Target Commodities: Base metals, manganese

Map Sheets:
- 1: 100,000   HELEN
- 1:250,000  HELEN SPRINGS

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1. ABSTRACT
EL28909 and EL28911 are located 710 km SSE of Darwin within the Northern Territory and 165 km north of Tennant Springs near to the Renner Springs Roadhouse. Access is via the Stuart Highway which EL28909 straddles and EL28911 parallels. Access around site is by station tracks.

These licenses are adjacent to the G2 linear and other linears and on the junction of the Tomkinson Province to the east and the Wiso Basin to the west, with the Georgina Basin further east and covers magnetic and gravity anomalies within the license area.

A literature review in conjunction with the existing geophysical and geological data has downgraded the potential of EL28909 and 28911 for manganese mineralisation as neither licence covers the Namerninni Group and in particular the Shillinglaw Formation member of that group. A short site inspection was carried out confirming this conclusion.

Kingsland Resources reviewed the likely prospectivity of these licences and has concluded that their prospectivity is low. No other work was carried out.

Continuing exploration of both EL28090 and EL28911 is not recommended and the licences have been surrendered.
2. LOCATION & ACCESS
EL28909 and EL28911 are located 710 km SSE of Darwin within the Northern Territory and 165 km north of Tennant Springs near to the Renner Springs Roadhouse (Figures 1 - 3).

![Location Plan, EL28909.](image)

Access is via the Stuart Highway which EL28909 straddles and EL28911 parallels. Access around site is by station tracks.

EL28909 and EL28911 both fall within NTP 1513 owned by S. Kidman & Co Limited, and EL28909 partially covers NTP 5150 held under the Department of Lands and Planning.
3. GEOLOGY

These licenses are adjacent to the G2 linear and other linears and on the junction of the Tomkinson Province to the east and the Wiso Basin to the west, with the Georgina Basin further east and covers magnetic and gravity anomalies within the license area.

The Tomkinson Province hosts substantial stratiform manganese deposits at Bootu Creek about 50 km SSE. A series of manganese prospects occur adjacent to the licence. The Georgina Basin is prospective for base metals, diamonds, manganese, oil and gas and locally forms shallow cover over prospective basement. There is also potential for base metal deposits within the Namerinni Group, a stratigraphic equivalent of the McArthur Group.

**EL 28909**
- The licence is near to the G2 linear and other linears within the Tomkinson Province with strongly defined magnetic low in centre of block with a magnetic high rim and a low level gravity anomaly on western side.
- The Tomkinson Province hosts substantial stratiform manganese deposits at Bootu Creek about 50 km SSE. A series of manganese prospects occur adjacent to the licence. There is also potential for base metal deposits within the Namerinni Group, a stratigraphic equivalent of the McArthur Group.

**EL 28911:**
- This licence is adjacent to the G2 linear and other linears and on the junction of the Tomkinson Province to the east and the Wiso Basin to the west, with the Georgina Basin further east and covers magnetic and gravity anomalies within the licence area.
- The Tomkinson Province hosts substantial stratiform manganese deposits at Bootu Creek about 50 km SSE. A series of manganese prospects occur adjacent to the licence. The Georgina Basin is prospective for base metals, diamonds, manganese, oil and gas and locally forms shallow cover over prospective basement. There is also potential for base metal deposits within the Namerinni Group, a stratigraphic equivalent of the McArthur Group.

Descriptions of each of these provinces is presented below (NT Geological Survey). (Figure 4)

Manganese mineralisation occurs within the Shillinglaw Formation, which is part of the Nannerinni Group within the Tomkinson Provence as shown by Figures 5 and 6.
Figure 4: Geological Regions covered by EL28909 and EL28911

**Tomkinson Province**

**Lithology:** Sedimentary and volcanic: sandstone, dolostone, shale, basalt.

**Epoch Min:** Mesoproterozoic

**Epoch Max:** Palaeoproterozoic.

**Age Min:** 1400 Ma.

**Age Max:** 1780 Ma.

**Summary:** Forms part of the Tennant Region. Unmetamorphosed and weakly deformed, predominantly shallow marine sedimentary rocks correlated with the McArthur Basin.

**Relationship:** Overlies the Warramunga Province to the south, and is overlain by the Georgina, Wiso and Carpentaria Basins. Locally overlain by the Kalkarindji Province. Likely to be continuous undercover with the McArthur and Birrindudu basins.

**Thickness:** At least 5 km.

**Economic:** Hosts substantial stratiform manganese deposits at Bootu Creek.

**Exploration:** Exploration target for manganese. Potential for base metal deposits within the Namerinni Group that is a stratigraphic equivalent of the
McArthur Group.

**Metamorphism:** Unmetamorphosed.

### Kalkarindji Province

*Mines and Energy / Geological Survey / Geology and Resources / Geology of the NT / Kalkarindji Province*

**Lithology:** Igneous and minor sedimentary: tholeiitic basalt, dolerite, andesite, minor trachyte, microdolerite, basaltic flow breccia, peperite, pyroclastic deposits, quartz sandstone, siltstone, sedimentary breccia, limestone, chert.

**Epoch Min:** Cambrian.

**Epoch Max:** Cambrian.

**Age Min:** 500 Ma.

**Age Max:** 520 Ma.

**Summary:** A widespread continental flood basalt province covering much of the northern Northern Territory and extending into Western Australia.

**Relationship:** Conformably underlies the Cambrian successions of the northern Georgina, northern Wiso, Daly and Ord Basins. Unconformably overlies the Birrindudu, Victoria, McArthur and South Nicholson Basins, the Tomkinson Province and the Tanami Region.

**Thickness:** Up to 1.1 km.

**Economic:** Hosts small copper and barite occurrences.

**Exploration:** Exploration target for Norilsk-style Ni, and copper mineralisation.

**Metamorphism:** Unmetamorphosed.

### Georgina Basin

*Mines and Energy / Geological Survey / Geology and Resources / Geology of the NT / Georgina Basin*

**Lithology:** Sedimentary: dolostone, limestone, shale, sandstone, siltstone.

**Epoch Min:** Devonian.

**Epoch Max:** Cryogenian (Neoproterozoic).

**Age Min:** 355 Ma.

**Age Max:** 850 Ma.

**Summary:** A widespread Neoproterozoic to Palaeozoic intracratonic basin that was initiated as part of the Centralian Superbasin and extends east into Queensland.

**Relationship:** Unconformably overlies the Aileron Province, Tennant Region, Murphy Inlier, McArthur and South Nicholson Basins and Lawn Hill.
Platform. Interpreted to be contiguous at depth with Wiso and Daly Basins. Conformably overlies Kalkarindji Province. Unconformably over lain by Carpentaria Basin. The basin deepens towards the south along the margin with the Arunta Region.

**Thickness:** Up to 3.7 km.

**Economic:** Numerous deposits of sedimentary phosphate including the Wonarah phosphate deposit. Several lead-zinc occurrences are located along the southern margin. Frequent oil shows throughout the basin.

**Exploration:** Major exploration target for sedimentary phosphate. Exploration for base metals, diamonds, manganese, oil and gas. Locally forms shallow cover over prospective basement.

**Metamorphism:** Unmetamorphosed.

## Wiso Basin

*Mines and Energy / Geological Survey / Geology and Resources / Geology of the NT / Wiso Basin*

**Lithology:** Dolostone, limestone, shale, sandstone, siltstone.

**Epoch Min:** Devonian.

**Epoch Max:** Cambrian.

**Age Min:** 360 Ma.

**Age Max:** 540 Ma.

**Summary:** An intracratonic basin forming part of the Central Australian Platform Cover.

**Relationship:** Faulted against Palaeoproterozoic metamorphic rocks of the Aileron Province to the south. Unconformably overlies Palaeoproterozoic rocks of the Tanami Region to the west, Tenannt Region to the east, and the Proterozoic Victoria-Birrindudu Basin to the northwest. Cretaceous rocks of the Dunmarra Basin cover its northern margin. The basin deepens toward the south (Lander Trough) along the margin with the Arunta Region.

**Thickness:** Up to 3 km in the Lander Trough, generally less than 300m elsewhere.

**Economic:** Rare oil shows in stratigraphic holes. Gas shows in waterbores. No petroleum wells have been drilled.

**Exploration:** Virtually unexplored. Potential for petroleum, base metals and phosphate. Currently explored for diamonds.

**Metamorphism:** The strata are not metamorphosed.
Figure 5: Known Mineralisation in the area.

Figure 6: Geology and Geological Provinces
The Namerinni Group is shown as light blue, and the Renner

[Map showing geological features and mineralisation locations]
Figure 7: Faulting in the area

Figure 8: Regolith
Figure 9: Gravity Image

Figure 10: TMI
4. **COMPLETED EXPLORATION April 2012 - April 2013**

A literature review in conjunction with the existing geophysical and geological data has downgraded the potential of EL28909 and 28911 for manganese mineralisation as neither licence covers the Namerninni Group and in particular the Shillinglaw Formation member of that group.

A brief site visit was carried out in March 2013 to check the relationship between the manganese mineralisation and ELs 28909 and 28911. This confirmed that EL28909 covered only a small area of Nannerninni Group rocks, and that EL28911 contained none.

5. **COMPLETED EXPLORATION April 2013 - June 2014**

Kingsland Resources reviewed the likely prospectivity of these licences and has concluded that their prospectivity is low. No other work was carried out.

6. **RECOMMENDATIONS**

Continuing exploration of both EL28090 and EL28911 is not recommended and the licences have been surrendered.
7. REFERENCES


