



## **SINOSTEEL AUSTRALIA PTY LTD**

*ACN 009 277 230*

**EL26534**

### **HELEN SPRINGS PROJECT**

### **ANNUAL REPORT**

**for the period ending 1 August 2011**

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Submitted to: NTGS, Geoscience Information

Tenement Holder: Sinosteel Australia Pty Ltd

Exploration Operator: Sinosteel Australia Pty Ltd

Tenement type and number: EL26534

Commodities sought: Mn and Cu

Map Sheets: 1:250K Helen Springs SE53-10  
1:100K Helen 5661 and Monmoona 5761

Datum: GDA94, projected to MGA53

Date of report: August 2011

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## EXECUTIVE SUMMARY

Tenement number EL26534 was granted on 1 August 2008, and is held in the name of Sinosteel Australia Pty Ltd., who is also the operator of the tenement. The tenement has been termed the "Helen Springs Project". Initially the tenement covered 284 blocks for 926.0 sq kms. The tenure was reduced to 106 blocks for 345.45 sq kms, after the initial 2 year period, on 1<sup>st</sup> August 2010. Tenure has been reduced again to 53 blocks for 172.72 sq kms on 1 August 2011.

A review of the geology and geophysical data conducted by Sinosteel Australia has indicated that the Bootu syncline continues into the tenement and that the Bootu Formation hosting the Bootu Creek Mn mineralisation may form part of an anticline and syncline under Cainozoic regolith cover in the south-eastern part of the tenement and in a narrow strip along the central western side of the tenement. Manganese mineralisation likely formed from low temperature hydrothermal fluids associated with silicification of dolomite deposits, and potential copper mineralisation may be related to mineralising fluids associated with intrusive sources from the Cambrian Helen Springs volcanics.

A RepTEM high-resolution helicopter, time-domain electromagnetic survey was flown in January 2009 over the SW part of the tenement, covering an area of 283 sq kms. Data and preliminary results were provided in the 2008/2009 annual report. During the previous reporting period initial data processing of the RepTEM data were carried out. A number of geophysical and geological GIS compilation plans were generated at 1:100,000 and 1:50,000 scales. Detailed RepTEM data processing, geological bedrock and structural interpretation, target generation and prioritisation, and target modelling were completed to identify drilling targets. Some highly conductive and magnetic bedrock features were identified as potential mineralisation targets. A reverse circulation (RC) drill program was been designed to test drill targets and a Mine Management Plan (MMP) was submitted.

During this reporting period Sinosteel made a site visit to plan drill program logistics, review site environmental conditions, and meet with land owners and station managers. The field trip was completed by the authors of this report during the period 11-15<sup>th</sup> October, 2010.

The MMP was approved on 24 November 2010 (Authorisation 06/2-01), and a bond of \$7,704 has been lodged with respect to the MMP. A prolonged wet season prevented access to the field areas until June 2011. CSA Global Pty Ltd were contracted to organise and carry out the drilling program. The drilling targets were further refined and the geophysical data were modelled in great detail to better position the drill collars. A senior geologist from CSA Global organised the preparation of tracks and drill pads. Interdrill were contracted to carry out the drilling and a deposit was paid for mobilisation. CSA staff were on site for the start of the drilling campaign, but then the contract was cancelled due to the inability of the drilling rig to get sufficient depth and meter rates on the previous job. Therefore, the drilling program was not completed during this reporting period due to a chronic shortage of RC rigs in the NT region. A contract has been signed with McKay Drilling and the drill program is expected to begin during August, 2011.

## Table of Contents

EXECUTIVE SUMMARY .....	2
1 INTRODUCTION .....	4
2 GEOLOGICAL SETTING AND PREVIOUS EXPLORATION .....	5
3 EXPLORATION COMPLETED DURING THE REPORTING PERIOD .....	8
4 DISCUSSION OF RESULTS AND FUTURE WORK .....	11
5 SAFETY AND ENVIRONMENT.....	11
6 REFERENCES .....	12
KEYWORDS .....	12
APPENDIX 1 .....	13

## List of Figures

Figure 1: Outline of tenement and RepTEM helicopter EM survey area over NTGS geology. ....	7
Figure 2: Bedrock interpretation completed by Dr Jayson Meyers.....	9
Figure 3: Proposed drill locations and tenement area retained over topographic map. ....	10

# 1 INTRODUCTION

Tenement number EL 26534 was granted on 1 August 2008, and is held in the name of Sinosteel Australia Pty Ltd., who is also the operator of the tenement. The tenement has been termed the “Helen Springs project” by the company. For the first 2 years, it covered 284 blocks for 926.0 sq kms. During the previous reporting period the tenure covered 106 blocks for 345.45 sq kms and has recently been reduced to 53 blocks for 172.72 sq kms.

The tenement area is 120 kms north of Tennant Creek, 25 km east of the Stuart Highway from Helen Springs, and is within 20 kms to the north of OM Holdings’ Bootu Creek manganese mine. Access to the field area is by a small number of tracks crossing the tenement that link pastoralist water bores.

There are no existing or historical mines or mineral prospects within the tenement, and there has been little to no previous exploration work due to the Cainozoic cover in most of the tenement area. The tenement was pegged to explore for manganese and copper mineralisation hosted in the Palaeoproterozoic rocks that sit under the Cainozoic cover, and for possible palaeochannel uranium deposits. The Paleoproterozoic rocks in the SW part of the tenement likely correlate to the Tomkinson Creek, Namerinni and Renner groups. Most of the Namerinni Group rocks are absent in the tenement, as the Renner Group sits unconformably over the Tomkinson Group due to an erosional unconformity or low angle faulting prior to folding. The Tomkinson Group is the same interval that hosts the most significant manganese and copper mineralisation within the district, the Bootu Creek manganese deposits being mined along the southern nose of the Bootu Syncline.

The main target sought after is Bootu style and other forms of manganese mineralisation, copper mineralisation similar to that recently discovered at Bootu Creek, and volcanic/intrusion related copper mineralisation. Palaeochannels identified by the RepTEM survey also have potential to host uranium mineralisation and could also be sources for groundwater. The massive zones of manganese mineralisation at Bootu Creek are predominantly cryptomelane and a range of other manganese oxide minerals, most of which are conductive (Ferenczi, 2001; Scriven and Munson, 2005). The source of the manganese is believed to be basalt rocks that were leached by hydrothermal fluids, with the manganese precipitated in the dolomitic stratigraphy, and then later enriched by supergene processes (Ferenczi, 2001; Scriven and Munson, 2005). This type of deposit style is very similar to Mn mineralisation at the Woodie Woodie mine in Western Australia that can usually be targeted using helicopter borne electromagnetic methods (Meyers, 2003; Hashemi, 2005).

A helicopter time-domain electromagnetic (HEM) survey was flown over the more prospective Neoproterozoic geological terrain interpreted to underlie Cainozoic cover in the southern part of the tenement during the 2008/2009 reporting period. Final HEM data processing, bedrock interpretation and drill target generation were completed during the previous reporting period. This report covers the refined target modelling, drill planning and drill site preparation completed during this reporting period.

## 2 GEOLOGICAL SETTING AND PREVIOUS EXPLORATION

The project area is in the NTGS Helen Springs 1:250,000 scale geological map sheet SE53-10 (Hussey et al. 2001). This map sheet shows that rocks of the Proterozoic Upper Tomkinson Creek Group host the Bootu style manganese mineralisation in this region. The Tomkinson Creek Group is a ca. 1.8 Ga succession of shallow marine and continental sedimentary rocks that form part of the Ashburton /Tomkinson Creek Province of the Tennant Creek Inlier. The Bootu Formation is the host rock to the currently mined manganese mineralisation, where the manganese bearing horizon at Bootu creek can be traced around the nose of the Bootu Syncline for some 24 km. These units continue under the transported regolith and Cambrian sedimentary cover to the northeast, but their extent and cover thickness are unknown.

The southern tenement boundary is 20 kms north of the Bootu Creek manganese mine. The mine is owned by OM Holdings Ltd and operated by its wholly owned subsidiary, OM (Manganese) Ltd. The mine commenced operations in 2005 and OM has published mineral resources (including ore reserves) of 15.9 Mt at 25% Mn, estimated using a cut-off grade of 18% Mn (Scriven and Munson, 2005). The mineralisation forms shallow dipping seams of massive Mn mineralisation hosted in mudstone and dolomitic siltstone units in the nose of the Bootu Syncline. The host rocks are approximately 1.8 Ga old and the manganese mineralisation likely formed as low temperature hydrothermal deposits (Ferenczi, 2001; Scriven and Munson, 2005). The manganese mineralisation is usually conductive and can be identified at depth using electromagnetic methods (Ferenczi, 2001; Scriven and Munson, 2005). Recently, Cu mineralisation has been identified by drilling stratiform conductivity anomalies near the Mn mineralisation, and this type of mineralisation will also be targeted in the Sinosteel tenement.

There are no known mineral occurrences within the tenement due to transported regolith cover. The geology is mostly transported regolith cover of Quaternary sand, colluvium, and alluvium (Figure 1). The core of the Bootu Syncline occurs in the SW part of the tenement, and the Bootu Formation may occur in the SE part of it. However, vertical faulting, unconformities and possible low angle faulting has juxtaposed rocks from different stratigraphic levels within the exposed Proterozoic areas. Therefore, the structures and stratigraphy under Cainozoic cover in the project area are unknown and hard to predict due to the lack of drilling data.

NTGS has mapped the surface geology (Figure 1), and have carried out regional aeromagnetic surveying using 400m spaced E-W flight lines and very widely spaced gravity surveying. These data show the magnetically quiet nature of the Tomkinson Creek group sedimentary deposits with some magnetic, flat laying features suggested to be lava flows in the Cambrian sequence. The higher gravity response is likely related to thick dolomite and volcanic rock units at depth. However these data sets do not provide enough detail to interpret structures and stratigraphy below the Cainozoic cover, and they are unable to predict the cover thickness across the tenement. During the 2008/2009 reporting period, Sinosteel flew a RepTEM airborne electromagnetic survey to map conductive units with depth, look for conductivity anomalies that may correspond to mineralisation, and get detailed magnetic information to improve the resolution over the existing government data (outline of the RepTEM survey area shown in Figure 1).

During the previous reporting period final data processing of the RepTEM data were carried out. A number of geophysical and geological GIS compilation plans were generated at 1:100,000 and 1:50,000 scales. Detailed RepTEM data processing, geological bedrock and structural interpretation, target generation and prioritisation, and target modelling were completed to identify drilling targets (see Appendix 1). Some highly conductive and magnetic bedrock features were identified as potential mineralisation targets. A reverse circulation (RC) drill program was been designed to test drill targets and a Mine Management Plan (MMP) was submitted.

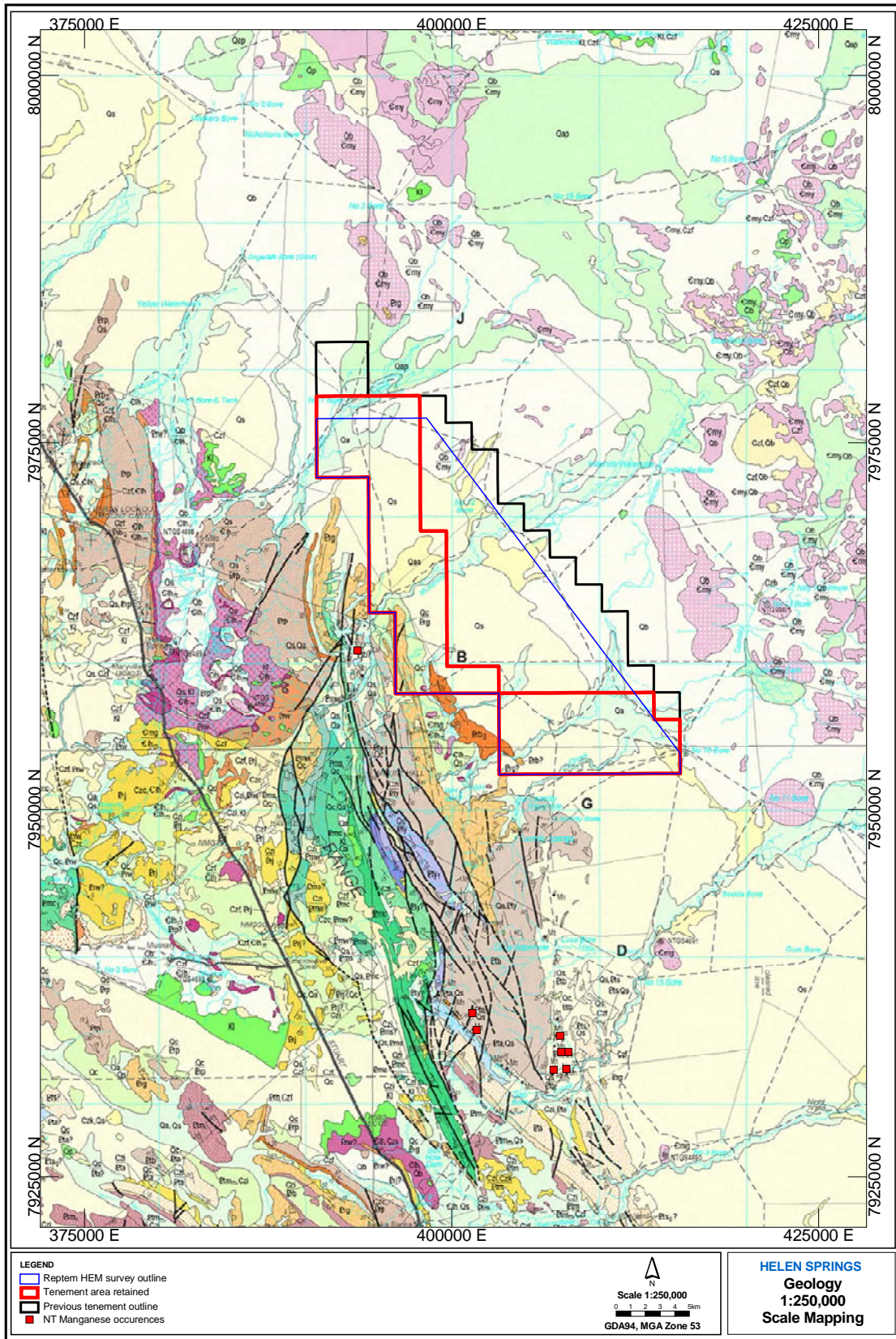


Figure 1: Outline of tenement and RepTEM helicopter EM survey area over NTGS geology.

### **3 EXPLORATION COMPLETED DURING THE REPORTING PERIOD**

During this reporting period, the authors made a site visit to check target areas and prepare logistics for drilling, the geophysical data were modelled and analysed in more detail to better position drill collars and target depths, and CSA Global were contracted to prepare the access tracks and drill pads for the drill program and carry out the drilling program.

Report authors Dr Jayson Meyers and Nigel Cantwell visited site during 11<sup>th</sup> – 15<sup>th</sup> October, 2010 to review drill program logistics, assess environmental conditions and meet with the land managers. In addition, a visit was made to the Bootu Creek Manganese mine to gain a better understanding of the local geology and style of Mn mineralisation.

The current drill targets are a mixture of magnetic and EM anomalies. The HEM and magnetic data were modelled for selected targets to refine drill collar positions. Plots of the planned drill traces shown against HEM inversion sections and magnetic data profiles are provided in Appendix 1.

Following approval of an MMP for exploration operations during the reporting period, CSA Global were contracted to organise and carry out a RC drill program to test the geophysical targets. CSA Global Senior Geologist Nikita Sergeev made a site visit and prepared the access tracks and drill pads. CSA Global NT Manager Patrick Maher sought quotes from various drilling companies. The drilling program was not completed during this reporting due to the initial drilling contract with Interdrill being cancelled due to non-performance on their previous job in the NT and then a shortage of RC drill rigs to get the program finished in a tight time frame. Interdrill have kept Sinosteel's mobilisation payment. A contract has been signed with McKay Drilling, and they are expected to start in the last week of August 2011.

In addition, Sinosteel submitted the required forms for tenement EL 26534; *Nomination of Blocks to Retain, Partial Relinquishment Report, Application for Variation of Covenant and Expenditure Report* during the current reporting period. The tenement area retained is shown in Figures 1 to 3.

The exploration events of this reporting period are listed as follows:

- MMP approved 24 November 2010.
- Geophysical data reprocessed and targets were re-modelled in detail to refine RC drill positions, dip, azimuth and target depths.
- CSA Global were contracted to organise and carry out the RC drilling program.
- A prolonged wet season resulted in standing water and saturated ground, therefore preventing site access until June 2011.
- Track clearing and drill pad preparation completed in June 2011.
- Interdrill were contracted to start drilling in June-July, but the contract was cancelled due to non-performance on their previous job while CSA staff were on site.
- Tenement reduction by 50% and Variation of Covenant, July 2011
- Drilling contract was signed with Mackay Drilling. Drill program to start August 2011.



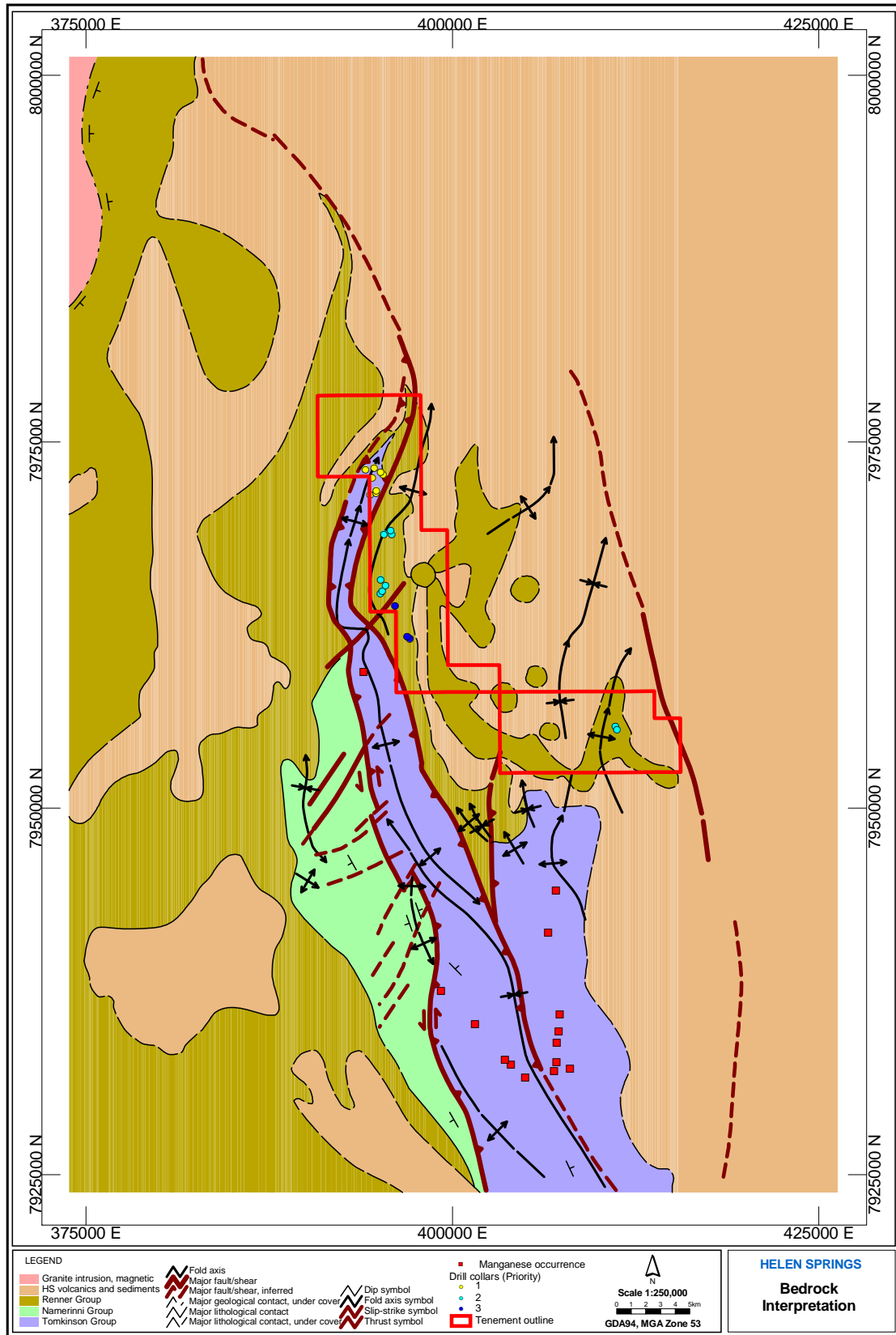


Figure 2: Bedrock interpretation completed by Dr Jayson Meyers. Note that a lot of detail included in the interpretation has been removed from this plot to reduce clutter at this scale.

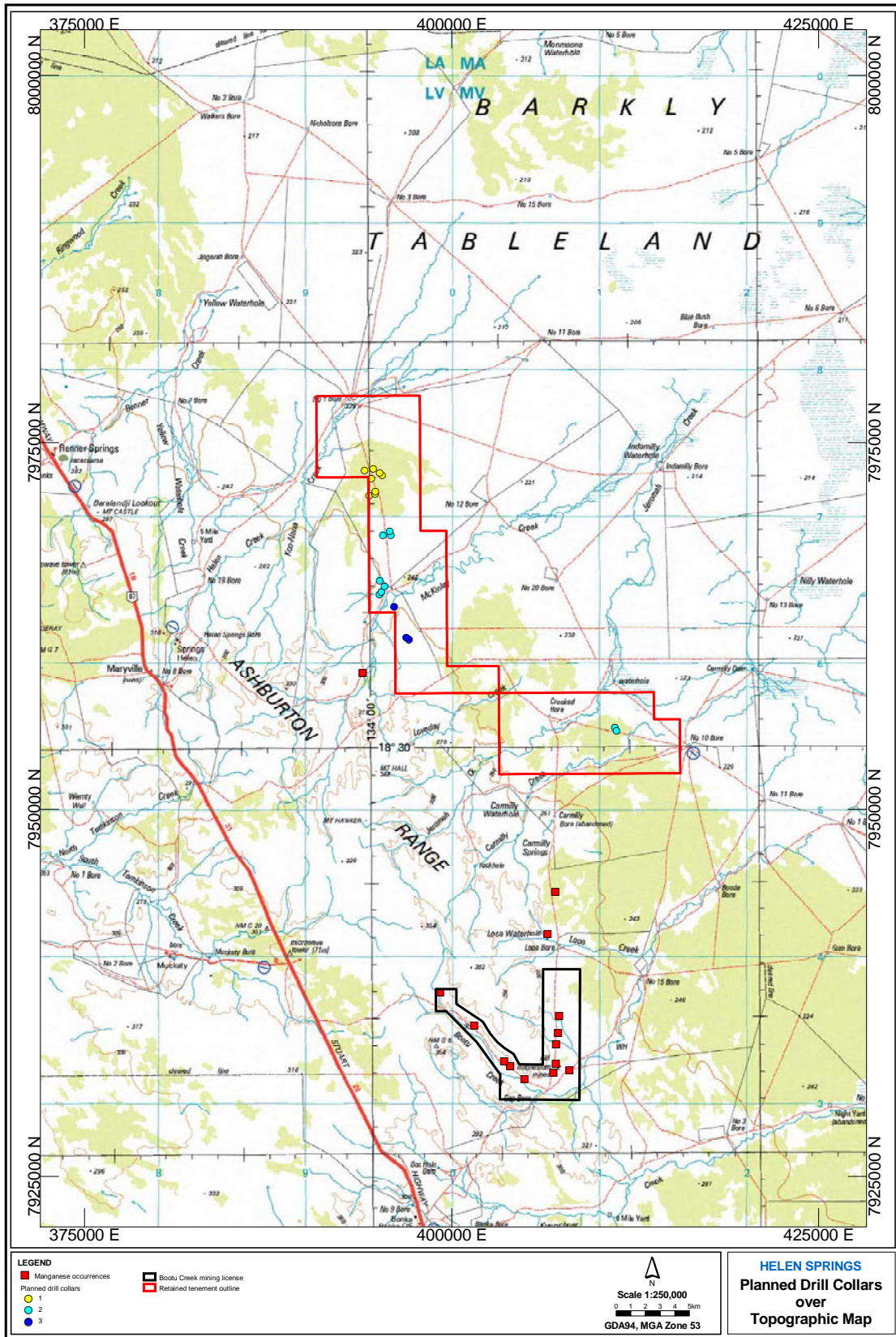


Figure 3: Proposed drill locations and tenement area retained over topographic map.

## **4 DISCUSSION OF RESULTS AND FUTURE WORK**

High priority EM and magnetic target areas have been identified from the RepTEM survey and data processing, interpretation and modelling. These targets are discrete bedrock conductors, magnetic anomalies or both types of anomalies that are coincident and occur in what is interpreted to be favourable lithology for Bootu style manganese, carbonatite hosted REE or intrusive copper-gold bearing volcanic plugs.

Targets will be tested by RC drilling through the Cainozoic cover into the bedrock to identify the source of geophysical target anomalies and to take samples for geochemical analysis. 20 drill holes have been planned and tracks cleared for an estimated minimum drilling program of 3,000 m. Drillholes will be collared in Cainozoic sediments and will be drilled through the cover deposits into Proterozoic bedrock deep enough to explain the sources of the geophysical anomalies. In some areas, several holes will be drilled into targets along transects crossing the trend of the target anomaly. Drill chips will be inspected for lithology, mineralisation, and alteration.

Modelling of geophysical data; electromagnetic inversions and magnetic modelling, has been completed to better position drill collars to intersect the respective magnetic and/or electromagnetic target.

Drilling for this first phase of reconnaissance drilling will be undertaken in the next reporting period. The access tracks and drill pads were prepared during this reporting period but a suitable RC drilling rig could not be found during the reporting period. A contract with McKay Drilling has been signed and the drill program is expected to begin in late August 2011.

Information obtained through drilling will be input into the current bedrock interpretation. Target areas will be prioritised and if required further diamond drilling will be undertaken to explain sources of geophysical anomalies.

## **5 SAFETY AND ENVIRONMENT**

There has been no safety or environmental incidents in the current reporting year.

As part of the MMP submitted for Exploration Operations, a search of the Environmental Reporting Tool has been completed. Invasive plant species and threatened animal species have been noted. As required by the MMP the environmental aspects and impacts of the proposed exploration drilling have been identified and an exploration rehabilitation program has been determined.

## 6 REFERENCES

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## KEYWORDS

Sinosteel, Helen Springs, manganese, copper, RepTEM, helicopter electromagnetic survey, bedrock interpretation, magnetic modelling, HEM inversion, drill program, reverse circulation (RC)

## **APPENDIX 1**

### **Drill traces versus HEM Inversion Sections and Magnetic Profile Data**

See accompanying ZIP file with profile images showing planed drillhole traces in PNG format.