SINOSTEEL AUSTRALIA PTY LTD

ACN 009 277 230

EL’s 26535, 26539, 26556 and 26557

CARPENTARIA PROJECT GROUP
TECHNICAL REPORT
for the period ending 31 August 2012
GR154/10

Prepared by: Nigel Cantwell
(Resource Potentials Pty Ltd. for Sinosteel Australia)
Level 42, 108 St Georges Terrace, Perth WA, 6000
Phone (08) 93385520, Fax (08) 93219950
e-mail: nigelc@respot.com.au

Submitted to: NTGS, Geoscience Information

Tenement Holder: Sinosteel Australia Pty Ltd

Exploration Operator: Sinosteel Australia Pty Ltd

Tenements: EL’s 26535, 26539, 26556 and 26557

Commodities sought: Mn and Cu

Map Sheets: 1:250K Robinson River, Pellew and Mount Young

1:100K Calvert River, Robinson, Wearyan, Pellew, Vanderlin, BingBong and Borroloola

Datum: GDA94, projected to MGA53

Date of report: 30 October 2012

Digital report name: CARPENTARIA_2012_02_GROUP_TECHNICAL_REPORT.PDF
EXECUTIVE SUMMARY

Tenements EL 26535, 26539, 26556 and 26557 form the “Carpentaria project”, and are held in the name of Sinosteel Australia Pty Ltd., who are also the operator of the tenements. The Titles division of the Northern Territory Geological Survey (NTGS) approved Group Technical Reporting for these tenements on 13th April 2010.

There are no existing or historical mines within the tenement, and there has been little to no previous exploration work due to the Cainozoic cover in most of the project area. The tenements were pegged to explore for manganese and copper mineralisation hosted in the Proterozoic rocks that sit under the Cainozoic cover and for possible stratiform, pisolitic manganese deposits at the base of Cretaceous shallow marine deposits.

The Carpentaria project area covers portions of the Robinson River, Pellew and Mount Young 1:250,000 map sheets. The 1:100,000 map sheets include Calvert River, Robinson, Wearyan, Pellew, Vanderlin, BingBong and Borroloola. The tenements extend southwards from the coastline of the Gulf of Carpentaria. Within 5km to 10km of the coast the topography consists of relatively flat expanses of tidal marshes, lagoons and mangroves. The remainder is primarily covered by recent Quaternary cover. Pre-Quaternary outcrop from 1:250,000 mapping is restricted to the southern limits of the tenements only. Outcropping geology consists of Cretaceous sandstone, claystone and siltstone, Sandstones of the Mesoproterozoic Roper Group and Karns Dolomite, and dolomitic siltstones and sandstones of the Palaeoproterozoic Talwallah Group.

During the previous reporting period, Sinosteel initiated targetting and interpretation of a VTEM (versatile time-domain electromagnetic) helicopter electromagnetic (EM) survey, which was flown over portions of the project area during 2010. Regional 1:50,000 scale maps of the VTEM geology, airborne magnetics and radiometrics and satellite data were generated to assist targetting. Preliminary Mn and Cu exploration targets were identified for ground truthing. A site visit was planned to use a helicopter to check VTEM anomalies in the field. This work had to be postponed due to heavier than usual rains that inundated most of the tighter areas until late July 2011.

The helicopter reconnaissance of preliminary exploration targets was completed in the current reporting period. Selected samples were sent for geochemical analysis. A drilling program was planned and the necessary documents were submitted to the NTGS for Authorisation of an MMP for exploration operations. The MMP was approved and a drilling program was started late in the current reporting period.

The results of the drill program will be reported in the next Annual Technical Report. Depending on results of the drill program and ongoing analysis of geological and geophysical datasets, Sinosteel will plan another drill program to follow-up existing drilling results and/or drill test newly identified exploration targets. It is anticipated that significant tenement area will be relinquished in the next reporting period.
TABLE OF CONTENTS

EXECUTIVE SUMMARY ................................................................................................................. 2
TABLE OF CONTENTS .................................................................................................................. 3
1 INTRODUCTION .......................................................................................................................... 4
2 GEOLOGICAL SETTING AND PREVIOUS EXPLORATION ....................................................... 6
3 EXPLORATION COMPLETED DURING THE REPORTING PERIOD ............................................. 8
4 DISCUSSION OF RESULTS AND FUTURE WORK ..................................................................... 11
5 SAFETY AND ENVIRONMENT ................................................................................................. 12
6 REFERENCES ............................................................................................................................. 13
KEYWORDS ................................................................................................................................. 13
APPENDIX 1: CSA GLOBAL REPORT ON HELICOPTER RECONNAISSANCE AND SAMPLING RESULTS 14
1 INTRODUCTION

Sinosteel Australia was granted EL’s 26535, 26539, 26556 and EL26557 in July and August 2008. The tenement areas are located along a coastal region of the southern part of the Gulf of Carpentaria in the Northern Territory (Figure 1). The region has a tropical climate, with a wet season lasting from November to April. Access along roads is typically only possible in the dry season, from May to October. The area is considered prospective primarily for manganese mineralisation, similar in style to the Groote Eylandt Mn deposits and carbonate hosted hydrothermal manganese, like prospects at Robinson River within tenement EL26556. Groote Eylandt Mn mineralisation occurs within Cretaceous shallow marine sediments of the Walker River Formation. It is possible that the Walker River Formation extends under cover in the southern part of Sinosteel’s tenure. Hydrothermal carbonate hosted Mn mineralisation occurs in other parts of the tenements, but there has been no large deposits discovered to date.

The tenure is primarily covered by Quaternary cover and areas within 5-10km of the coast consist of relatively flat expanses of tidal marshes, lagoons and mangroves. Pre quaternary outcrop from 1:250,000 scale mapping is restricted to the southern limits of the tenements. Outcropping geology consists of Cretaceous sandstone, claystone and siltstone; and Mesoproterozoic sandstones of the Roper Group and Karns Dolomite, and dolomitic siltstones and sandstones of the Talwallah Group.

Following grant of the tenements, Sinosteel undertook an open-file data compilation and desktop study that was completed in July 2009. Outcomes of the study were that exploration for Mn mineralisation was complicated by the Quaternary cover and an airborne electromagnetic (AEM) survey was recommended. Southern portions of the tenement were prioritised, as there is less Quaternary cover and no tidal mangrove swamps. Sinosteel contracted Geotech Airborne to conduct a helicopter electromagnetic survey using the VTEM system. Survey production was completed during June, 2010. The northern tenement area that was not covered by the VTEM survey has since been dropped. Final data from the VTEM survey were received in mid September 2010. Targetting and interpretation of the VTEM data was completed over the 2010/2011 reporting period. This work is considered and ongoing.

This report details the initial field investigations of preliminary exploration targets and the planning of the first drill program in the project area by Sinosteel Australia. The drilling program was approved and started late in this reporting period, so the results will be provided in the next Annual Technical Report.
Figure 1: Map showing current tenement outlines and VTEM survey outline over a topographic raster image.
2 GEOLOGICAL SETTING AND PREVIOUS EXPLORATION

The Carpentaria project area covers portions of the Robinson River, Pellew and Mount Young 1:250,000 map sheets. The 1:100,000 map sheets covered, or party covered by the project area, include Calvert River, Robinson, Wearyan, Pellew, Vanderlin, BingBong and Borroloola. The tenements extend southwards from the coastline of the Gulf of Carpentaria. Within 5km to 10km of the coast, the topography consists of relatively flat expanses of tidal marshes, lagoons and mangrove swamps. The remainder is primarily covered by recent Quaternary cover. Pre-Quaternary outcrop from 1:250,000 mapping is restricted to the southern limits of the tenements only. Outcropping geology consists of Cretaceous sandstone, claystone and siltstone, Sandstones of the Mesoproterozoic Roper Group and Karns Dolomite, and dolomitic siltstones and sandstones of the Palaeoproterozoic Talwallah Group.

There are no existing or historical mines within the Carpentaria project area, and there has been little to no previous exploration work due to the Cainozoic cover in most of the project area. There are two known manganese occurrences named Robinson River 1 and Robinson River 2 which are located along the banks of the Robinson River within tenement EL 26556.

Following a desktop study Sinosteel commissioned a VTEM helicopter EM survey over high priority target areas. The survey was completed during 2010. Interpretation and targeting of the VTEM and other available information is ongoing. Preliminary targets areas are shown in Figure 2.

A RC drilling program of 2,000m has been planned to be completed prior to the onset of the 2012-2013 wet season. An MMP application has been approved, and CSA Global will be conducting the drill program on behalf of Sinosteel.
Figure 2: Map showing preliminary target areas (purple). The flight path for helicopter reconnaissance (red) and helicopter landing locations (yellow stars) are also shown over a raster image of the 1:250,00 scale geological mapping.
3 EXPLORATION COMPLETED DURING THE REPORTING PERIOD

During this reporting period, Sinosteel engaged geological consultants CSA Global Pty Ltd to assist with geological field investigations and to plan and supervise drilling programs.

A helicopter reconnaissance trip was completed to field check the preliminary exploration targets that had been generated by Sinosteel’s desktop studies and analysis of VTEM airborne EM data that have been completed over previous reporting periods. The helicopter reconnaissance was completed by CSA geologist Karl Lindsay-Park and Nigel Cantwell over a 2 day period during November 2011. All preliminary targets were flown over to check for outcropping rocks but in most cases there didn’t appear to be any outcrop to check on the ground and many of the VTEM targets coincided with localised topography lows which may have given rise to an EM anomaly when filled with water.

During the helicopter reconnaissance four rock samples were taken for geochemical analysis. A sample was taken near the known Robinson River Mn occurrence located on the banks of the Robinson River within tenement EL 26556. Another sample was taken from outcropping rocks within an interpreted sub-basin in the western tenement area, within tenement EL 26539. Another two samples were taken over a circular shaped magnetic anomaly and coincident topographic low that is considered prospective as an intrusive kimberlite pipe target prospective for diamond mineralisation. One sample was from a sandstone, and the second samples was from a lateritic rock overlying the sandstone. The rock samples were sent for mineral analysis at Amdel Laboratories. CSA Global prepared a report describing the helicopter reconnaissance and subsequent sampling assay results. The report is attached and provided in digital format as Appendix 1. The geochemical analysis report and assay results are provided in digital format as Appendix 2.

A drilling program was planned and a Mine Management Plan (MMP) was submitted for Sinosteel’s first exploration drilling program on the tenement group (Figure 3). The initial MMP was submitted on 18th June 2012. An amended MMP, including additional information requested by the DoR Compliance Division, was submitted on 15th July 2012. Authorisation of the MMP was provided on the 17th August.

CSA Global were contracted to plan the drill program and conduct a pre-drilling program reconnaissance trip to assess field conditions and determine best access routes to planned drill sites, and to make sure there were no potential aboriginal heritage sites and environmental issues. A few drill sites were found to be too close to Seven Emu station and nearby potential heritage sites and were subsequently cancelled. The field reconnaissance trip was completed by CSA geologist Nikita
Sergyev and field assistant over the period 2\(^{nd}\) to 8\(^{th}\) August, 2012. The station managers within the project area were contacted before and during this field trip and were informed of Sinosteel’s drilling program.

Drilling contractors McKay Drilling were contracted to start the drilling program as soon as possible after Authorisation of the MMP had been received. The drill program was started late in this reporting period, in late August, and extended into September, into the next reporting period. The results of the drilling program will be reported in the next Combined Annual Technical Report.

In addition, Sinosteel submitted the various annual reporting documents required by the NT Department of Resources. This included payment of the annual rent and administration fee, expenditure reports, and applications for Variation of Covenant and requests for Waiver of Reductions for each tenement within the Carpentaria Project. The applications for Variation of Covenant and Waiver of Reductions have been approved.
Figure 3: Map showing planned drill hole locations over a topographic raster image. The majority of the planned holes are located near the known Robinson River Mn occurrence, near Seven Emu Station.
4 DISCUSSION OF RESULTS AND FUTURE WORK

The results of the helicopter reconnaissance of preliminary exploration targets were mixed. Many of the VTEM airborne EM anomalies were not explained by helicopter reconnaissance, as in many cases there was no outcrop rocks observed to check on the ground. However, it is thought small natural ponds and cultural features may explain some of the VTEM anomalies.

Assay results indicate that the sample taken near the known Robinson River Mn occurrence contained high levels of Manganese and Iron, as expected. The sample taken near the interpreted western sub-basin did not contain anomalous assays beyond that expected for haematitic sandstone. This area is still considered for Mn mineralisation.

The assay results for the sandstone sample collected over the magnetic anomaly were inconclusive. Some of the kimberlite indicator elements: Ni, Ce and La were elevated, but others: Cr, Ti, V and Nb showed no difference compared to another sample of laterite taken over the sandstone (Appendix 1). Alkali and lanthanide metals were elevated in the sandstone sample. CSA Global indicated that a possible explanation of the geochemical and geophysical differences between the samples is that the sandstone is derived from a magnetite-bearing feldspathic intrusive and that such an intrusive would have the potential to host rare earth element mineralisation. The amount of data available is limited, so Sinosteel still considers this a potential kimberlite target as well.

During the next reporting period, the results of the drilling program will be analysed. CSA Global will provide a report on the drilling program along with drilling data and rehabilitation report, and this will be reviewed by Sinosteel Australia. The drilling program started late in the current reporting period and extended into the next reporting period so there are no laboratory results to report as yet. It is estimated that 40 RC holes will be drill for a total of 2,500m.

The existing analysis of the VTEM data will be reviewed. Further processing and interpretation of the VTEM and other geophysical and geological datasets may be undertaken. Another drill program may be planned to follow-up results from the recent drill program and/or new targets generated from review of geophysical and geological data. Depending on the outcomes of the drilling programs and the review of geophysical and geological targets, Sinosteel will relinquish portions of the current tenure. It is anticipated that significant tenement areas will be relinquished in the next reporting period.
5 SAFETY AND ENVIRONMENT

No safety and environmental issues were raised during this reporting period.

A drill program was started late in this reporting period but the majority of the drilling program was completed in the next reporting period. The results of the drill program and any issues regarding safety and environment will be reported in the next Combined Annual Technical Report.
6 REFERENCES


KEYWORDS

Carpentaria project, Manganese, Group Report, VTEM, helicopter EM survey, helicopter reconnaissance, field samples
APPENDIX 1: CSA GLOBAL REPORT ON HELICOPTER RECONNAISSANCE AND SAMPLING RESULTS
Airborne Field Exploration

Sinosteel Australia

Carpentaria Manganese Project – Field Reconnaissance
ELs 26557, 26539, 26556, 26535
Northern Territory

By
Karl Lindsay-Park
B App Sc

For:
Sinosteel Australia,
Lvl 41, 108 St. Georges Terrace,
Perth, WA 6000

Approved:
Graham M. Jeffress
Manager – Exploration & Evaluation
Executive Summary

A two day, helicopter-assisted, reconnaissance trip was made to assess the validity of 26 groups of VTEM anomalies in the Gulf of Carpentaria region. The field team was based in Borroloola.

The results of the field reconnaissance were generally disappointing, with most of the VTEM anomalies attributed to cultural features (buildings, vehicles, borrow pits, etc.) and natural ponds or swamps.

It was observed that although several of the VTEM anomalies coincided with natural ponds, there are numerous ponds present in the survey area that did not give a response. Thus it is impossible to categorically say the anomalies are caused by variations in moisture or ponds.

Three of the VTEM anomalies were considered to lie in the most prospective position from a geological perspective. Detailed examination of these areas failed to find a ready explanation for the anomalism and additional work on these targets is warranted.

Four rock chip samples were collected during the field visit. Two of these were taken from identically looking rocks. The first came from a laterite developed over a magnetic anomaly which is also a topographic low. The second came from a laterite developed over haematitic sandstone. Comparison of the assay results suggest the former is derived from a magnetite-bearing felspathic intrusive.
Contents

Executive Summary ............................................................................................................II
Contents ...........................................................................................................................III
1 Introduction ......................................................................................................................1
2 Work Undertaken ..........................................................................................................3
  2.1 Pre field trip ..............................................................................................................3
3 Field Observations .......................................................................................................5
  3.1 Landform ...................................................................................................................5
  3.2 Robinson River Manganese .....................................................................................8
    3.2.1 Anomalies 20 to 26 ..........................................................................................10
    3.2.2 Anomaly 8 ........................................................................................................11
    3.2.3 Anomalies 1 to 18 ..........................................................................................12
    3.2.4 Magnetic Anomaly 1 ......................................................................................12
    3.2.5 Hill at 673744 8206462 ................................................................................13
4 Assay Results ................................................................................................................15
5 Conclusions ...................................................................................................................16

Figures

Figure 1. Carpentaria Manganese Project Location Map ..................................................2
Figure 2. Location Map of the VTEM anomalies, Northern Territory ...............................4

Photographs

Photo 1. Topography at the western end of the project area ...........................................5
Photo 2. Typical vegetation cover on western project area ..............................................6
Photo 3. Water pond – typical landscape feature in the project area .........................6
Photo 4. Typical water pond feature in project area – November, 2011 .....................7
Photo 5. Manganese mineralisation at Robinson River ...............................................8
Photo 6. Galvanised iron lean-too ...................................................................................9
Photo 7. Pandanus vegetation .......................................................................................9
Photo 8. Robinson River bed .......................................................................................10
Photo 9. Silcrete ............................................................................................................11
Photo 10. Silcrete rubble at Anomaly 8 ..........................................................................12
Photo 11. Rubbly iron rich laterite amongst Paperbark vegetation ............................13
Photo 12. Haematitic sandstone ...............................................................................14
Photo 13. Haematite pisolite laterite forming over the haematite sandstone .............14

Appendices

Appendix 1 ......................................................................................................................17

This report also refers to “Attachment 1 - Carpentaria Mn 2011 Assay Results” and this is submitted as an attachment in Microsoft Excel 2010 digital form along with this document.
1 Introduction

In November 2011 a helicopter-assisted reconnaissance trip was made by Karl Lindsay-Park (Associate Senior Geologist, CSA Global) and Nigel Cantwell (Geophysicist, Resource Potentials) to four exploration licences (ELs 26557, 26539, 26556, 26535) owned by Sinosteel Australia.

The exploration licences are located east of Borroloola near the Gulf of Carpentaria in the Northern Territory (Figure 1).

The purpose of the trip was to ground-truth several VTEM anomalies defined by Resource Potentials.

It was anticipated that some of the VTEM anomalies would be related to manganese mineralisation and validation of the model would assist in determining a work program for 2012.
Figure 1. Carpentaria Manganese Project Location Map
2 Work Undertaken

2.1 Pre field trip

Prior to departing for the field, the geophysical data presented to CSA Global by Resource Potential was added to CSA’s NT-wide GIS and a plan showing the locations of the VTEM anomalies was prepared as shown in Figure 2.

Each of the VTEM anomalies or groups of anomalies, depending on geographic distribution, was assigned a number as shown on the plan. As part of the preparation each of the anomalous areas was examined in GoogleEarth™, as well as overlain on the regional geology and total magnetic intensity imagery.

Nigel Cantwell suggested that additional refinement of the interpretation of the VTEM data was possible and this might provide more information about the nature of the responses.

The results of the examination of the anomalies superimposed on the GoogleEarth™ imagery are tabulated in Appendix 1. The table presents the Anomaly ID as shown on the location plan, the location of each anomaly in latitude/longitude and MGA co-ordinates and a comment on the probable cause of the anomaly.

In many cases the anomalies appeared to be related to buildings, borrow pits, the main road and ponds or swampy areas. However, the GoogleEarth™ imagery shows numerous ponds or swamps, borrow pits and roads that do not present as VTEM anomalies and as such the geographic features and VTEM anomaly position may be just coincidence.

The examination of the VTEM anomaly positions with respect to the mapped geology indicated that the anomalies numbered 19 to 26 and 8 are located in the most prospective areas when considering a Groote Eylandt style of mineralisation. The VTEM anomalies are more linear than elsewhere suggesting a strike extent more probably related to mineralisation than a semi-circular feature. The anomalies also occur reasonably close to outcropping Proterozoic Sandstone and Quartzite where buried mineralisation may have developed on the Proterozoic, Cretaceous unconformity.

It was also noted that the VTEM anomaly identified as 19 corresponds to the mapped position of the Robinson River 1 and 2 manganese occurrences.
Figure 2. Location Map of the VTEM anomalies, Northern Territory
3 Field Observations

3.1 Landform

The first and most striking observation that can be made about the project area is how flat it is. Photo 1 was taken from the western end of the project area looking towards the east. The apparent variations in topography are the result of cloud shadows and fire scares.

Most of the project area has been burnt off and now consists of open Eucalypt forest with local patches of Cyprus Pines. A closer examination of the general area, Photo 2, shows the effect of the early season burn which has removed almost all of the undergrowth. The absence of undergrowth made observation of the ground easy and effective from the helicopter. Inspection of photo 2 shows how easily car tracks, termite mounds, tree bases and scattered (white) sub crop can be seen. It was concluded that conducting the examination of the VTEM target areas at a flight height of between 160-230m could not fail to locate outcrops if they were as large as a fallen tree, approximately 30cm diameter and about 5m long.

Photo 1. Topography at the western end of the project area
Photo 2. Typical vegetation cover on western project area

Photo 3. Water pond – typical landscape feature in the project area
The second most dominant feature of the landscape is the large number of shallow (<1m deep) natural lakes of various size present. Photos 3 and 4 show two of the typical sorts of ponds that occur. It is important to note that in November most of the ponds are dry but when the VTEM survey was flown in late April or early May many would have still held water, some would have been damp and only a few would have been dry.

Photo 3 is a typical pond that forms for no obvious reason other than it is a depression. These ponds, up to a few kilometres in diameter are very common and clearly recognisable due to the variation in vegetation from open Eucalypt forest to green grass and Melaleuca trees. Photo 4 shows another style of pond that is fairly common. In this case the water is in a small, deep pit which has developed in a laterite layer. Overlying the laterite is a white silcrete. The vegetation density developed over areas of silcrete exposure is much less than developed in areas of sand or laterite cover.

A general observation made while flying between VTEM target areas, at some targets and particularly in the creek bank at MGA Z53 741580mE 8194705mN is that the land surface is comprised of unconsolidated white sand, laterite or silcrete. In fact, the creek bank at the quoted co-ordinate consist of a flat lying stratigraphy of (from top to bottom) 20cm of white sand, 50cm of welded pisolite iron laterite, 50cm of cross-bedded sandstone, 30cm of laterite as above, 50cm of massive sandstone followed by a finely bedded interval of sandstone and siltstone layers.

The presence of several sandstone and laterite layers in the creek bank and the evidence of laterite overlying silcrete and elsewhere silcrete overlying laterite suggest a history of multiple land surfaces that have been preserved. Added to the complexity is the possibly of
rivers meandering across the region and numerous point-bars, palaeo-channels and like features being present beneath the sand cover.

3.2 Robinson River Manganese

The geological map of the region indicates the presence of two manganese occurrences that correspond to the VTEM Anomaly 19 area which is made up of four individual VTEM targets.

The known mineralisation provided an ideal place to start the prospecting work. One occurrence (MGA Z53 723213mE 8199948mN) is located in the bank of the Robinson River.

The mineralisation appears as thin stringers and surface coatings in and on sandstone beds, (see Photo 5). The mineralisation shows some lateral variation and in places beds of massive mineralisation to 5cm occur. Sample RR1001 was taken at this locality. The outcrop is poor and the vegetation is very thick which prevented an estimate of the distribution of mineralisation being made. The northern two of the four VTEM targets that make up anomaly 19 appear to be related to the known mineralisation. The southern most of the four targets corresponds to the location of the abandoned Seven Emu homestead.

Photo 5. Manganese mineralisation at Robinson River.

The third (from the north) VTEM target at anomaly 19 is the largest in the group and given the proximity to mineralisation some effort was made to examine the area. Disappointingly, no mineralisation was discovered. The centre of the VTEM response appears to be related to a galvanised iron lean-to (photo 6) and possibly to a stand of Pandanus (photo 7). Pandanus only grows near water and is common on the river banks. A stand of Pandanus away from the river suggests the presence of a spring or similar water source.
Photo 6. Galvanised iron lean-to

Photo 7. Pandanus vegetation, a sure sign of water
To further assess the possibilities at Anomaly 19 an examination of the rivers bed-load was made. Photo 8 shows the size of and the extent of the material present. Most of the rock present is quartzite and sandstone with much less siltstone and silcrete. No manganese was located.

Photo 8. Robinson River bed

The examination of Anomaly 19 was disappointing in the sense that no major outcrops of manganese were located. However, the known mineralisation has clearly produced an EM response and this suggests that unexplained VTEM anomalies need further work.

3.2.1 Anomalies 20 to 26

Anomalies 20 to 26 are located in the east of the tenements, and based on a Groote Eylandt target style were considered to be the most prospective targets.

Examination of these areas and the zone between the anomalies and the outcropping Proterozoic from the air and also by a short field traverse failed to find any manganese occurrences. With the exception of anomaly 26 no obvious explanation for any of the responses was forthcoming. Anomaly 26 appears to be associated with a small round pond and a linear outwash zone with a distinct change in vegetation.

The absence of any direct evidence for the cause of this group of VTEM anomalies, their implied position with respect to the unconformity, the location of known mineralisation and their linear nature suggest anomalies 20, 24, 25, 22 and 23 remain the most prospective.

Anomaly 21 is the Seven Emu Station house.
3.2.2 Anomaly 8

VTEM anomaly 8 was also considered to be a “good” target based on its size and position near the Proterozoic quartzite outcrop. Examination of the area from the air failed to locate any significant outcrops but the anomaly appears to be related to a broad depression surrounded by silcrete. Photo 9 shows the edge of the silcrete layer and the step-down to the next topographic level. Several VTEM anomalies were located in similar geographic positions. It is thought that increased run-off from the silcrete into the lower area and the associated change in moisture content may be responsible for the anomalism.

![Photo 9](image)

Photo 9. Silcrete to a large extent controls the topography. Several VTEM anomalies were situated where the Silcrete steps down to the next topographic level.

Photo 10 was taken on the site of anomaly 18 and shows the typically rubbly edge of the silcrete as it descends to the next layer down. In the case of Anomaly 8 the next level down appears to be just grey or black soil.
3.2.3 **Anomalies 1 to 18**

Examination of the remaining anomalies was completed mainly from the air and occasionally on the ground. Overwhelmingly this group appears to be related to depressions with distinctive vegetation changes (ponds and swamps), houses, buildings, radio masts, abandoned machinery, borrow pits and the Savannah Highway itself. Most have no outcrop or subcrop.

3.2.4 **Magnetic Anomaly 1**

One discrete magnetic anomaly was identified from the recently captured airborne data and selected for inspection. Unfortunately, none of the magnetic line data was available for examination and as such no feel for the depth or orientation of the causative body could be inferred. The magnetic anomaly, centred at Z53 683150mE 8214980mN coincides with a topographic low with a distinctive vegetation anomaly.

Photo 11 was taken near the centre of the magnetic anomaly. The area consists of very thick melaleuca trees (paperbarks) and discontinuous but large patches of rubbly laterite. Sample MH001 (683150 8214980) was collected as small bits from several areas of rubble. The staining on the tree trunks indicates the area is submerged by about 50 to 60cm each year.
The coincidence of a magnetic high and topographic low is considered to be interesting. If magnetic modelling suggests the body may be caused by an intrusive pipe a drilling program will be needed to test the area. The possibility for diamondiferous pipes should not be overlooked given the proximity to the Merlin group of pipes.

### 3.2.5 Hill at 673744 8206462

One additional hill not associated with a VTEM or magnetic anomaly was visited during the field work. The hill was recognised as different due to the presence of dark coloured outcrop which from the air was thought to be manganese. Unfortunately inspection on the ground showed the black rocks to be haematitic sandstone. The rock is a medium to coarse-grained sandstone with a black fine-grained matrix. Overlying the haematite sandstone is a haematitic laterite which forms the hill top.

Photo 12 shows the haematitic sandstone which streaks to the expected red-ochre colour. The sandstone forms a hill approximately 5m high. Photo 13 shows the haematite pisсолite laterite forming over the haematite sandstone. The lateritic layer is up to 50cm thick. Very similar haematite rich sandstone forms a flat layer of Cretaceous aged sediment over the Proterozoic Moondogie Sandstone near the Frances Creek Iron ore mines in Pine Creek. Two samples were collected from the area.

Sample MH002 consists of the hill top laterite and sample MH003 consists of the haematite sandstone. The samples were not collected with the thought of iron ore as a possible target but rather to see if the similar looking material from the site of the magnetic high is geochemically different.
Photo 12. Haematitic sandstone

Photo 13. Haematite pisolithic laterite forming over the haematite sandstone
4 Assay Results

As mentioned previously four rockchip samples were collected from the field. The assay results are presented in digital form along with this report as “Attachment 1 - Carpentaria Mn 2011 Assay Results”.

Sample RR1001 was collected at the Robinson River Manganese outcrop. As expected the sample contains elevated levels of manganese and iron and little of anything else. Sample MH003 was taken from a conspicuous black hill which was identified as haematitic sandstone of probable Cretaceous age. The assay results for MH003 do not appear to be significantly different from those expected for this type of rock.

Samples MH001 (Section 3.2.4) and MH002 (Section 3.2.5) were collected to provide a comparison for each other. Both samples consist of haematite-goethite-limonite pisolithic laterite. MH001 was sampled from outcrop developed over a discreet magnetic high which is also a topographic low, whilst MH002 was taken from the laterite developed over the MH001 sandstone which is a hill. The assay results for the two samples have been simply analysed in the comparison table in Attachment 1 (see Attachment 1 - Carpentaria Mn 2011 Assay Results).

Given that there are only two samples available the analysis has been restricted to roughly quantifying the magnitude of the differences between the assay results. For example: in the table the difference between the chromium content of the two samples is 70ppm which is expressed as -25% of the chromium content of sample MH001. The colour coding is an attempt to group the elements into broader groups that may have significance. The following general comments are appropriate:

- The iron content of the two samples is the same, element scavenging by iron is unlikely to be the cause of the differences between the samples
- The Kimberlite indicator elements (coloured yellow) are inconclusive. Ni, Ce and La appear to be elevated in MH001 but Cr, Ti, V and Nb are the same.
- The alkali metals (grey) are all significantly elevated in sample MH001.
- The metals Mn, Co and Mo show considerable differences but most of the transition metals are the same. No obvious base metal anomalism is present.
- Virtually all of the lanthanide metals are much higher in sample MH001 than in sample MH002.

The amount of data available is very limited but the simplest explanation for the geophysical and geochemical differences between the two samples and sites is that MH001 has been derived from a magnetite-bearing felspathic intrusive. The lanthanide content suggests a reasonably deep source for the intrusive.

From an exploration perspective an intrusive of the postulated type has the potential to host a rare earth element mineralisation consisting of both light and heavy REEs.
5 Conclusions

The geological reconnaissance of 26 VTEM anomalies in the Gulf of Carpentaria region was completed with three days of helicopter assistance.

The results of the work were disappointing in that no obvious signs of manganese mineralisation were located. In fact, for most of the VTEM anomalies a spatial coincidence between ponds, swamps, changes in geological cover, buildings, miscellaneous scrap metal, abandoned vehicles, borrow pits and roads became evident. It was also noted that numerous features similar to those listed exist but do not appear as VTEM anomalies. In these cases it is thought that the variations in ground moisture content when the survey was flown may have played an important part in controlling the EM features detected.

Notwithstanding the apparent failure of the airborne prospecting, several of the VTEM anomalies do not appear to be related to any of the above listed features. In particular, anomalies 20, 24 and 25 are considered to lie in a geologically favourable position, are near known mineralisation and have no obvious cause.

At a minimum the VTEM data needs to be fully processed to obtain as much information about anomalies 20, 24 and 25 as possible. The aeromagnetic data needs to be more closely examined and the line data used to model the isolated high visited on this trip. If no more data is available it would be prudent to drill test the known mineralisation at anomaly 19. Also a line of shallow RC holes starting near the Proterozoic outcrop to the south of anomaly 25 and extending at least to the VTEM anomaly is warranted.

If a drilling rig is available to do the work a hole or two into the magnetic anomaly would also be prudent.
Appendix 1.
## Sinosteel-Carpentaria Manganese Project

### VTEM Anomaly Locations

(Lat + Longs in WGS 84)  
(MGA in GDA 94)

<table>
<thead>
<tr>
<th>Anomaly ID</th>
<th>No of Parts</th>
<th>East Decimal</th>
<th>North Decimal</th>
<th>East deg,min,sec</th>
<th>North deg,min,sec</th>
<th>East MGA 53</th>
<th>North MGA 53</th>
<th>Plan No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>136.5426</td>
<td>-16.0480</td>
<td>136 32 33.3</td>
<td>-16 02 52.8</td>
<td>665100</td>
<td>8225100</td>
<td>1</td>
<td>Anomaly covers a small rise and a drainage area. No obvious cause.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>136.5281</td>
<td>-16.0812</td>
<td>136 31 41.2</td>
<td>-16 04 52.3</td>
<td>663400</td>
<td>8221500</td>
<td>1</td>
<td>Lies over a borrow pit and the C Highway. Probable laterite</td>
</tr>
<tr>
<td>3</td>
<td>A</td>
<td>136.5872</td>
<td>-16.0417</td>
<td>136 35 13.9</td>
<td>-16 02 30.1</td>
<td>669800</td>
<td>8226000</td>
<td>1</td>
<td>A well treed area. No obvious cause, no outcrop.</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>136.5920</td>
<td>-16.0530</td>
<td>136 35 31.2</td>
<td>-16 03 10.8</td>
<td>670300</td>
<td>8224600</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>136.6035</td>
<td>-16.1160</td>
<td>136 36 12.6</td>
<td>-16 06 57.6</td>
<td>671400</td>
<td>8217500</td>
<td>1</td>
<td>Overlies the C Highway. Well treed. Purple / black area in the SE of the anomaly.</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>136.6242</td>
<td>-16.0981</td>
<td>136 37 27.1</td>
<td>-16 05 53.2</td>
<td>673700</td>
<td>8219600</td>
<td>1</td>
<td>Lies next to a major creek. A distinct white otc area in the east. No obvious cause.</td>
</tr>
<tr>
<td>5</td>
<td>A</td>
<td>136.6353</td>
<td>-16.1230</td>
<td>136 38 07.1</td>
<td>-16 07 22.8</td>
<td>674900</td>
<td>8216800</td>
<td>1</td>
<td>Four areas on a very flat plain. Some ponds and drainages. Nothing obvious.</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>136.6519</td>
<td>-16.1137</td>
<td>136 39 06.8</td>
<td>-16 06 49.3</td>
<td>676700</td>
<td>8217800</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>136.6647</td>
<td>-16.1233</td>
<td>136 39 52.9</td>
<td>-16 07 23.9</td>
<td>677900</td>
<td>8216700</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>136.6726</td>
<td>-16.1200</td>
<td>136 40 21.4</td>
<td>-16 07 12.0</td>
<td>678900</td>
<td>8217000</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>A</td>
<td>136.6636</td>
<td>-16.1528</td>
<td>136 39 48.9</td>
<td>-16 09 10.1</td>
<td>677900</td>
<td>8213500</td>
<td>1</td>
<td>Overlies a borrow pit and the C Highway. Distinct geology change in the S ½ of the area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>136.6916</td>
<td>-16.2959</td>
<td>136 41 29.8</td>
<td>-16 17 45.2</td>
<td>680500</td>
<td>8197500</td>
<td>5</td>
<td>Lies on a breakaway in the cover material next to Proterozoic outcrop. Several purple / black areas</td>
</tr>
<tr>
<td>9</td>
<td>A</td>
<td>136.6906</td>
<td>-16.1578</td>
<td>136 41 26.2</td>
<td>-16 09 27.9</td>
<td>680800</td>
<td>8212800</td>
<td>1</td>
<td>Two anomalies that lie on the C highway, borrow pits. Nothing obvious, road fill?</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>136.7131</td>
<td>-16.1618</td>
<td>136 42 47.2</td>
<td>-16 09 42.5</td>
<td>683100</td>
<td>8212500</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>A</td>
<td>136.7293</td>
<td>-16.1751</td>
<td>136 43 45.5</td>
<td>-16 10 30.4</td>
<td>684800</td>
<td>8210900</td>
<td>2</td>
<td>A long anomaly associated with an orange (laterite) area.</td>
</tr>
</tbody>
</table>
## Anomaly Details

<table>
<thead>
<tr>
<th>Anomaly ID</th>
<th>No of Parts</th>
<th>East Decimal</th>
<th>North Decimal</th>
<th>East deg, min, sec</th>
<th>North deg, min, sec</th>
<th>East MGA 53</th>
<th>North MGA 53</th>
<th>Plan No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>136.7207</td>
<td>-16.1824</td>
<td>136 43 14.5</td>
<td>-16 10 56.6</td>
<td>684000</td>
<td>8210000</td>
<td>2</td>
<td></td>
<td>A pond and drainage zone. Nothing obvious</td>
</tr>
<tr>
<td>11</td>
<td>136.7508</td>
<td>-16.1635</td>
<td>136 45 02.9</td>
<td>-16 09 48.6</td>
<td>687200</td>
<td>8212100</td>
<td>2</td>
<td></td>
<td>Lies over the C highway and borrow pits.</td>
</tr>
<tr>
<td>12</td>
<td>136.7677</td>
<td>-16.1797</td>
<td>136 46 03.7</td>
<td>-16 10 46.9</td>
<td>689000</td>
<td>8210300</td>
<td>2</td>
<td></td>
<td>Lies over station buildings, generator and river</td>
</tr>
<tr>
<td>13</td>
<td>136.7964</td>
<td>-16.1110</td>
<td>136 47 47.0</td>
<td>-16 06 39.6</td>
<td>692200</td>
<td>8217900</td>
<td>2</td>
<td></td>
<td>Lies over point-bar on major river bend</td>
</tr>
<tr>
<td>14</td>
<td>136.8064</td>
<td>-16.1432</td>
<td>136 48 23.0</td>
<td>-16 08 35.5</td>
<td>693200</td>
<td>8214400</td>
<td>2</td>
<td></td>
<td>A well treed rise. No obvious cause.</td>
</tr>
<tr>
<td>15</td>
<td>136.8721</td>
<td>-16.1688</td>
<td>136 52 19.6</td>
<td>-16 10 07.0</td>
<td>700100</td>
<td>8211400</td>
<td>2</td>
<td></td>
<td>Centred on a small lake. Why this lake and not others??</td>
</tr>
<tr>
<td>16</td>
<td>136.8822</td>
<td>-16.2119</td>
<td>136 52 56.1</td>
<td>-16 12 42.8</td>
<td>701200</td>
<td>8206700</td>
<td>2</td>
<td></td>
<td>Contains highway, ricer and lakes. On a flood plain. Nothing obvious. Some sheds</td>
</tr>
<tr>
<td>17</td>
<td>136.9126</td>
<td>-16.2033</td>
<td>136 54 45.4</td>
<td>-16 12 11.9</td>
<td>704500</td>
<td>8207600</td>
<td>2</td>
<td></td>
<td>Centred on sheds and billabong. Floodplain nothing obvious.</td>
</tr>
<tr>
<td>B</td>
<td>136.9696</td>
<td>-16.2169</td>
<td>136 58 10.6</td>
<td>-16 13 00.8</td>
<td>710600</td>
<td>8206100</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>136.9824</td>
<td>-16.2189</td>
<td>136 58 56.6</td>
<td>-16 13 08.0</td>
<td>711800</td>
<td>8205900</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>A</td>
<td>137.0941</td>
<td>-16.2577</td>
<td>137 05 38.8</td>
<td>-16 15 27.7</td>
<td>723800</td>
<td>8201400</td>
<td>3</td>
<td>4 anomalies along the E side of Robinson River. 2 Mn prospects located in the area.</td>
</tr>
<tr>
<td>B</td>
<td>137.0903</td>
<td>-16.2720</td>
<td>137 05 25.1</td>
<td>-16 16 19.2</td>
<td>723400</td>
<td>8199800</td>
<td>3</td>
<td></td>
<td>Nothing obvious</td>
</tr>
<tr>
<td>C</td>
<td>137.0848</td>
<td>-16.2849</td>
<td>137 05 05.3</td>
<td>-16 17 05.6</td>
<td>722800</td>
<td>8918300</td>
<td>3</td>
<td></td>
<td>Contains station buildings</td>
</tr>
<tr>
<td>D</td>
<td>137.0855</td>
<td>-16.2982</td>
<td>137 05 07.8</td>
<td>-16 17 53.5</td>
<td>722800</td>
<td>8196900</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robinson 1</td>
<td>137.0896</td>
<td>-16.2727</td>
<td>137 05 22.6</td>
<td>-16 16 21.7</td>
<td>723400</td>
<td>8199800</td>
<td>3</td>
<td></td>
<td>Not obvious on Google earth</td>
</tr>
<tr>
<td>20</td>
<td>137.1239</td>
<td>-16.2348</td>
<td>137 07 26.0</td>
<td>-16 14 05.3</td>
<td>707100</td>
<td>8204000</td>
<td>3</td>
<td></td>
<td>Long anomaly orientated para to geographic features like drainage and tree lines. Geology?? Nothing obvious. Possibly along strike of Robinson R mineralisation.</td>
</tr>
<tr>
<td>Anomaly ID</td>
<td>No of Parts</td>
<td>East Decimal</td>
<td>North Decimal</td>
<td>East deg,min,sec</td>
<td>North deg,min,sec</td>
<td>East MGA 53</td>
<td>North MGA 53</td>
<td>Plan No</td>
<td>Comments</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------</td>
<td>-------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>137.1391</td>
<td>-16.3258</td>
<td>137 08 20.8</td>
<td>-16 19 32.9</td>
<td>728500</td>
<td>8193800</td>
<td>4</td>
<td>Covers river, flood plain and low hills. One old house. No obvious cause</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>137.1688</td>
<td>-16.3005</td>
<td>137 10 07.7</td>
<td>-16 18 01.8</td>
<td>731800</td>
<td>8196500</td>
<td>4</td>
<td>Contains two small lakes. No obvious cause. Proterozoic otc to the south. Rock has fabric</td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>137.1816</td>
<td>-16.3195</td>
<td>137 10 53.8</td>
<td>-16 19 10.2</td>
<td>733000</td>
<td>8914500</td>
<td>4</td>
<td>As for 22, good location but nothing obvious</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>137.2324</td>
<td>-16.2594</td>
<td>137 13 56.6</td>
<td>-16 15 33.8</td>
<td>738500</td>
<td>8201100</td>
<td>4</td>
<td>Nothing obvious, good location. Where rivers end on costal floodplain.</td>
</tr>
<tr>
<td>26 A</td>
<td></td>
<td>137.3089</td>
<td>-16.2594</td>
<td>137 18 32.0</td>
<td>-16 15 33.8</td>
<td>746700</td>
<td>8200900</td>
<td>4</td>
<td>On coastal floodplain. Contain lakes and forest. Nothing obvious</td>
</tr>
<tr>
<td>26 B</td>
<td></td>
<td>137.3272</td>
<td>-16.2800</td>
<td>137 19 37.9</td>
<td>-16 16 48.0</td>
<td>748700</td>
<td>8198700</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>