sandstone with minor volcanic rocks, siltstone and carbonate rocks of the Tomkinson, Namerinni and Renner groups, in part overlain by Cambrian volcanic and sediments (Hussey et al, 2001).

A significant portion of EL28662 hosts an elevated platform of Bootu Formation (Ptb) sandstone in the northwest quadrant, while the south west comprises rocks of the ridge-forming Short Range Formation (Pts) and the recessive Morphett Creek Formation (Ptm). The western side of the licence area extends onto a sliver of the younger, overlying Namerinni Formation consisting of sandstone, siltstone and dolomite. Large areas of the eastern side of the licence are covered by recent aeolian deposits and alluvial deposits derived from the Bootu Formation.

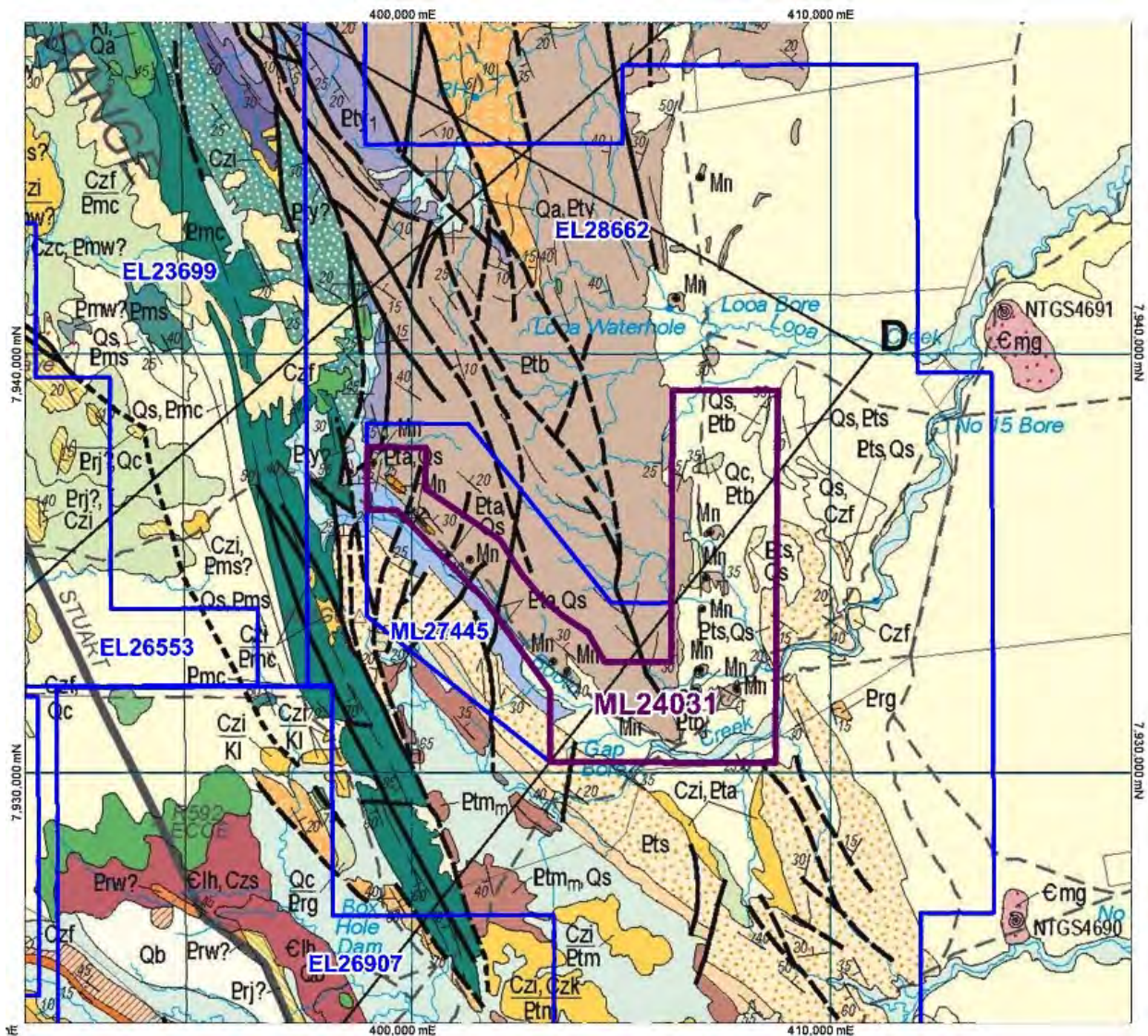


Figure 2. Geology map of EL28662 showing various members of the Tomkinson Creek Group. Geological data is taken from the published Helen Springs 1:250,000 geology map sheet (Hussey et al, 2001)

The manganese deposits at Bootu Creek occur as strata-bound deposits located along the contact between the underlying dolomite-siltstone of the Attack Creek Formation (Pta) and overlying sandstone of the Bootu Formation, both of the Tomkinson group. The contact folds around the gentle NNW plunging Bootu Syncline where the manganese mineralisation can be discontinuously traced for up to 24km, and then around the shallow north plunging Bootu Anticline near the north eastern boundary of EL28662.

A number of manganese deposits occur around the eastern and western limbs of the Bootu Syncline, with current economic interest focused on deposits within ML24031. West limb manganese deposits dip around 30° towards the northeast, while the deposits on the more structurally complex east limb dip between 30° and 45° to the west.

The manganese mineralisation appears hydrothermally concentrated within shallow marine sediments, which can locally retain a relic stromatolite texture. The unweathered protore is generally located greater than 90m below surface and consists of Rhodochrosite (MnCO_3) and Braunite. The supergene altered "ore zone" consists of high grade, massive and heavy disseminated footwall ore zone (>15%Mn) which typically varies from 2m to 12m in width and may be overlain by similar widths of low grade (10-15%Mn), manganese bearing sandstone. Individual mineralised deposits are generally strata-bound in character and can persist over strike lengths of several kilometres.

The principal supergene ore minerals are:

- Pyrolusite - MnO_2 and varying amounts of quartz, goethite and clay gangue
- Cryptomelane - $\text{K}(\text{Mn}^{2+}, \text{Mn}^{4+})_8\text{O}_{16}(\text{OH})_4$ around 60%Mn and 5%K, plus minor
- Psilomelane - $\text{Ba}(\text{Mn}^{2+}, \text{Mn}^{4+})_8\text{O}_{16}(\text{OH})_4$ being around 50%Mn and 15%Ba, and
- Braunite - $3(\text{Mn}_2\text{O}_3) \cdot (\text{MnSiO}_3)$ being around 62%Mn

3 Previous Exploration Activity

3.1 Exploration Activity 2001-2004

Work carried out on EL10412 and EL22428 by Bootu Creek Resources Pty Ltd prior to the excision of ML24031 (Sept 2004) comprised -

- Re-evaluation of existing geology, drilling and geophysical data
- Progress of heritage surveys, mining and land access agreements
- Open-hole and RC percussion, and diamond drill programs
- Gravity survey
- Aerial photography and digital terrain modelling
- Hydrological investigations
- Metallurgical test work
- Mineral Resource and Ore Reserve estimation
- Geotechnical and mining studies
- Environmental and logistical studies, culminating in the
- Bootu Creek Manganese Project feasibility study (reported October 2004).

3.2 Exploration Activity 2004-2011

Work carried out on EL10412 and EL22428 by Bootu Creek Resources Pty Ltd and later by OM (Manganese) Ltd for the above period comprised -

- A helicopter borne Hoist-EM survey
- Acquisition and interpretation of Aster multi-spectral data
- Satellite imagery
- RC exploration drill programs
- Combined aeromagnetic/radiometric airborne survey and data processing
- Aerial photography
- Gradient Array IP geophysical ground survey (part Masai NW survey)

For more detail, refer to the EL10412, Bootu Creek Manganese Project - Final Technical Report (Sept 2011).

3.3 Exploration Activity 2011-2012 (Year 1)

Exploration activity on EL28662 in the 2011/2012 reporting period comprised –

- 2 x Gradient Array IP
- 8 RC drill holes (382m)
- Satellite imagery (Worldview-2)
- Access track maintenance

3.4 Exploration Activity 2012-2013 (Year 2)

Exploration activity on EL28662 in the 2011/2013 reporting period includes –

- 1 x Gradient Array IP geophysical ground survey
- 15 RC drill holes (801m)
- Aerial Photography and DTM (Aerometrex)
- Access track maintenance

3.5 2013/2014 Exploration Activity (Year 3)

Exploration activity on EL28662 in the current reporting period includes –

- 1 x 453 sample reconnaissance soil geochemical survey
- 127 RC drill collar repair/rehabilitation program
- Access track maintenance

4 2014/2015 Exploration Activity (Year 4)

4.1 Infill Geochemical Survey

A 219 infill (-80 mesh) soil sampling survey was conducted over the Looa Bore Project area, in November 2014, utilising a 2 man contract field crew from Arnhem Exploration Services. The infill survey followed up on the low level anomalous results returned from the eastern side of the initial wide spaced reconnaissance lines, sampled at 50m spacing on 7944400mN and 7945200mN in September 2014.

The topography in this area is flat lying and generally covered by one to several metres of red windblown sand, with minor float and low lying sub-crop consisting of weathered sandstone from the Bootu Formation, located along the eastern limb of the Bootu Anticline. Rare manganese bearing pisolite fragments were observed in the anomalous area.

Initial elevated assay results were regarded as +0.03%Mn and anomalous results as +0.05%Mn. Three infill lines on 7944000mN, 7944800mN and 7945600mN extend the strike length of the anomaly to 2.0 km with a peak value of 0.12%Mn.

Further exploration, deferred until 2016, may include further infill soil sampling or Gradient Array IP survey to target initial RC drilling.

4.2 Satellite Image

Updated World View II satellite imagery from July 2015, attached separately as a pdf in the electronic file list.

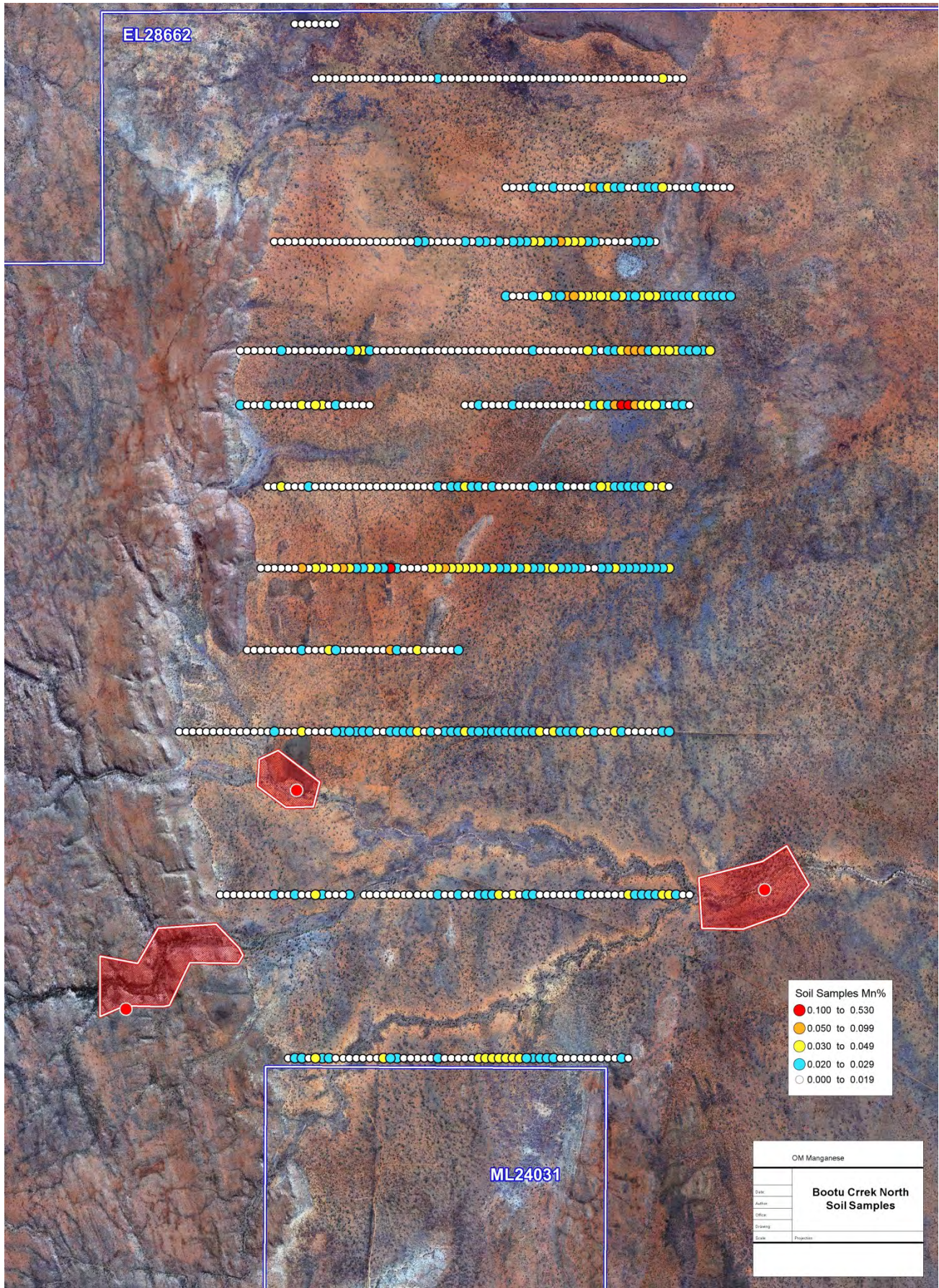


Figure 3. Reconnaissance Soil Sampling Results – September and November 2014

5 Conclusions and Recommendations

The objective of the infill soil sampling exploration program was to confirm the initial anomaly, identified in September 2014, and to define the extent and intensity of the anomalism. The follow up soil sampling program confirmed the location and trend of the anomalism, and extended the strike extent of the anomalous trend to 2.0km (5 sample lines spaced at 400m intervals).

The 2015 exploration program (deferred until 2016 due to budget constraints) is planned to include further infill soil sampling and/or Gradient Array IP to target initial RC drill testing.

6 References

Reddell, C.T., Bailey, M.H., (2011) EL10412 Bootu Creek Manganese Project, Final Technical Report for period 21st September 2001 to 20th September 2011, *OM (Manganese) Ltd, unpublished.*

Hussey, K.J., Beier, P.R., Crispe, A.J., Donnellan, N., and Kruse, P.D., (2001) Helen Springs, Northern Territory. 1:250,000 geological map series and explanatory notes, SE53-10 (Second Edition) *Northern Territory Geological Survey*