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First Annual Report
For the 12 months ending 19th January 2009
on
EL4022
Olary
South Australia

S. Whitehead

January 2009

Project: Olary Project

Prospect: Olary

State: South Australia

Country: Australia

Tenement: EL 4022

Organisation: Helix Resources Limited

Report Title: First Annual Report for the 12 months ending 19th January 2009 on EL4022, Olary, South Australia

Author: Whitehead, S.

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Commodities: Au, Ag, Cu, Pb, Zn

Nearest Town: Olary

1:250k Map No: SI 54-2

1:250k Map Name: Olary

1:100k Map No: 6933, 7033, 6932, 7032

1:100k Map Name: Olary, Mingary, Alabaman, Oakvale

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EXECUTIVE SUMMARY

EL 4022 is located immediately south of Olary, and covers 976 square kilometres of ground on the Olary 1:250k mapsheet. Access to the tenement is on gravel roads and station tracks off the Barrier Highway. Helix Resources are exploring for porphyry Au-Cu, Carlin-type, Skarn, Telfer-style, and Mesothermal Au deposits.

The area surrounding the tenement is rich in historical workings, and the regional geology contains some encouraging macro-scale features, which highlights the potential for significant mineralisation. Deep, mantle tapping structures (D_1 – D_3) reactivated in later deformation events (D_4 – D_5) have the potential to act as fluid conduits for metal-bearing fluids into the Adelaidian sediments. Ordovician intrusive bodies, responsible for significant mineralisation elsewhere, are a possible heat, fluid, and metal source driving hydrothermal systems in the region.

Initial exploration efforts by Helix Resources comprise a field reconnaissance trip, literature and previous exploration review, magnetic and radiometric surveys, and IKONOS satellite imagery acquisition. Review of the previous exploration on the ground revealed diamond core drilling was undertaken by Utah Development Co near the Copperlinka Mine.

1. INTRODUCTION

1.1. Location and Access

EL 4022 is located off the Barrier Highway, approximately 150km south-west of Broken Hill on the Olary 1:250k map sheet (Figure 1). It is located immediately south of the Olary township, and covers 976 square kilometres of predominantly semi-arid landscape of low relief, with the exception of the Benda Ranges to the west. Access to the tenement is via gravel roads and station tracks.

1.2. Tenement

Exploration Licence 4022 was applied for on the 28th June 2007, and was granted on the 21st January 2008.

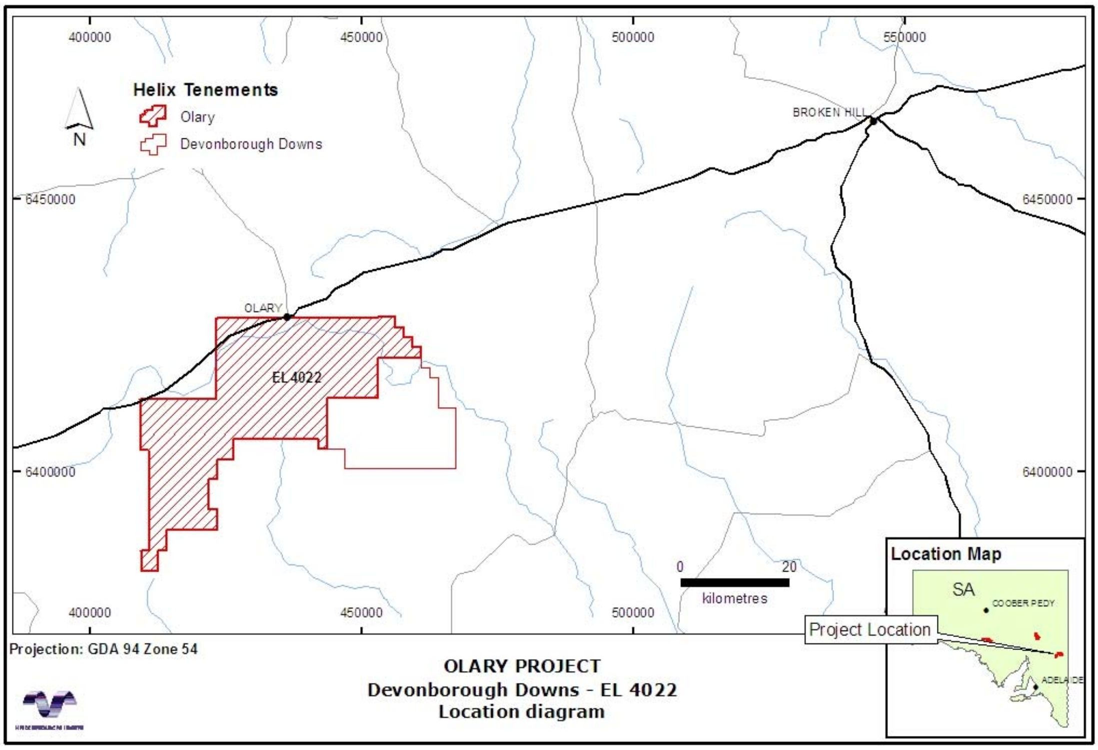

Figure 1: Locality map for Olary (EL 4022)

1.3. Exploration Rationale

EL 4022 was acquired to explore for porphyry Au-Cu, Carlin-type, Skarn, Telfer-style, and Mesothermal Au deposits. The area surrounding the tenement is rich in historical mining and prospecting, with Au, Cu, Pb, and Ag having been mined in the past.

Helix Resources is encouraged by macro-scale features, which highlight the region as having potential for significant mineralisation. The presence of lamprophyres in the region is indicative of deep, mantle-tapping structures in the area. Interpretations of D_5 reactivation of D_3 retrograde shear zones support the idea of the reactivation of deep crustal structures into the Adelaidian sediments, providing fluid conduits into the sediments.

A continental-scale Bouger gravity anomaly extending from the west coast of Tasmania to central Australia represents a deep discontinuity that has influence to the surface. The MacDonald fault to the east of the tenement and the similarly trending Teetulpa fracture zone probably represent surface expressions of this anomaly. Significant Au, Au-Cu, and Cu deposits in proximity to the MacDonald Fault and Anabama Granite indicate that there is considerable opportunity for several mineralisation events and timings.

Ordovician I-type granites, like the Anabama Granite, are responsible for significant mineralisation elsewhere in the Tasman Fold Belt (e.g. Au, Cu). The presence of diapirs and diorite intrusives in proximity to each other could suggest a link to intrusive events as a possible heat, fluid, and metal source driving hydrothermal systems in the region.

2. GEOLOGY

2.1. Regional Geology

EL 4022 is located at the eastern end of the Adelaidian Fold-Belt, within the Olary Province. The Olary region comprises Early-Proterozoic metamorphic sediments of the Willyama Supergroup, Mid-Proterozoic granites intruding fault-bounded inliers of the Willyama Supergroup, Neoproterozoic sediments of the Adelaidian Geosyncline, and the Ordovician I-type intrusive bodies.

The Willyama Supergroup

The Willyama Supergroup, along with the Mid-Proterozoic granites, form fault-bounded inliers, collectively named the Willyama Inliers, within the Adelaidian sediments (Forbes, 1991). Due to the structural complexity of the metasediments in the inliers, and the discontinuous nature of the exposures of older basement, it has been difficult to form a stratigraphic compendium for the Olary Region or to correlate it with the type section at Broken Hill (Forbes, 1991). Laing and Barnes (1986) proposed that the geological setting for the Willyama Supergroup for the Broken Hill – Olary region comprised a shallow-water carbonate shelf to the west and local acid volcanic centres in the Olary region. The central and eastern part of the Broken Hill – Olary region (i.e. Broken Hill – Mutooroo) was the site of a rift with tholeiitic volcanism and local base-metal exhalation (Forbes, 1991).

The Adelaidian Geosyncline Metasediments

The Adelaidian Geosyncline sediments vary in age from 850 to 570 Ma (Hine, 2002), with the MacDonald Fault forming a sharp contact between these sediments (to the west) and the older Early-Proterozoic metamorphic rocks of the Willyama Supergroup to the East. Within the Olary map sheet there are four distinct groups of the Adelaidian Metasediments. These include, from oldest to youngest, the Callanna, Burra, Umberatana, and Wilpena Groups. The

Adelaidian sediments in the area are mostly members of the Lower and Interglacial sequences of the Sturtian Series (Lopes, 1970). The glacial periods were closely followed by widespread deposition of neritic iron formations known as the Braemar ironstone facies (Lopes, 1970), with its origin proposed as an inorganic precipitating agent.

Structure

Both the older Early-Proterozoic rocks and younger Adelaidian sediments have been deformed to some extent by various different generations of deformation. The deformation varies from the younger sediments to the older basement, with folding more prevalent within the younger sediments and faulting more prevalent within the older basement (Lopes, 1970). The dominant structures in the Olary region are the MacDonald and Outalpa faults, both of which have a similar trend to the Teetulpa fracture zone and a continental-scale Bouger gravity anomaly extending from the west coast of Tasmania to central Australia known as the G2.

Five deformation events (three major, two minor) have been identified for the Willyama Complex and the Adelaidian sediments, with four metamorphic events also identified, corresponding to various deformation events (Berry *et al.*, 1978). D_1 to D_3 are Lower Proterozoic deformation events associated with basement deformation and a mid-amphibolite facies metamorphism (D_1) retrograding to a greenschist facies metamorphism (D_2 & D_3). D_4 and D_5 are associated with the Delamerian Orogeny (450 – 500 Ma) and a Barrovian-type upper greenschist facies metamorphism. During D_4, reactivation of basement-intersecting faults occurred and continued through D_5 (Berry *et al.*, 1978).

Table 1: Deformation and metamorphism history of the Olary Province (after Berry *et al.*, 1978)

Event	Deformation Description	Metamorphic Facies
D_1	Layer-parallel muscovite-biotite foliation in the Willyama Sediments.	Mid-Amphibolite Facies
D_2	Minor folding phase, resulting in macroscopic open folds and crenulations.	Initial retrogressive greenschist facies
D_3	Macroscopic tight folding & intense development of mesoscopic crenulations & crenulation cleavage. Development of Late D_3 faulting (f_1) prior to Sedimentation.	Retrogressive greenschist facies
f_2 – Block Faulting		
D_4,f_3	Schistosity in cover metasediments, crenulations in the basement. Basement-cover interactions give tight synclines and broad anticlines in the unconformity.	Barovian-type upper greenschist facies
f_4 - Block Faulting		
D_5	Cleavage & schistosity in cover metasediments, crenulations in basement. Open anticline over granodiorite → opposite plunging F_4 synclines in cover.	Barovian-type upper greenschist facies
f_5 – Late Block Faulting		

2.2. Local Geology

EL 4022 is situated on the eastern-most part of the Adelaidian geosyncline (metasediment package), just to the west of the MacDonald Fault. The tenement comprises a package of Adelaidian sediments from the Burra subgroup of the Wilpena Group. The Burra Group comprises a succession of rock units including (oldest to youngest) the Cradock Quartzite, Saddleworth Formation, and the Belair Subgroup. The Umberatana Group comprises several subgroups, including the Yudnamatana Subgroup (Benda Siltstone & Pualco Tillite), Farina Subgroup (Tapley Hill Formation, Tarcowie Siltstone, & Enorama Shale), and the Yerelina Subgroup (Gumbowie Arkose, Pepuarta Tillite, & Grampus

Quartzite). The Ulupa Siltstone is the only member of the Wilpena Group to outcrop on the tenement.

A series of Ordovician Intermediate dykes trending NNE are seen cross-cutting the Mindaltie Syncline, an area of complex folding in the eastern-most part of the tenement. The dykes have sharp margins with narrow contact aureoles, and are coarsely porphyritic with abundant Ti-rich biotite phenocrysts (Hine, 1998). Quaternary calcrete covers roughly half of the tenement, with the majority of the cover in the northern half of the tenement.

The tenement area is dominated by a gently WSW plunging large scale, tight syncline. A few northwest trending faults can be seen cross-cutting the Burra group in the southwest of the tenement.

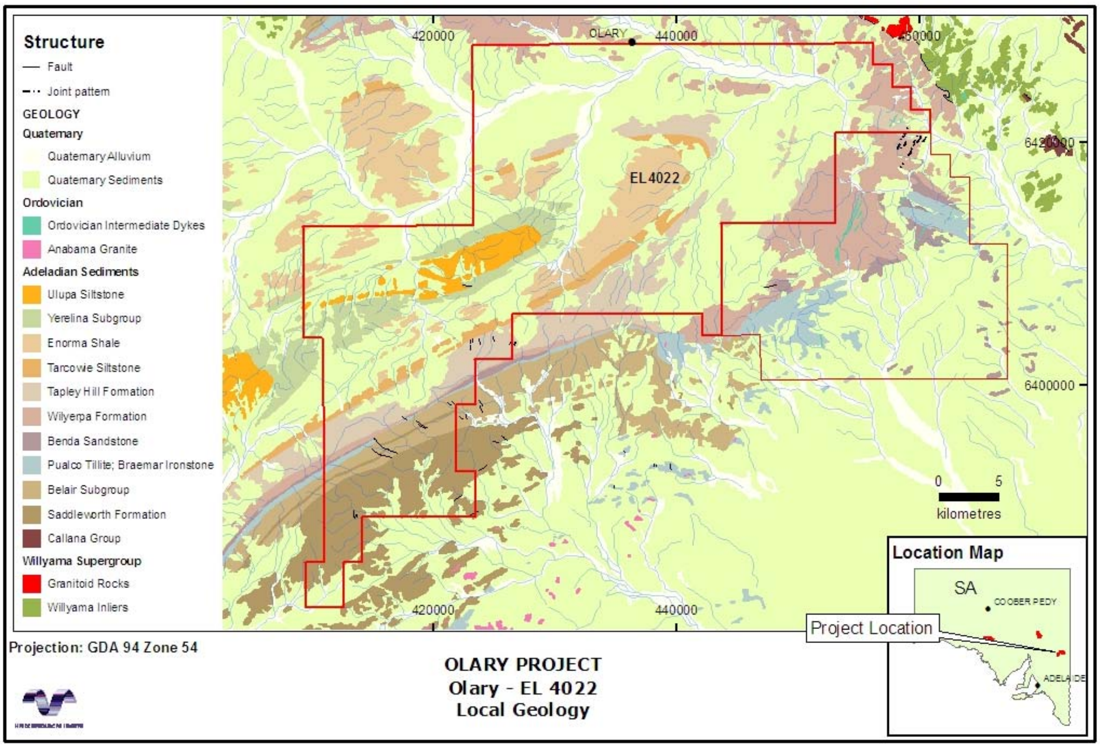

Figure 2: Geological map for Olary (EL 4022).

3. PREVIOUS EXPLORATION

There has not been much in the way of modern, systematic exploration completed over the ground currently held by Helix Resources.

Electro-winning Pty Ltd held a Special Mining Lease (SML 98) covering the area around the Mindaltie Mine in the far-east of EL 4022 from 1965 to 1966. Electro-winning completed a field reconnaissance trip, diamond & RC drilling, as well as geochemical & geophysical surveys over the mine. The geochemical survey comprised a single line of soil and drainage samples, with the best result being 300ppm. Geophysical work comprised induced polarisation and resistivity, with some magnetics. Induced polarisation and resistivity surveys identified a broad conductor across the mine, with a strike length of 2,000ft (Irving, 1966). RC and diamond drilling, undertaken to define the source of these anomalies, identified the presence of between 1 – 10% iron sulphides (mainly pyrrhotite) as the possible source. One RC drill hole intersected 20ft of 0.77% Cu, while one diamond hole identified 7 ½ft of 0.17% Cu as chalcopyrite (Irving, 1966).

Utah Development Co held the tenement EL 1102 (Copperlinka) from early-1983 to early-1989. A partial relinquishment in January 1985 reduced the tenement coverage by around 75% (Mann, 1985). The ground that was relinquished in 1985 covered over half of what is now EL 4022. A small area of EL 1102 that overlaps with the current EL 4022 was kept. However, the ground was not explored again by Utah Development Co. Exploration on EL 1102 comprised RAB and auger drill lines over the Tapley-Tarcowie contact to an average depth of 2.5 and 3.5 metres respectively, two diamond drill holes at the Copperlinka Mine (CD001) and Two Mile Dam (CD005), and numerous rock chip samples from various areas, as well as detailed 1:25,000 & 1:10,000 scale mapping and ground & aeromagnetic surveys. Results from the RAB, auger, and rock chip programmes were weak, with only one rock chip (possibly taken from the mine) displaying a gold assay of 3.5g/t. For the rest of the samples gold was at or below detection limits and no other element displayed any significant elevation. The diamond drill holes were also lacking in mineralised zones and alteration.

Climax Mining explored the tenement EL 2246 (Wiawera) from December 1996 to December 2001. The part of EL 2246 that, today, overlaps EL 4022 was relinquished in 1999. Exploration on the ground was fairly comprehensive, comprising literature research, data compilation, airborne magnetics interpretation, calcrete auger sampling, rock chip sampling, and MMI soil sampling (Hine, 2002). Climax Mining completed a fairly comprehensive regional calcrete sampling program over the area, the results from which highlighted some key areas of gold and base metal anomalism worthy of follow-up work. During 1998, priorities were given to the various anomalies and prospect areas throughout Climax's tenement, with only one anomaly present on the area currently held as EL 4022. The ground covering EL 4022 was relinquished in 1999, with one 6 x 3.5km block that covered the Mindaltie Syncline with associated historic workings held back.

4. WORK COMPLETED

Preliminary field reconnaissance, a detailed magnetic and radiometric survey, requisition of detailed IKONOS imagery, and an extensive literature and previous exploration review were undertaken by Helix in the 12 months up to 21st October 2008.

4.1. Ground Reconnaissance

A preliminary ground reconnaissance trip was completed by Helix Resources. The purpose of the trip was to liaise with the local landowners regarding future exploration efforts and to look inspect the geology and mineralisation styles present on the tenement.

4.2. Literature Review

A review of literature from various sources was undertaken by Helix Resources during the reporting period, and is set to be completed during the next reporting period.

EL 4022 contains a few historic mines/prospects. Mine-summary cards were located, where available, for some of these localities. Prospects located within EL 4022 include Copperlinka, Dalkey, Mindaltie, Nilpena, and Trinkaleena mines, as well as the Eringa Prospects and several unnamed polymetallic prosects.

An open file search using the SARIG portal at PIRSA commenced in early August 2008. The search was restricted to gold and base metal exploration on the Olary 1:250k map sheet. The review identified one company (Climax Mining LTD) that had explored the ground acquired by Helix Resources during the last 10 years, relinquishing the ground less than 6 years prior to Helix's application. Open file reports relating to Climax Mining's tenement (EL 2246) were downloaded and surveyed for valuable information. Open file documents were also reviewed for earlier exploration by Utah Development Co and Electro-winning Pty Ltd, both of which previously held ground over what is now EL4022. Information from this historical exploration review is summarised in the previous exploration section of this report.

4.3. Geophysics

UTS Geophysics was contracted by Helix Resources to fly a 100m-spaced airborne magnetic survey at 40m flight height over the EL4022 in June with the survey completed in October following operational delays. The survey covered roughly half of the tenement (564km^2, Figure 3). The data is yet to be processed and handed to Helix Resources for analysis.

Mag Rad data - see Government of South Australia Mineral Resources Website)

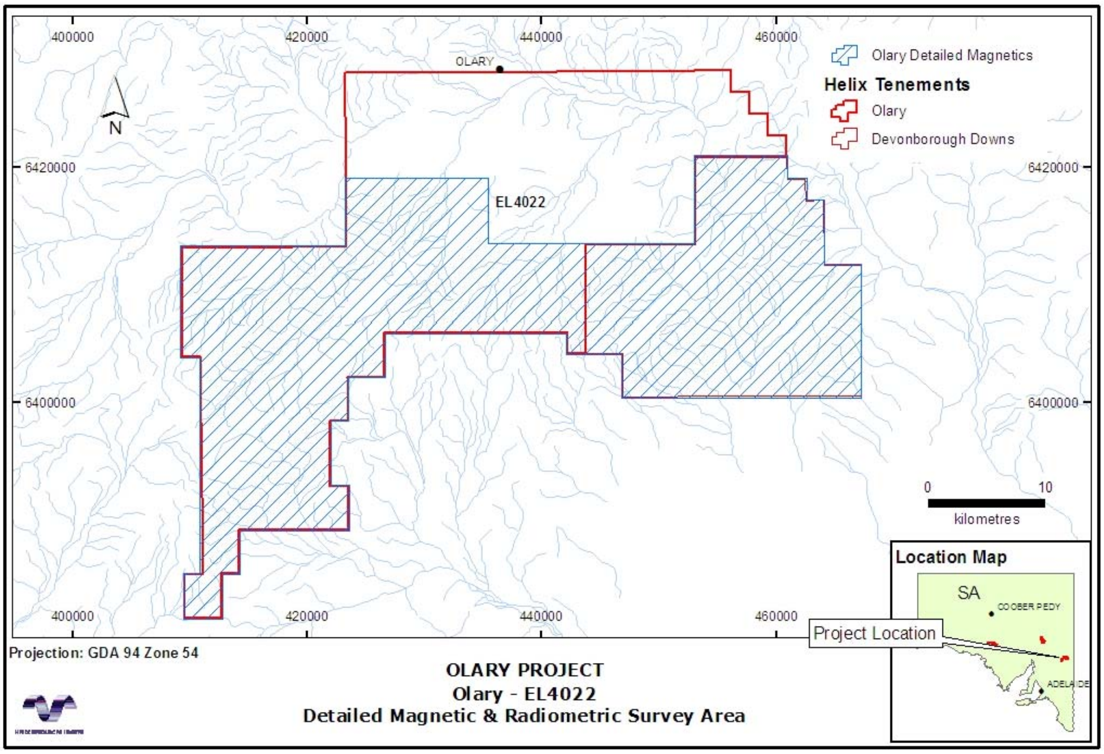

Figure 3: Detailed magnetic & radiometric survey area over EL 4022.

4.4. IKONOS Satellite Imagery

Geoimage was contracted by Helix Resources to collect and process high resolution IKONOS satellite imagery of the tenement. The data was received during September 2008. The images will provide a basis for geological mapping and sampling program design.

5. CONCLUSIONS

EL 4022 was acquired by Helix Resources in January 2008. Helix Resources is exploring the tenement for porphyry Au-Cu, Carlin-type, Skarn, Telfer-style, and Mesothermal Au deposits. There are numerous historical workings surrounding the tenement, as well as encouraging macro-scale geological features, which highlight the region as having potential for further significant mineralisation.

Work on the tenement to date comprises an initial ground reconnaissance trip, a literature and previous exploration review, magnetic and radiometric surveys, and IKONOS satellite imagery retrieval. Previous exploration over the ground by Climax Mining has revealed several interesting areas for further surface geochemistry and geological mapping to be carried out. Utah Development Co completed several drilling traverses, including two diamond holes, in the area with mixed results. Electro-winning Pty Ltd completed various drilling, geochemistry, and geophysical programmes over the area. Drilling identified the source of these anomalies to be 1 – 10% iron sulphides (mainly pyrrhotite). Drilling results varied from 20ft of 0.77% Cu to 7½ft of 0.17% Cu as chalcopyrite.

Exploration during the next reporting period will include soil, calcrete, and rock chip sampling, as well as geological mapping of targets identified from the previous exploration review.

6. EXPENDITURE

A: MINERAL - EXPLORATION ACTIVITIES	
Employee Costs	41,742
Tenement Costs (excl Rent,Rates and App'n Fees)	20
Exploration Costs	83,358
Assay	-
Drilling	-
Travel	17
Vehicles	1,323
Other	773
SUBTOTAL	127,333
C: ABORIGINAL HERITAGE SURVEYS	
Aboriginal Heritage Surveys	-
SUBTOTAL	-
D: ANNUAL TENEMENT RENT AND RATES	
Rent	6,002
Rates	-
SUBTOTAL	6,002
E: ADMINISTRATION OVERHEADS	
Overheads	10,110
SUBTOTAL	10,110
F: OTHER - LAND ACCESS NATIVE TITLE COSTS	
Land Access and Native Title	-
SUBTOTAL	-
TOTAL	143,345
Add GST on Rent	600
CLAIMABLE EXPENDITURE	**143,945**

7. REFERENCES

BERRY, R.F., FLINT, R.B., AND GRADY, A.E., 1978. Deformation history of the Outalpa area and its application to the Olary Province, South Australia. *Transactions of the Royal Society of South Australia*. **102**(2), p43 – 53.

FORBES, B.G., 1991. Explanatory notes: Olary, South Australia, sheet SH53-11. *Department of Mines and Energy, South Australia*, 47p.

HINE, R., 1998. Second annual report for the period ending 12th December 1998 on exploration licence 2246, Wiawera, South Australia (SI 54-2). *Climax Mining Ltd*, Open File Report, Env 09268.

HINE, R., 2002. Exploration Licence 2246 (SI 54-2) Final Technical Report. *Climax Mining Ltd*, Open File Report, Env 09268.

IRVING, C.F., 1966. Austminex Venture No. 9, Radium Hill, SA. Report of Investigations on SML 98. *Austminex Pty Ltd*, Open File Report, Env 00568.

LAING, W.P. AND BARNES, R.G., 1986. Metallogeny of the Willyama Supergroup, Broken Hill. *In:* 8th Australian Geological Convention, Adelaide, 1986. *Geological Society of Australia, Abstracts.* **15**, p112 – 113.

LOPES, D., 1970. S.M.L 207, Olary District, Report on exploration during period 1/7/69 to 30/3/70. *Sundowner Minerals NL and Australian Gold & Uranium Ltd*, Open File Report, Env 01343.

MANN, T., 1985. EL 1102 Copperlinka, Partial Relinquishment Report for the period 24/1/83 to 23/1/85. *Utah Development Co. Ltd.*, Open File Report, Env 06292.

MCCALLUM, W.S., 1997. Report Book 98/00022 - Review of Open File Company Exploration Data Yunta, Winnininnie, Anabama, Oakvale 1:100 000 Map Sheets, Olary 1:250 000 Map Sheet, From Early 1980s to Mid-1997. South Australia. *Primary Industries and Resources SA*.

Logistics Report

for a

DETAILED AIRBORNE MAGNETIC, RADIOMETRIC AND DIGITAL TERRAIN SURVEY

for the

OLARY PROJECT

carried out on behalf of

HELIX RESOURCES LTD

(UTS Job # B037)

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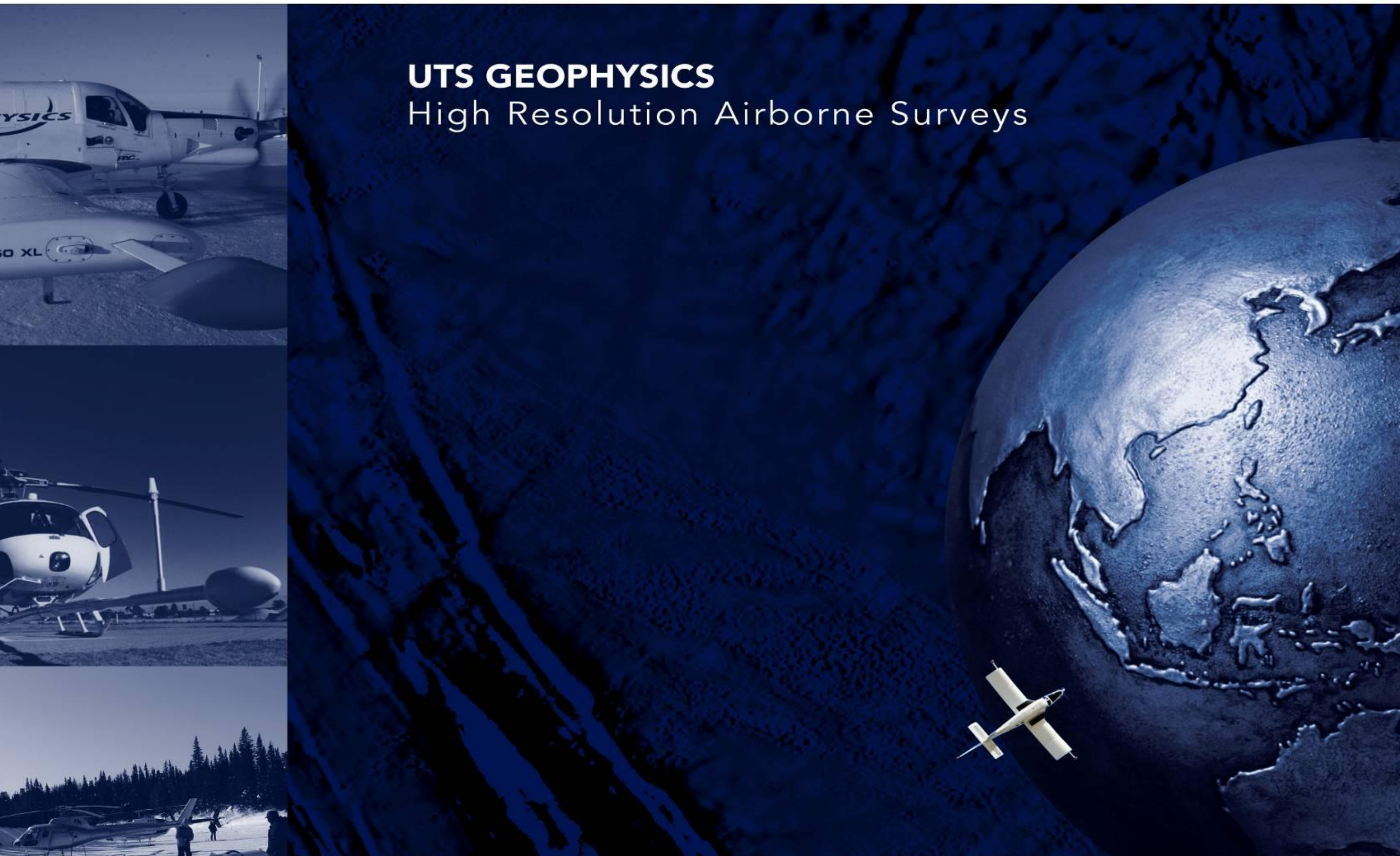

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1 GENERAL SURVEY INFORMATION

UTS Geophysics conducted a low level airborne geophysical survey for the following company:

Helix Resources Ltd
9 Richardson Street
West Perth WA 6005

Acquisition for this survey commenced on the 14th October 2008 and was completed on the 27th October 2008. The base location used for operating the aircraft and performing in-field quality control was Broken Hill, New South Wales.

2 SURVEY SPECIFICATIONS

The area surveyed was approximately 100km southwest of Broken Hill, New South Wales.
The survey was flown using the MGA94 coordinate system (a Universal Transverse Mercator projection) derived from the Geocentric Datum of Australia and was contained within zone 54 with a central meridian of 141 degrees. Details of the datum and projection system are provided in Appendix B of this report. Survey boundary coordinates are listed in Appendix C.

The survey data acquisition specifications for each area flown are specified in the following table:

PROJECT NAME	LINE SPACING	LINE DIRECTION	TIE LINE SPACING	TIE LINE DIRECTION	SENSOR HEIGHT	TOTAL LINE KM
Olary	100m	000-180	2000m	090-270	40m	10,465
TOTAL						**10,465**

The specified sensor height for the magnetic samples is as stated in the above table. This sensor height may be varied where topographic relief or laws pertaining to built up areas do not allow this altitude to be maintained, or where the safety of the aircraft and equipment is endangered.

3 AIRCRAFT AND SURVEY EQUIPMENT

The UTS navigation flight control computer, data acquisition system and geophysical sensors were installed into a specialised geophysical survey aircraft.

The list of geophysical and navigation equipment used for the survey is as follows:

General Survey Equipment

- CRESCO-08-600 fixed wing survey aircraft.
- UTS proprietory flight planning and survey navigation system.
- UTS proprietory high speed digital data acquisition system.
- Novatel, 12 channel precision navigation GPS.
- OMNISTAR real time differential GPS system.
- UTS LCD pilot navigation display and external track guidance display.
- UTS post mission data verification and processing system.
- Bendix/King KRA-405 radar altimeter.

Magnetic Data Acquisition Equipment

- UTS tail stinger magnetometer installation.
- Cesium Vapour total field magnetometer.
- Fluxgate three component vector magnetometer.
- RMS Aeromagnetic Automatic Digital Compensator (AADC II).
- Diurnal monitoring magnetometer (Scintrex Envimag or Geometrics GR-856).

Radiometric Data Acquisition Equipment

- Exploranium GR-820 gamma ray spectrometer.
- Exploranium gamma ray detectors.
- Barometric altimeter (height and pressure measurements).
- Temperature and humidity sensor.

3.1 Survey Aircraft

The aircraft used for this survey was a CRESCO-08-600 series fixed wing survey aircraft, operated by UTS Geophysics, registration ZK-LTP. The specifications are as follows:

Power Plant

• Engine Type	Pratt and Whitney PT-6-34AG
• Shaft Horse Power	750 eshp
• Fuel Type	JET-A1

Performance

• Cruise speed	155 Kn
• Survey speed	140 Kn
• Stall speed	50 Kn
• Range	2550 Km
• Endurance (no reserves)	10.5 hours
• Fuel tank capacity	1800 litres

3.2 Data Positioning and Flight Navigation

Survey data positioning and flight line navigation was derived using real-time differential GPS (Global Positioning System).

Navigation was performed using a UTS designed and built electronic pilot navigation system providing computer controlled digital navigation instrumentation mounted in the cockpit as well as an externally mounted track guidance system.

GPS derived positions were used to provide both aircraft navigation and survey data location information.

The GPS systems used for the survey were:

• Aircraft GPS Model	Novatel
• Sample rate	0.5 Seconds (2 Hz)
• GPS satellite tracking channels	12 parallel
• Typical differentially corrected accuracy	1-2 metres (horizontal) 3-5 metres (vertical)

3.3 UTS Data Acquisition System and Digital Recording

All geophysical sensor data and positional information measured during the survey was recorded using a UTS developed, high speed, precision data acquisition system. Survey data was downloaded onto magnetic tape on completion of each survey flight.

Instrument synchronisation times were measured and removed in real-time by the UTS data acquisition system.

3.4 Altitude Readings

Accurate survey heights above the terrain were measured using a King radar altimeter installed in the aircraft. The height of each survey data point was measured by the radar altimeter and stored by the UTS data acquisition system.

• Radar altimeter models	Bendix/King KRA-405
• Accuracy	0.3 metres
• Resolution	0.1 metres
• Range	0 - 762 metres
• Sample rate	0.1 Seconds (10Hz)

The digital terrain model is calculated by subtracting the terrain clearance (radar altimeter) from the GPS height (interpolated to 0.1 Hz), and as such the accuracy is constrained by the differentially corrected GPS position.

3.5 UTS Stinger Mounted Magnetometer System

The installation platform used for the acquisition of magnetic data was a tail mounted stinger. This proprietory stinger system was constructed of carbon fibre and designed for maximum rigidity and stability.

Both the total field magnetometer and three component vector magnetometer were located within the tail stinger.

3.6 Total Field Magnetometer

Total field magnetic data readings for the survey were made using a Cesium Vapour Magnetometer. This precision sensor has the following specifications:

• Model	Cesium Vapour Magnetometer
• Sample Rate	0.1 seconds (10Hz)
• Resolution	0.001nT
• Operating Range	15,000nT to 100,000nT

3.7 Three Component Vector Magnetometer

Three component vector magnetic data readings for the survey were made using a Fluxgate Magnetometer. This precision sensor has the following specifications:

• Model	Fluxgate Magnetometer
• Sample Rate	0.1 seconds (10Hz)
• Resolution	0.1nT
• Operating Range	-100,000nT to 100,000nT

3.8 Aircraft Magnetic Compensation

At the start of the survey, the system was calibrated for reduction of magnetic heading error. The heading and manoeuvre effects of the aircraft on the magnetic data was removed using an RMS Automatic Airborne Digital Compensator (AADC II).

Calibration of the aircraft heading effects were measured by flying a series of pitch, roll and yaw manoeuvres at high altitude while monitoring changes in the three axis magnetometer and the effect on total field readings. A 26 term model of the aircraft magnetic noise covering permanent, induced and eddy current fields was determined. These coefficients were then applied to the data collected during the survey in real-time.
UTS static compensation techniques were also employed to reduce the initial magnetic effects of the aircraft upon the survey data.

3.9 Diurnal Monitoring Magnetometer

A base station magnetometer was located in a low gradient area beyond the region of influence of any man made interference to monitor diurnal variations during the survey.

The specifications for the magnetometer used are as follows:

- Model — Scintrex Envimag or Geometrics GR-856
- Resolution — 0.1 nT
- Sample interval — 5 seconds (0.2 Hz)
- Operating range — 20,000nT to 90,000nT
- Temperature — -20^{o}C to +50^{o}C

3.10 Barometric Altitude

An Air DB barometric altimeter was installed in the aircraft so as to record and monitor barometric height and pressure. The data was recorded at 0.10 second intervals and is used for the reduction of the radiometric data.

- Model — Air DB barometric altimeter
- Accuracy — 2 metres
- Height resolution — 0.1 metres
- Height range — 0 - 3500 metres
- Maximum operating pressure: 1,300 mb
- Pressure resolution: 0.01 mb
- Sample rate — 10 Hz

3.11 Temperature and Humidity

Temperature and humidity measurements were made during the survey at a sample rate of 10Hz. Ambient temperature was measured with a resolution of 0.1 degree Celsius and ambient humidity to a resolution of 0.1 percent.

3.12 Radiometric Data Acquisition

The gamma ray spectrometer used for the survey was capable of recording 256 channels and was self stabilising in order to minimise spectral drift. The detectors used contain thallium activated sodium iodide crystals.

Thorium source measurements were made each survey day to monitor system resolution and sensitivity. A calibration line was also flown at the start and end of each survey day to monitor ground moisture levels and system performance.

Spectrometer model Exploranium GR820

- Detector volume 32 litres
- Sample rate 1 Hz

4 PROJECT MANAGEMENT

Helix Resources Ltd	Bill Peters
UTS Geophysics Perth Office	Nino Tufilli David Abbott Cameron Johnston Rebecca Steadman

5 DATA PROCESSING PROCEDURES

5.1 Data Pre-processing

The raw survey data was loaded from the field tapes and the recorded data trimmed to the correct survey boundary extents. Any survey lines subsequently reflown were removed from the dataset.

At the commencement of each acquisition flight, all the instrumentation clocks were synchronized to local time, and the error and latency of each instrument in providing its data measurement calculated. The results of these latency measurements were recorded into a synchronisation file, and the results used to assign GPS positions to the magnetic, radiometric and elevation data. Any residual parallax was removed via correlation software.

The synchronized, parallax corrected data was then exported as located ASCII data.

5.2 Magnetic Data Processing

The diurnal base station data was checked for spikes and steps, and suitably filtered prior to the removal of diurnal variations from the aircraft magnetic data.

The filtered diurnal measurements were subtracted from the diurnal base field and the residual corrections applied to the survey data by synchronising the diurnal data time and the aircraft survey time. The average diurnal base station value was added to the survey data.

The X and Y positioning of the data was then checked for spikes before applying the IGRF correction. Any spikes in the positions were manually edited. The updated IGRF 2005 correction was calculated at each data point (taking into account the height above sea level).

This regional magnetic gradient was subtracted from the survey data points.

Tie line levelling was applied to the data by least squares minimisation, using a polynomial fit of order 0, of the differences in magnetic values at the crossover points of the survey traverse and tie line data.

In order to remove any residual long wavelength variations in the tie line levelled data along the traverse lines, polynomial levelling was then applied.

Final micro-levelling techniques were then selectively applied to the tie line levelled data to remove minor residual variations in profile intensity

Located and gridded data were generated from the final processed magnetic data.

5.3 Radiometric Data Processing

Statistical noise reduction of the 256 channel data was performed using the Noise Adjusted Singular Variable Decomposition (NASVD) method described by Hovgaard and Grasty (1997).

Noise-adjusted singular value decomposition is performed, and the number of components to be used is determined by inspection of plots of the spectral components and by a statistical analysis of the contributions of the components. If the spectral shapes show any unusual characteristics, further analysis of the concentrations of the spectral components in the line data is performed in order to identify and eliminate any corrupt spectra. If such spectra were eliminated, the NASVD process is re-performed, in order to obtain spectral components free of any bias from corrupt spectra.

Only the dominant spectral shapes (identified as described above) were used in the spectral reconstruction process. The first 8 NASVD components were used for this process.

Channels 30-250 only are spectrally smoothed, as these contain the regions of interest and are not dominated by the lower end of the Compton continuum. The energy spectrum between the potassium and thorium peaks was recalibrated from the spectrally smoothed 256 channel measurements.

The aircraft background spectrum and the scaled unit cosmic spectrum were then subtracted from the 256 channel data. This 256 channel data was then windowed to the 5 primary channels of total count, potassium, uranium, thorium and low-energy uranium. Dead time corrections were then applied to the data. Radon background removal was performed using the Minty Spectral Ratio method (1992).

The radar altimeter data was corrected to standard temperature and pressure, and height corrected spectral stripping was then applied to the windowed data. Height attenuation corrections based on the STP radar altimeter were then performed to remove any altitude variation effects from the data.

The Uranium and Total Count channels were tie-levelled to remove the effects of residual radon background. The tie-levelling process employed was a least-squares/median filter procedure, which generated a single correction for each line of data. Mis-matches were calculated at each tie-traverse intersection and the median mismatch for each flight line was calculated as the residual levelling error for that line.

Final micro-levelling techniques were then selectively applied to the tie line levelled data to remove minor residual variations in profile intensities, as per the method outlined for magnetic data micro-levelling in 7.2 above.

5.4 Digital Terrain Model Data Processing

The radar altimeter data was subtracted from the GPS altimeter data leaving digital terrain data.

The digital terrain data thus derived was tie line levelled and gridded. Tie line levelled data was then examined and selectively microlevelled to produce a grid without line dependent artifacts.

For further information concerning the survey flown, please contact the following office:

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Fax: +61 8 9479 7361

Postal Address:

UTS Geophysics
P.O. Box 126
BELMONT WA 6984

Quoting reference number: B037

6 APPENDIX A - LOCATED DATA FORMATS

MAGNETIC LOCATED DATA

FIELD	FORMAT	DESCRIPTION	UNITS
1	I8	LINE NUMBER	
2	I4	FLIGHT/AREA NUMBER	AAFF (Area/Flight)
3	I9	DATE	YYMMDD
4	F10.1	TIME	sec
5	I8	FIDUCIAL NUMBER	
6	I4	UTM ZONE	
7	F12.6	LATITUDE (WGS84)	degrees
8	F12.6	LONGITUDE (WGS84)	degrees
9	F12.2	EASTING (MGA94)	metres
10	F12.2	NORTHING (MGA94)	metres
11	F8.1	RADAR ALTIMETER HEIG	metres
12	F8.1	GPS HEIGHT (WGS84)	metres
13	F8.1	TERRAIN HEIGHT (WGS84)	metres
14	F10.2	RAW MAGNETIC INTENSITY	nT
15	F10.2	DIURNAL CORRECTED TMI	nT
16	F10.2	DIURNAL AND IGRF CORRECTED TMI	nT
17	F10.2	TIE LINE LEVELLED TMI	nT
18	F10.2	FINAL TOTAL MAGNETIC INTENSITY	nT

RADIOMETRIC LOCATED DATA

FIELD	FORMAT	DESCRIPTION	UNITS
1	I8	LINE NUMBER	
2	4	FLIGHT/AREA NUMBER	AAFF (Area/Flight)
3	I9	DATE	YYMMDD
4	F10.1	TIME	sec
5	I8	FIDUCIAL NUMBER	
6	I4	UTM ZONE	
7	F12.6	LATITUDE (WGS84)	degrees
8	F12.6	LONGITUDE (WGS84)	degrees
9	F12.2	EASTING (MGA94)	metres
10	F12.2	NORTHING (MGA94)	metres
11	F8.1	RADAR ALTIMETER HEIGHT	metres
12	F8.1	GPS HEIGHT (WGS84)	metres
13	I5	LIVE TIME	milli sec
14	F8.1	PRESSURE	hPa
15	F6.1	TEMPERATURE	Degrees Celcius
16	F6.1	HUMIDITY	percent
17	I6	TOTAL COUNT (RAW)	Counts/sec
18	I6	POTASSIUM (RAW)	Counts/sec
19	I6	URANIUM (RAW)	Counts/sec
20	I6	THORIUM (RAW)	Counts/sec
21	I6	COSMIC (RAW)	Counts/sec
22	F8.1	TOTAL COUNT (CORRECTED)	Counts/sec
23	F8.1	POTASSIUM (CORRECTED)	Counts/sec
24	F8.1	URANIUM (CORRECTED)	Counts/sec
25	F8.1	THORIUM (CORRECTED)	Counts/sec
26	F9.4	DOSE RATE	nGy/hr
27	F9.4	POTASSIUM GRND CONCENTRATION	%
28	F9.4	URANIUM GRND CONCENTRATION	ppm
29	F9.4	THORIUM GRND CONCENTRATION	ppm

GRIDDED DATASET FORMATS

Gridding was performed using a bicubic spline algorithm.

The following grid formats have been provided:

- ER-Mapper format

LINE NUMBER FORMATS

Line numbers are identified with a six digit composite line number and have the following format - AALLLLB, where:

A or AA	Survey area number
LLLL	Survey line number
	0001-8999 reserved for traverse lines
	9001-9999 reserved for tie lines
B	Line attempt number, 0 is attempt 1, 1 is attempt 2 etc..

UTS FILE NAMING FORMATS

Located and gridded data provided by UTS Geophysics uses the following 8 character file naming convention to be compatible with PC DOS based systems.

File names have the following general format - JJJJAABB.EEE, where:

JJJJ	UTS Job number	
AA	Area number if the survey is broken into blocks	
BB	M	Magnetic data
	R	Radiometric data
	TC	Total count data
	K	Potassium counts
	U	Uranium counts
	Th	Thorium counts
	DT	Digital terrain data
EEE	File name extension	
	DAT	Located digital data file
	DFN	Located data definition file
	ERS	Ermapper gridded data header file
		Ermapper data portion has no extension
	GRD	Geosoft gridded data file

7 APPENDIX B - COORDINATE SYSTEM DETAILS

Locations for the survey data are provided in both geographical latitude and longitude and Universal Transverse Mercator metric projection coordinate systems.

WGS84	World Geodetic System 1984
Coordinate Type	Geographical
Semi Major Axis	6378137m
Flattening	1/298.257223563

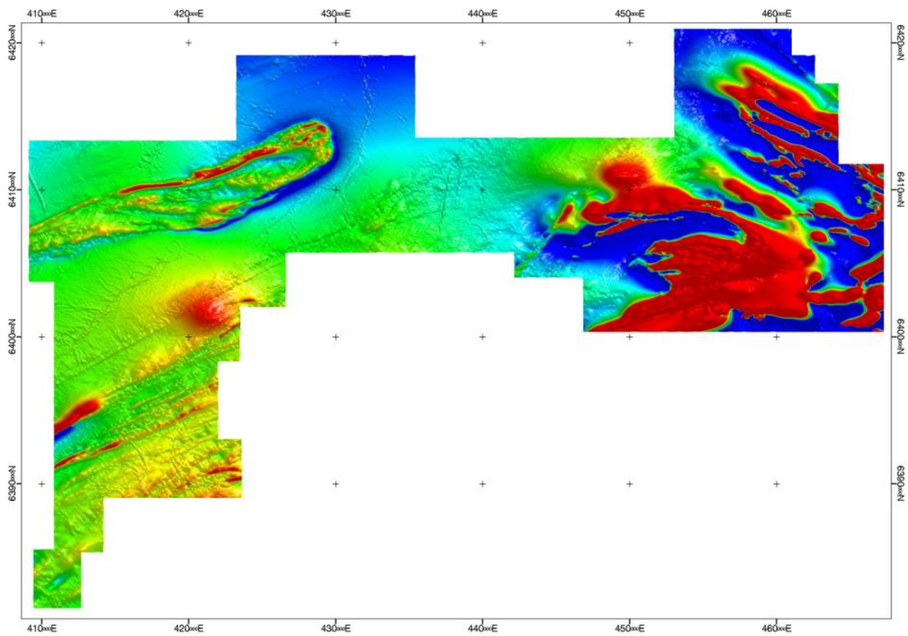
MGA94	Map Grid of Australia 1994
Coordinate type	Universal Transverse Mercator Projection Grid
Geodetic datum	Geocentric Datum of Australia
Semi major axis	6378137m
Flattening	1/298.257222101

8 APPENDIX C - SURVEY BOUNDARY DETAILS

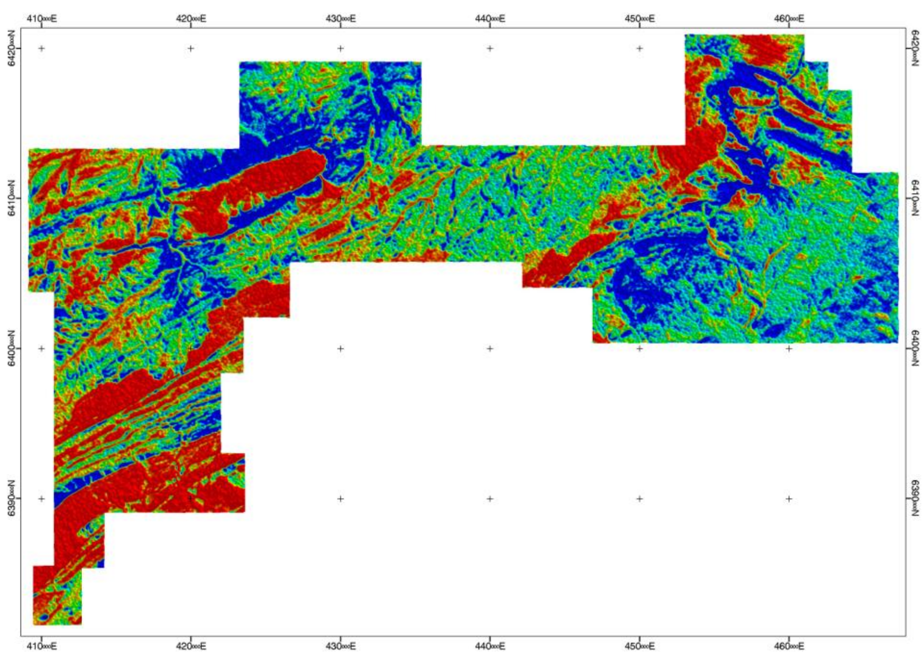
Area Name: Olary
Coordinates in MGA94
Grid Zone: 54

Easting	Northing
409100	6413300
423200	6413300
423200	6419100
435400	6419100
435400	6413500
453000	6413500
453000	6420900
461000	6420900
461000	6419100
462600	6419100
462600	6417200
464200	6417200
464200	6411700
467300	6411700
467300	6400400
446800	6400400
446800	6404100
442100	6404100
442100	6405800
426600	6405800
426600	6402100
423500	6402100
423500	6398400
422000	6398400
422000	6393000
423600	6393000
423600	6389100
414200	6389100
414200	6385400
412700	6385400
412700	6381600
409400	6381600
409400	6385500
410800	6385500
410800	6403800
409100	6403800

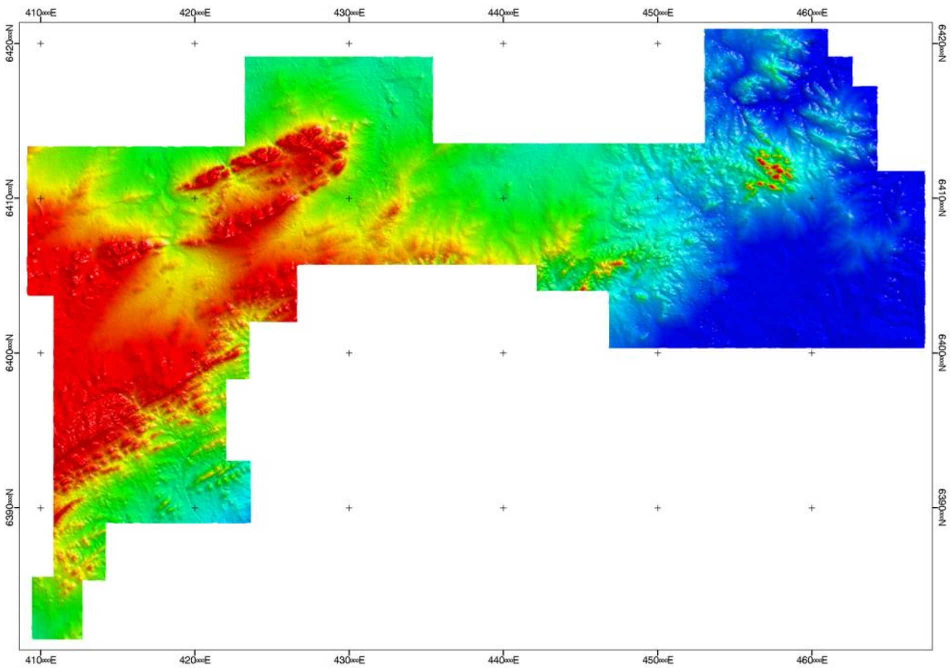
9 APPENDIX D - PROJECT DATA OVERVIEW



Total Magnetic Intensity



Radiometric Total Count



Digital Terrain Model

10 APPENDIX E – PROCESSING PARAMETERS

Magnetic Processing Parameters

IGRF Date:	IGRF 2008.81
Average Declination:	8.39 degrees
Average Inclination:	-64.4 degrees
Average Field strength:	57902 nT
Average diurnal:	57298 nT

Radiometric Processing Parameters

Height Attenuation Coefficients

Total Count:	-0.0074
Potassium:	-0.0094
Uranium:	-0.0084
Thorium:	-0.0074

Cosmic Correction Coefficients

Total Count:	0.8662
Potassium:	0.0466
Uranium:	0.0462
Thorium:	0.0486

Aircraft Background Coefficients

Total Count:	78.6
Potassium:	14.1
Uranium:	2.0
Thorium:	1.25

Sensitivity Coefficients

Total Count:	37.17 cps/dose rate
Potassium:	156.40 cps/%k
Uranium:	11.42 cps/ppm
Thorium:	8.7 cps/ppm

***Final Reduction* -** All data reduced to STP height datum 40m

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Annual Report
For the 12 months ending 20th January 2010
on
EL4022
Olary
South Australia

C. Johnson

March 2010

Project: Olary Project

Prospect: Devonborough Downs

State: South Australia

Country: Australia

Tenement: EL 4022

Organisation: Helix Resources Limited

Report Title: Annual Report for the 12 months ending 20th January 2010 on EL4022, Olary, South Australia

Author: Johnson, C.

Pages: 24

Key Words: Olary, Devonborough Downs, Maldorky, Adelaidian Geosyncline, MacDonald Fault, Gold, Base Metals, Willyama Inliers, Pualco Tillite, Wilyerpa Formation, Tapley Hill Formation, Benda Sandstone.

Commodities: Au, Ag, Cu, Pb, Zn

Nearest Town: Olary

1:250k Map No: SI 54-2

1:250k Map Name: Olary

1:100k Map No: 6933, 7033, 6932, 7032

1:100k Map Name: Olary, Mingary, Alabaman, Oakvale

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FIGURES

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LIST OF APPENDICES

EXECUTIVE SUMMARY

EL 4022 is located immediately south and extending south and south-west of Olary. The tenement covers ~976 square kilometres of ground on the Olary 1:250k mapsheet. Access to the tenement is on gravel roads and station tracks off the Barrier Highway. Helix Resources are focussed predominantly on exploring for Au and/or Cu.

Regional Carbonate soil sampling (44 samples), rock chip sampling (20 samples) and reconnaissance mapping/geological assessment of historical prospects was completed during the period.

An analysis of results from regional carbonate soils geochemistry programs conducted by Helix has resulted in the identification of several anomalous regions for Au and base-metals. Many of these regions are close to or trend into the adjacent Helix tenement EL3956.

Infill of carbonate soil sampling is proposed in the Junction Mine area principally on the north easterly extensions of the Tindelpina and Teagues Fork prospect areas.

The principal characteristics of mineralised occurrences so far identified are of;

a) epithermal "fissure vein" style associated with brittle to brittle ductile style sub-vertical faulting/fracture associated with differential slip on ~N and ~025° striking joint/fracture patterns.

b) Mineralisation within quartz-iron oxide veins within silica-sericite alteration on shears has also been identified in association with layer parallel slip between competent and more ductile lithologies.

The historically exploited mineralisation in the region is largely of type **a)** character however it is considered that the interaction of types **a)** and **b)** may result in mineralisation of substantially larger tonnages than the historical

mines. This model has some similarity with the "Telfer Style" mineralisation model.

Field evidence broadly suggests that type a) occurrences post date, or are progressively developed during the formation of type b) occurrences.

Mineralisation would appear to be a result of the progressive effects of the Delamerian deformation events with the shape of the bounding Curnamona Craton margins and basement configuration providing the far-field controls on location of vein systems in the Adelaidean sedimentary sequence.

INTRODUCTION

1.1. Location and Access

EL 4022 is located off the Barrier Highway, approximately 150km south-west of Broken Hill on the Olary 1:250k map sheet (**Figure 1**). The centre of the tenement is roughly 15km south-west of Olary, and covers ~976 square kilometres of predominantly semi-arid landscape of low relief, with the exception of the Maldorky and Nilpena hills. Access to the tenement is via gravel roads and station tracks.

1.2. Tenement

Exploration Licence 4022 was granted on the 22nd January 2008.

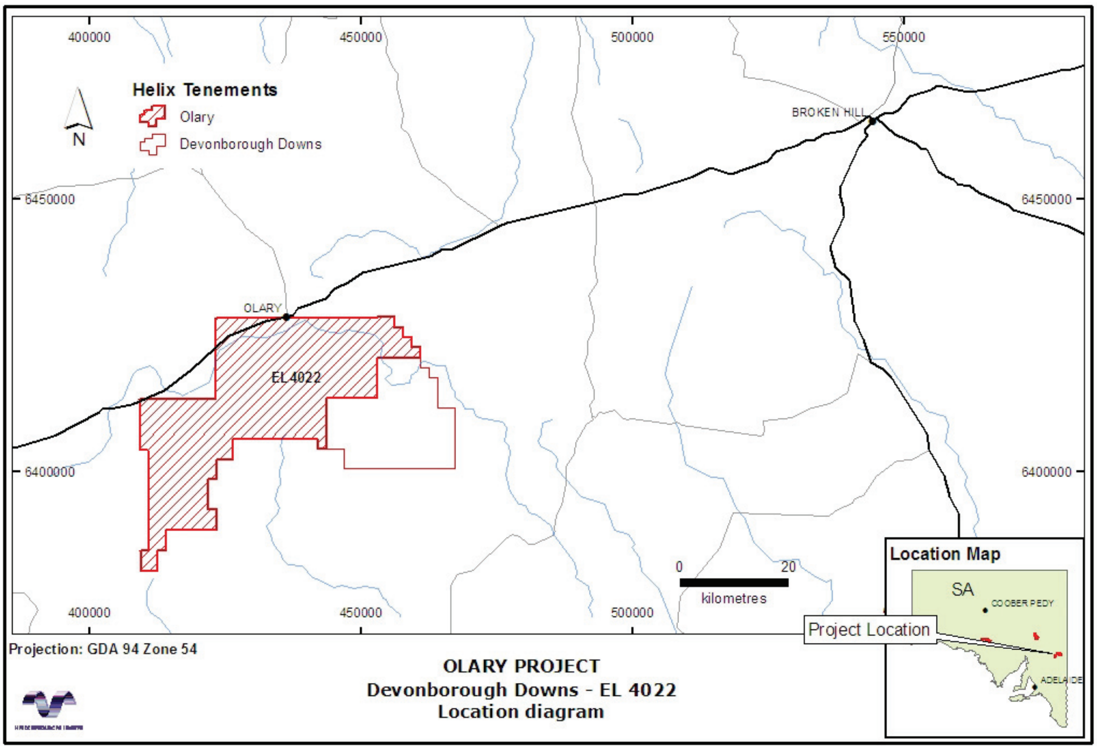

Figure 1: Locality map for Olary (EL 4022)

1.3. Exploration Rationale

EL 4022 was acquired principally to explore for gold and/or copper mineralisation. A review of historical work and geological research literature supported the presence of mineralisation with affinities to several broad models namely; Carlin-type, Skarn, Telfer-style, Epithermal and Mesothermal vein style.

Encouragement to explore in the area was provided by the presence of macro-scale features in the region which are often associated with significant mineralised “camps”. Examples of encouraging features included the presence of lamprophyres, indicative of mantle-tapping structures. Steep gravity gradients and irregularities in magnetic imagery were indicative of deep structure of substantial extent with influence into the surface geology. These features were visible in geophysical imagery at the continent scale. Most interpretations of the structural history for the region support multiple reactivations of basement structure up into the younger Adelaidean sedimentary sequence.

The Adelaidean sedimentary sequence contains numerous examples of reactive “trap” lithologies (brittle/ductile, oxidised/reduced) as well as evidence for evaporite minerals in the lower units capable of generating brines of substantial metal leaching and transporting capacity.

The juxtaposition of basement sequences and structures as well as multiple unconformities and sedimentary units deposited during a range of transgression/regression phases was considered to provide multiple opportunities for rock and/or fluid interaction to produce metalliferous mineralisation.

Ordovician I-type granites, like the Anabama Granite, are responsible for significant mineralisation elsewhere in the Tasman Fold Belt (e.g. Au, Cu). The presence of diapirs and diorite intrusives in proximity to each other suggested a link to intrusive events as a possible heat, fluid, and metal source driving hydrothermal systems in the region.

2. GEOLOGY

2.1. Regional Geology

EL 4022 is located at the eastern end of the Adelaidian Fold-Belt, within the Olary Province. The Olary region comprises Early-Proterozoic metamorphic sediments of the Willyama Supergroup, Mid-Proterozoic granites intruding fault-bounded inliers of the Willyama Supergroup, Neoproterozoic sediments of the Adelaidian Geosyncline, and the Ordovician I-type intrusive bodies.

The Willyama Supergroup

The Willyama Supergroup, along with the Mid-Proterozoic granites, form fault-bounded inliers, collectively named the Willyama Inliers, within the Adelaidian sediments (Forbes, 1991). Due to the structural complexity of the metasediments in the inliers, and the discontinuous nature of the exposures of older basement, it has been difficult to form a stratigraphic compendium for the Olary Region or to correlate it with the type section at Broken Hill (Forbes, 1991). Laing and Barnes (1986) proposed that the geological setting for the Willyama Supergroup for the Broken Hill – Olary region comprised a shallow-water carbonate shelf to the west and local acid volcanic centres in the Olary region. The central and eastern part of the Broken Hill – Olary region (i.e. Broken Hill – Mutooroo) was the site of a rift with tholeiitic volcanism and local base-metal exhalation (Forbes, 1991).

The Adelaidian Geosyncline Metasediments

The Adelaidian Geosyncline sediments vary in age from 850 to 570 Ma (Hine, 2002), with the MacDonald Fault forming a sharp contact between these sediments (to the west) and the older Early-Proterozoic metamorphic rocks of the Willyama Supergroup to the East. Within the Olary map sheet there are four distinct groups of the Adelaidian Metasediments. These include, from oldest to youngest, the Callanna, Burra, Umberatana, and Wilpena Groups. The Adelaidian sediments in the area are mostly members of the Lower and Interglacial sequences of the Sturtian Series (Lopes, 1970). The glacial periods were closely followed by widespread deposition of neritic iron formations known as the Braemar ironstone facies (Lopes, 1970), with its origin proposed as an inorganic precipitant.

Structure

Both the older Early-Proterozoic rocks and younger Adelaidian sediments have been deformed to some extent by various different generations of deformation. The deformation varies from the younger sediments to the older basement, with folding more prevalent within the younger sediments and faulting more prevalent within the older basement (Lopes, 1970). The dominant structures in the Olary region are the MacDonald and Outalpa faults, both of which have a similar trend to the Teetulpa fracture zone and a continental-scale Bouger gravity anomaly extending from the west coast of Tasmania to central Australia known as the G2.

Five deformation events (three major, two minor) have been identified for the Willyama Complex and the Adelaidian sediments, with four metamorphic events also identified, corresponding to various deformation events (Berry *et al.*, 1978). D_1 to D_3 are Lower Proterozoic deformation events associated with basement deformation and a mid-amphibolite facies metamorphism (D_1) retrograding to a greenschist facies metamorphism (D_2 & D_3). D_4 and D_5 are associated with the Delamerian Orogeny (450 – 500 Ma) and a Barrovian-type upper greenschist facies metamorphism. During D_4, reactivation of basement-intersecting faults occurred and continued through D_5 (Berry *et al.*, 1978).

Event	Deformation Description	Metamorphic Facies
D_1	Layer-parallel muscovite-biotite foliation in the Willyama Sediments.	Mid-Amphibolite Facies
D_2	Minor folding phase, resulting in macroscopic open folds and crenulations.	Initial retrogressive greenschist facies
D_3	Macroscopic tight folding & intense development of mesoscopic crenulations & crenulation cleavage. Development of Late D_3 faulting (f_1) prior to Sedimentation.	Retrogressive greenschist facies
f_2 – Block Faulting		
D_4,f_3	Schistosity in cover metasediments, crenulations in the basement. Basement-cover interactions give tight synclines and broad anticlines in the unconformity.	Barovian-type upper greenschist facies
f_4 - Block Faulting		
D_5	Cleavage & schistosity in cover metasediments, crenulations in basement. Open anticline over granodiorite → opposite plunging F_4 synclines in cover.	Barovian-type upper greenschist facies
f_5 – Late Block Faulting		

Table 1: Deformation Events

2.2. Local Geology

EL 4022 is situated on the eastern-most part of the Adelaidian geosyncline (metasediment package), just to the west of the MacDonald Fault. The tenement comprises a package of Adelaidian sediments from the Burra subgroup of the Wilpena Group. The Burra Group comprises a succession of rock units including (oldest to youngest) the Cradock Quartzite, Saddleworth Formation, and the Belair Subgroup. The Umberatana Group comprises several subgroups, including the Yudnamatana Subgroup (Benda Siltstone & Pualco Tillite), Farina Subgroup (Tapley Hill Formation, Tarcowie Siltstone, & Enorama Shale), and the Yerelina Subgroup (Gumbowie Arkose, Pepuarta Tillite, & Grampus Quartzite). The Ulupa Siltstone is the only member of the Wilpena Group to outcrop on the tenement.

A series of Ordovician Intermediate dykes trending NNE are seen cross-cutting the Mindaltie Syncline, an area of complex folding in the eastern-most part of the tenement. The dykes have sharp margins with narrow contact aureoles, and are coarsely porphyritic with abundant Ti-rich biotite phenocrysts (Hine, 1998). Quaternary calcrete covers roughly half of the tenement, with the majority of the cover in the northern half of the tenement.

The tenement area is dominated by a gently WSW plunging large scale, tight syncline. A few northwest trending faults can be seen cross-cutting the Burra group in the southwest of the tenement.

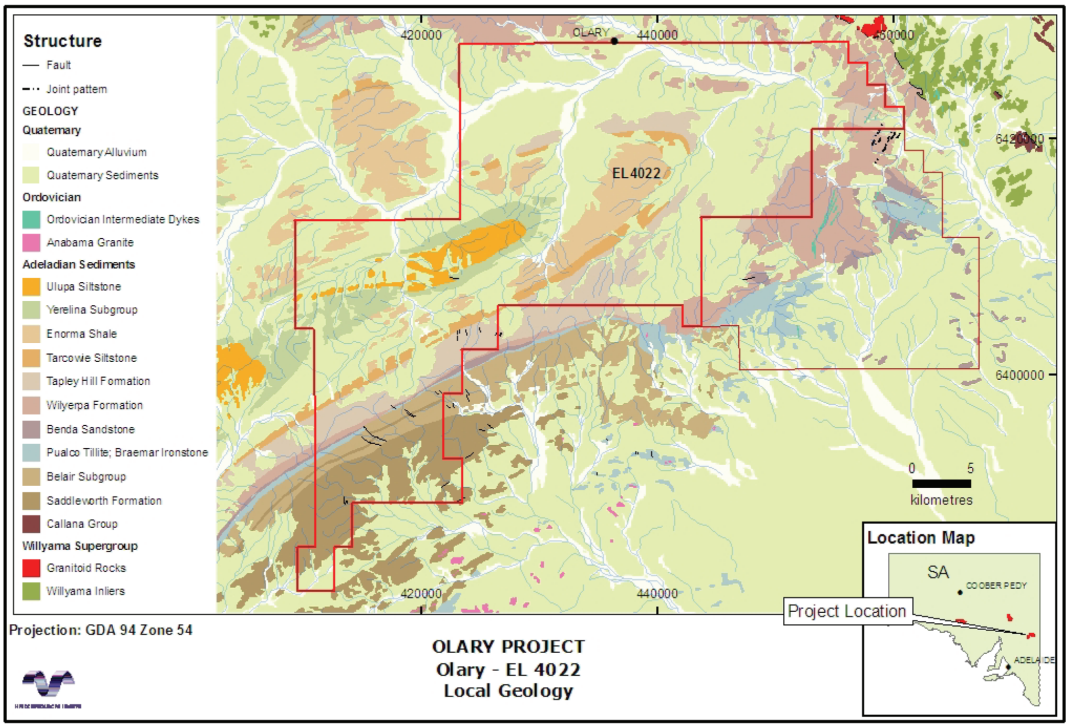

Figure 2: Geological map for Olary (EL 4022).

3. PREVIOUS EXPLORATION

There has not been much in the way of modern, systematic exploration completed over the ground currently held by Helix Resources.

Electro-winning Pty Ltd held a Special Mining Lease (SML 98) covering the area around the Mindaltie Mine in the far-east of EL 4022 from 1965 to 1966. Electro-winning completed a field reconnaissance trip, diamond & RC drilling, as well as geochemical & geophysical surveys over the mine. The geochemical survey comprised a single line of soil and drainage samples, with the best result being 300ppm. Geophysical work comprised induced polarisation and resistivity, with some magnetics. Induced polarisation and resistivity surveys identified a broad conductor across the mine, with a strike length of 2,000ft (Irving, 1966). RC and diamond drilling, undertaken to define the source of these anomalies, identified the presence of between 1 – 10% iron sulphides (mainly pyrrhotite) as the possible source. One RC drill hole intersected 20ft of 0.77% Cu, while one diamond hole identified 7 ½ft of 0.17% Cu as chalcopyrite (Irving, 1966).

Utah Development Co held the tenement EL 1102 (Copperlinka) from early-1983 to early-1989. A partial relinquishment in January 1985 reduced the tenement coverage by around 75% (Mann, 1985). The ground that was relinquished in 1985 covered over half of what is now EL 4022. A small area of EL 1102 that overlaps with the current EL 4022 was kept. However, the ground was not explored again by Utah Development Co. Exploration on EL 1102 comprised RAB and auger drill lines over the Tapley-Tarcowie contact to an average depth of 2.5 and 3.5 metres respectively, two diamond drill holes at the Copperlinka Mine (CD001) and Two Mile Dam (CD005), and numerous rock chip samples from various areas, as well as detailed 1:25,000 & 1:10,000 scale mapping and ground & aeromagnetic surveys. Results from the RAB, auger, and rock chip programmes were weak, with only one rock chip (possibly taken from the mine) displaying a gold assay of 3.5g/t. For the rest of the samples gold was at or below detection limits and no other element displayed any significant elevation. The diamond drill holes were also lacking in mineralised zones and alteration.

Climax Mining explored the tenement EL 2246 (Wiawera) from December 1996 to December 2001. The part of EL 2246 that, today, overlaps EL 4022 was relinquished in 1999. Exploration on the ground was fairly comprehensive, comprising literature research, data compilation, airborne magnetics interpretation, calcrete auger sampling, rock chip sampling, and MMI soil sampling (Hine, 2002). Climax Mining completed a fairly comprehensive regional calcrete sampling program over the area, the results from which highlighted some key areas of gold and base metal anomalism worthy of follow-up work. During 1998, priorities were given to the various anomalies and prospect areas throughout Climax's tenement, with only one anomaly present on the area currently held as EL 4022. The ground covering EL 4022 was relinquished in 1999, with one 6 x 3.5km block that covered the Mindaltie Syncline with associated historic workings held back.

4. WORK COMPLETED

During the reporting period Helix completed the collection 44 regional carbonate soil samples and 20 rock chip samples. Regional to prospect scale geological reconnaissance was also completed and provided valuable insight into mineralisation for Au and Cu in the area.

4.1. Regional Carbonate Soil Sampling

A total of 44 minus 40 mesh carbonate soil samples were collected. Sampling traverses in the area of Chinamen Well did not return particularly encouraging results supported the generally lower perceived prospectivity of this particular portion of the tenement for Au/Cu as a result of geological assessment (**Figure 3**). Sampling in the Junction Anticline area continued to provide some encouragement.

All samples were collected using a hand auger to reach the top 10-20cm of the carbonate/calcrete horizon (generally ~40-80cm depth range). Material from this position was collected into a minus 40 mesh sieve pan to derive ~100gm of sample.

All samples were transported to Ultra Trace Laboratories, Canning Vale, W.A. Assay was carried out for a suite of elements by several methods (Table 2).

Elements	Preparation Method	Analysis Method
Au, As, Cu, Mo, Pb, Zn	Single stage mix and grind (SSMG)	Aqua Regia with ICP-MS finish
Ca, Fe, Mn, S,	Single stage mix and grind (SSMG)	Aqua Regia with ICP-AES finish
Ag, As, Mo, Pb, Sb	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPMS finish
Ca, Cu, Zn	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPAES finish

Table 2: Analytical Methodology for Regional Carbonate Soil Sampling.

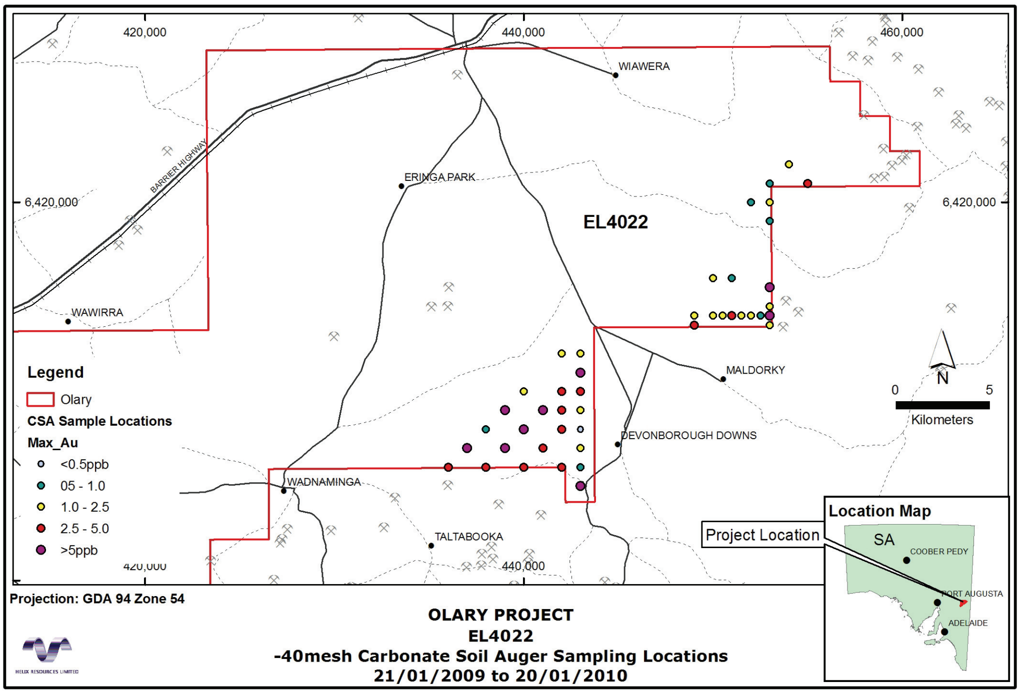

Figure 3: Maximum Gold Assay Results for Regional Carbonate Soil Sampling.

4.2. Rock Chip Sampling.

Rock chip sampling of possible mineralised rock materials of interest was completed within EL4022. A total of 20 samples were collected.

All samples were taken with a geological pick and generally represented niche samples of probable mineralised rock/vein materials or proximal alteration to these materials.

All samples were despatched to Ultra Trace, Canning Vale, W.A. Analysis of samples was completed following the assay schedule defined below in Table 4.

Elements	Preparation Method	Analysis Method
Au	Single stage mix and grind (SSMG)	Aqua Regia with ICP-MS finish
Ag, As, Mo, Pb, Sb, U,	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPMS finish
Cu, Zn	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPAES finish

Table 3: Analytical Methodology for Rock Chip Sampling

Sampling confirmed that material in bedding sub-parallel shearing and in bedding discordant, sub-vertical quartz-iron-oxide +/- carbonate veining was most commonly anomalous in Au and base-metals. Few potentially economic indicators were obtained from the materials sampled for Au or the principal base-metals (**Figure 4**).

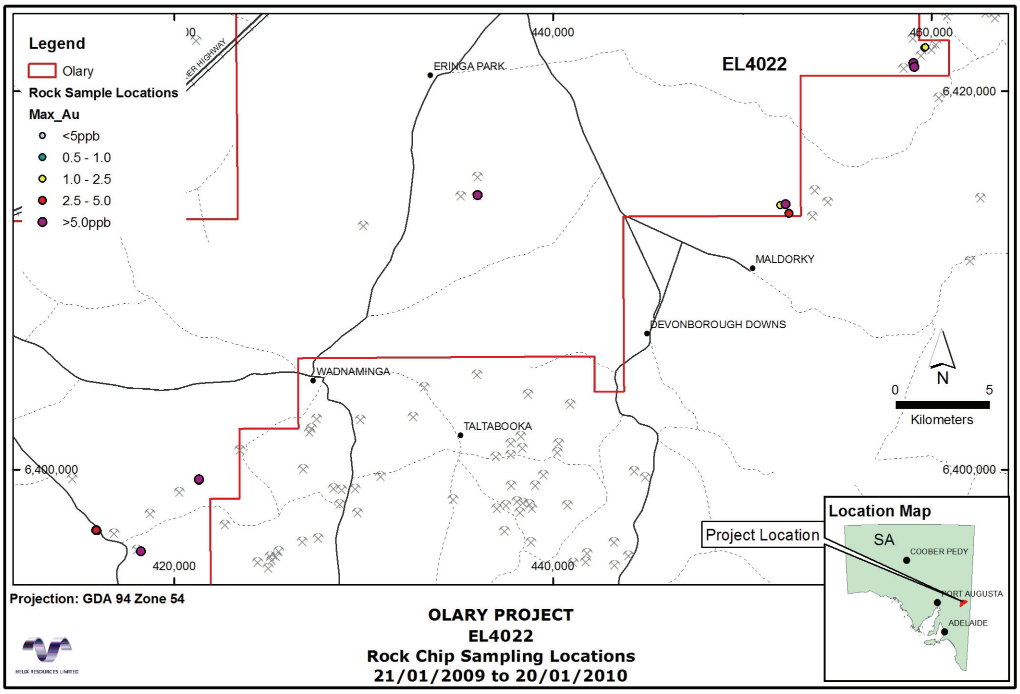

Figure 4: Rock Chip Sample Locations and Maximum Gold Results

4.3. Regional and Prospect Scale Reconnaissance Mapping

A program of regional prospecting/mapping was completed in conjunction with the regional carbonate soil sampling. Areas of anomalism in Climax Mining Ltd regional sampling, areas of historic mine/prospecting activity and those areas with apparent anomalous geophysical response were traversed to assist in identifying the principal controls on mineralisation in the region.

At the regional scale the prospecting/mapping confirmed that most, if not all of the known mineralisation have common lithological and structural controls.

Features resolved include;

- Magnetic high responses are not consistently associated with any particular unit and are a result of alteration. As such, magnetic response cannot be used as a consistent surrogate for mapping out rock units.
- Visible copper mineralisation +/- Au and other metals are consistently associated with macro to micro scale iron rich veining developed initially as a conjugate set perpendicular to the far field effects of the Curnamona Craton edges and progressing to faulting and sub-vertical vein development associated with differential slip on these planes. The vein orientation can usually be identified as perpendicular to the nearest craton margin.
- Development of sub-vertical joint sets, fractures, fissure veins as a progression of deformation intensity most commonly occurs where massive/brittle units are confined (eg in fold noses and over-tightened limbs) or in interaction with low angle dipping buck quartz veins developed during earlier folding by sub-vertical extension. The shape of

historical mining voids indicates that this is the principal high grade control.

- Where well developed these veins have a bleached silica-sericite-carbonate-iron oxide core with a darker silica-dolomite-chlorite halo that is resistant to weathering and is weakly inverted in the landscape even in areas of poor outcrop.

- Fracture/fault thickness (<1m) and frequency (>50m) generally suggested that large and focussed mineralised volumes of rock are uncommon/of low likelihood with connectivity generally appearing to be poor. Some of the well developed fissure veins demonstrate strike extents in the order 100s of metres.

- The overall stratigraphic dips are quite shallow resulting in any low angle mineralised controls having irregular and complex outcrop patterns further complicated by differential erosion/incision. This could render any significant sub-horizontal lode targets effectively blind to surface and difficult to identify and define.

Mag Rad data - see Government of South Australia Mineral Resources Website)

4.4. Geophysics

UTS Geophysics was contracted by Helix Resources to fly a 100m-spaced airborne magnetic survey at 40m flight height, N-S lines over EL4022 in June 2008 with the survey completed in October 2008 following operational delays. The survey covered roughly half of the tenement ie 564km^2 (**Figure 4**). The data was processed by Southern Geoscience Consultants (Perth). Geotiff images with associated ArcMap files of RTP and TMI magnetic and Ternary RGB radiometrics are included as **Appendix 3**).

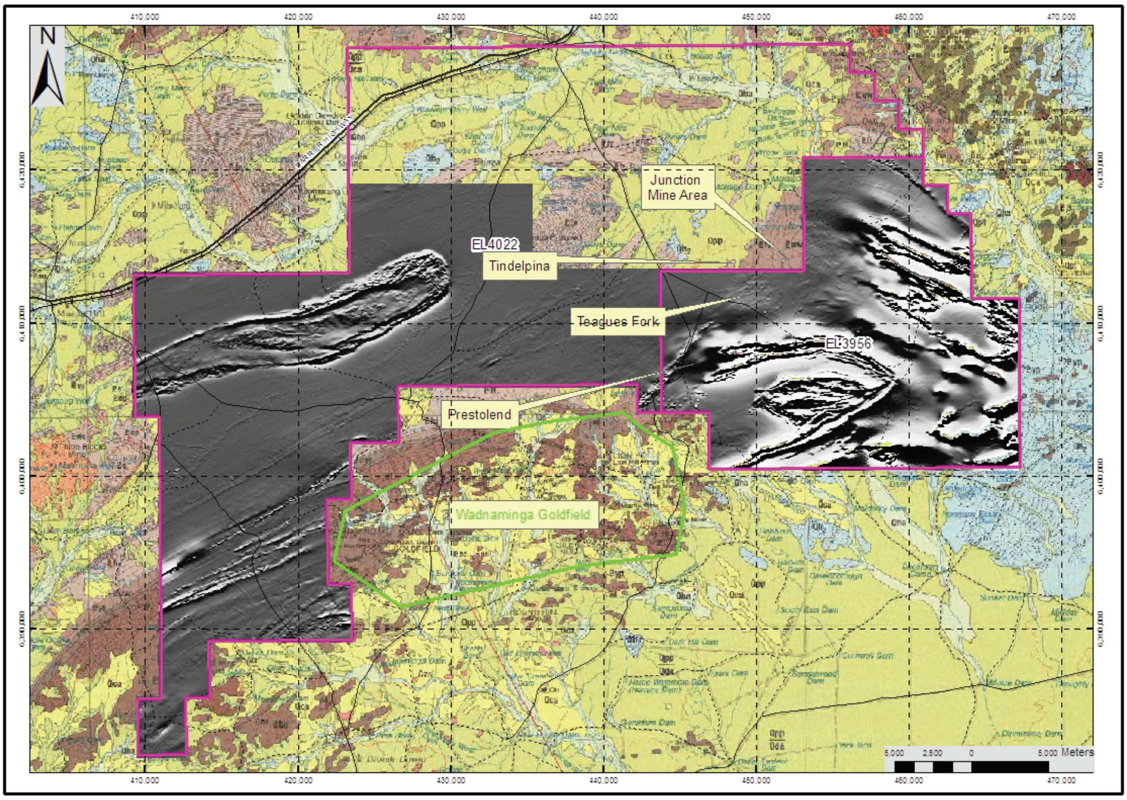

Figure 4: Detailed TMI Magnetic for EL 4022.

5. DISCUSSION

The principal anomalous region for Au and base-metals present on EL4022 is associated with the projections of the Tindelpina Shale and Junction Anticline trend, both under cover and in outcrop. In addition epithermal vein systems identified in the MacDonald Hill area may strike into the northern tenement area.

The mineralisation controls identified are common to all prospects visited by Helix geologists in the region and support a model for epithermal to mesothermal fracture to fissure vein development associated with the regional D4 – D5 Delamerian compression events in the region. Initially this is reflected in broadly N-S directed compression progressing to broadly NE-SW directed compressional to transpressional deformation as the margin of the Curnamona Craton re-oriented the compressional stress in the Adelaidean sedimentary basin.

Observations indicate that the sub-horizontal component of the mineralisation model produces narrow zones of areally extensive anomalism however it appears that material approaching potential ore grade requires the influence of the sub-vertical fractures/fissure vein development. The fissure veins, fracture swarms are quite narrow (<1m on average) and do not appear to have a frequency of development across strike (<50m) that is sufficient to produce large tonnages of economic material where so far identified. The significant strike length of fissure vein development in the region, of as much as 500m in some instances, suggests that several small, moderate to high grade shoots could be identified in the larger of these structures.

6. CONCLUSIONS AND RECOMMENDATIONS

An analysis of results from regional carbonate soils geochemistry programs conducted by Helix has resulted in the identification of several anomalous regions for Au and base-metals.

The apparent mineralisation controls for Cu and Au have been identified in the area and are predictable to some degree.

It is recommended that the Tindelpina and Junction Anticline (western limb) regional targets be further assessed by soil sampling and prospecting/mapping to identify locations that contain substantial scope for drill testing or contain indications of a different mineralisation style to that already identified.

This work would be directed toward the advancement of several prospects to the point that multiple targets are available for initial drill testing as a single program.

EXPENDITURE

A: Mineral – Exploration Activities		**Interim** **21/7/09 – 20/1/10**	**Annual** **21/1/09 – 20/1/10**
Employee Costs		17,223	39,584
Tenement Costs (excl Rent,Rates and App'n Fees		35	60
Exploration Costs		3,344	12,236
Assay		759	3,378
Travel		625	1,983
Vehicles		3,979	9,798
Other		287	349
		26,252	**67,388**
D: Annual Tenement Rent and Rates			
Rent		-	7,418
Rates		-	-
		-	**7,418**
E: Administration Overheads			
Overheads		8,400	13,987
Total		34,652	88,793
Add GST on rent		-	742
Claimable Expenditure		**34,652**	**89,535**

7. REFERENCES

BERRY, R.F., FLINT, R.B., AND GRADY, A.E., 1978. Deformation history of the Outalpa area and its application to the Olary Province, South Australia. *Transactions of the Royal Society of South Australia*. **102**(2), p43 – 53.

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Annual Report for EL4022 For the 12 months ending 20th January 2011

C. Johnson

March 2011

Project: Olary Project

Prospect: Devonborough Downs

State: South Australia

Country: Australia

Tenement: EL 4022

Organisation: Helix Resources Limited

Report Title: Annual Report for EL4022 for the 12 months ending 20th January 2011

Author: Johnson, C.

Pages: 15

Key Words: Olary, Devonborough Downs, Maldorky, Adelaidian Geosyncline, Gold, Base Metals, Magnetite, Pualco Tillite, Braemar Iron Formation, Yudnamutana Sub-Group.

Commodities: Au, Ag, Cu, Pb, Zn, Fe

Nearest Town: Olary

1:250k Map No: SI 54-2

1:250k Map Name: Olary

1:100k Map No: 6933, 7033, 6932, 7032

1:100k Map Name: Olary, Mingary, Alabaman, Oakvale

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FIGURES

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EXECUTIVE SUMMARY

EL 4022 is located immediately south and extending south and south-west of Olary. The tenement covers ~976 square kilometres of ground on the Olary 1:250k mapsheet. Access to the tenement is on gravel roads and station tracks off the Barrier Highway. During the majority of tenure Helix Resources have focussed on exploring for Au and/or Cu on the tenement.

No work was completed on-ground during the period by Helix Resources.

Helix entered into an Earn-in agreement with a private company, Bonython Metals Group Pty Ltd (BMG) on EL4022 commencing 26th February 2010 whereby BMG would undertake exploration activities, including drilling programs, and keep the tenement in good standing, amongst a number of other obligations. The Earn-in was for a percentage of Iron Ore rights only.

Helix was unable to gain information to satisfactorily confirm the details and extent of work undertaken, if any, conducted by BMG. As a result of this the Expenditure Report below details Helix Resources Limited's expenditure for the period and Total Expenditure for the licence only.

Helix has terminated the arrangement with BMG 28th January 2011 due to breaches of their obligations, and has resumed full control of all exploration upon EL4022.

During the next reporting period Helix will complete studies into transport routes and infrastructure locations with reference to any future development of the magnetite iron mineralisation associated with the Braemar Iron Formation which in itself is largely located on the adjacent EL3956.

A reduction of tenure for EL4022 is proposed in conjunction with this work guided by areas of magnetite mineralisation potential from the detailed magnetics flown by Helix during tenure as previously reported

INTRODUCTION

1.1. Location and Access

EL 4022 is located off the Barrier Highway, approximately 150km south-west of Broken Hill on the Olary 1:250k map sheet (**Figure 1**). The centre of the tenement is roughly 15km south-west of Olary, and covers ~976 square kilometres of predominantly semi-arid landscape of low relief, with the exception of the Maldorky and Nilpena hills. Access to the tenement is via gravel roads and station tracks.

1.2. Tenement

Exploration Licence 4022 was granted on the 22nd January 2008.

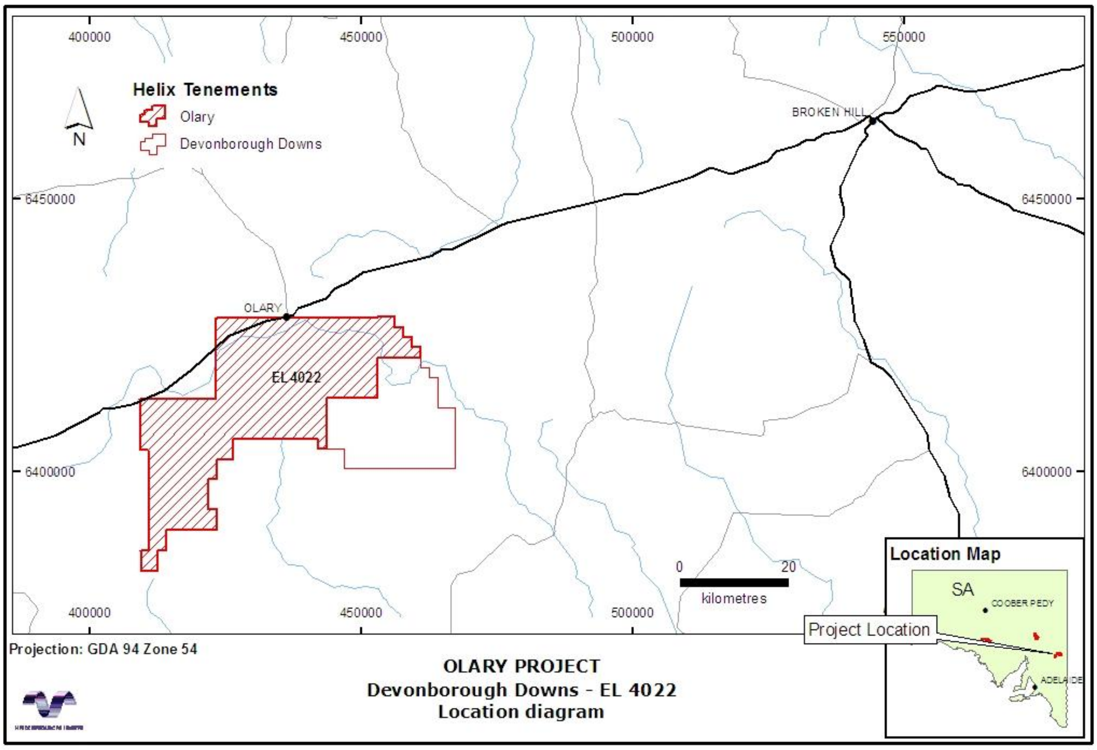

Figure 1: Locality map for Olary (EL 4022)

1.3. Exploration Rationale

EL 4022 was acquired principally to explore for gold and/or copper mineralisation. A review of historical work and geological research literature supported the presence of mineralisation with affinities to several broad models namely; Carlin-type, Skarn, Telfer-style, Epithermal and Mesothermal vein style.

More recently the exploration potential of the magnetite iron mineralisation associated with the Braemar Iron Formation and other glacial derived sedimentary units within Adelaidean sequence have been of some interest (**Figure 2**).

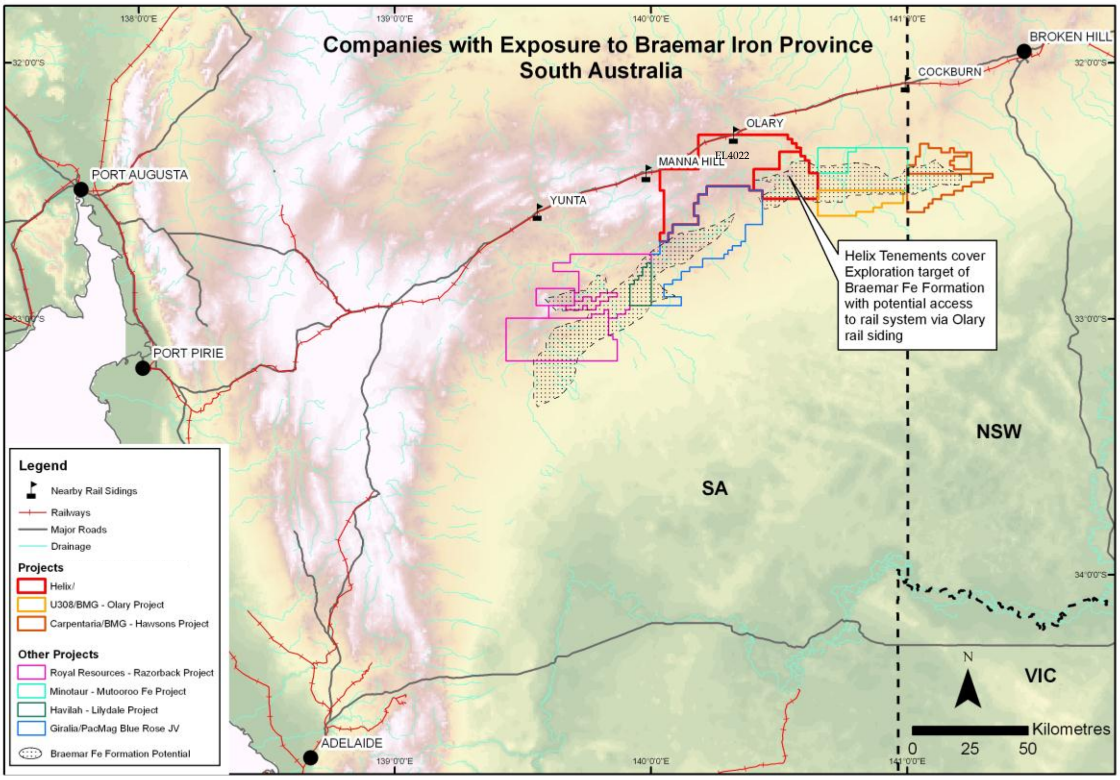

Figure 2: Braemar Iron Formation Distribution within EL4022 and District

2. GEOLOGY

2.1. Regional Geology

EL 4022 is located at the eastern end of the Adelaidian Fold-Belt, within the Olary Province. The Olary region comprises Early-Proterozoic metamorphic sediments of the Willyama Supergroup, Mid-Proterozoic granites intruding fault-bounded inliers of the Willyama Supergroup, Neoproterozoic sediments of the Adelaidian Geosyncline, and the Ordovician I-type intrusive bodies.

The Willyama Supergroup

The Willyama Supergroup, along with the Mid-Proterozoic granites, form fault-bounded inliers, collectively named the Willyama Inliers, within the Adelaidian sediments (Forbes, 1991). Due to the structural complexity of the metasediments in the inliers, and the discontinuous nature of the exposures of older basement, it has been difficult to form a stratigraphic compendium for the Olary Region or to correlate it with the type section at Broken Hill (Forbes, 1991). Laing and Barnes (1986) proposed that the geological setting for the Willyama Supergroup for the Broken Hill – Olary region comprised a shallow-water carbonate shelf to the west and local acid volcanic centres in the Olary region. The central and eastern part of the Broken Hill – Olary region (i.e. Broken Hill – Mutooroo) was the site of a rift with tholeiitic volcanism and local base-metal exhalation (Forbes, 1991).

The Adelaidian Geosyncline Metasediments

The Adelaidian Geosyncline sediments vary in age from 850 to 570 Ma (Hine, 2002), with the MacDonald Fault forming a sharp contact between these sediments (to the west) and the older Early-Proterozoic metamorphic rocks of the Willyama Supergroup to the East. Within the Olary map sheet there are four distinct groups of the Adelaidian Metasediments. These include, from oldest to youngest, the Callanna, Burra, Umberatana, and Wilpena Groups. The

Adelaidian sediments in the area are mostly members of the Lower and Interglacial sequences of the Sturtian Series (Lopes, 1970). The glacial periods were closely followed by widespread deposition of neritic iron formations known as the Braemar ironstone facies (Lopes, 1970), with its origin proposed as an inorganic precipitant.

Structure

Both the older Early-Proterozoic rocks and younger Adelaidian sediments have been deformed to some extent by various different generations of deformation. The deformation varies from the younger sediments to the older basement, with folding more prevalent within the younger sediments and faulting more prevalent within the older basement (Lopes, 1970). The dominant structures in the Olary region are the MacDonald and Outalpa faults, both of which have a similar trend to the Teetulpa fracture zone and a continental-scale Bouger gravity anomaly extending from the west coast of Tasmania to central Australia known as the G2.

Five deformation events (three major, two minor) have been identified for the Willyama Complex and the Adelaidian sediments, with four metamorphic events also identified, corresponding to various deformation events (Berry *et al.*, 1978). D_1 to D_3 are Lower Proterozoic deformation events associated with basement deformation and a mid-amphibolite facies metamorphism (D_1) retrograding to a greenschist facies metamorphism (D_2 & D_3). D_4 and D_5 are associated with the Delamerian Orogeny (450 – 500 Ma) and a Barrovian-type upper greenschist facies metamorphism. During D_4, reactivation of basement-intersecting faults occurred and continued through D_5 (Berry *et al.*, 1978).

Event	Deformation Description	Metamorphic Facies
D_1	Layer-parallel muscovite-biotite foliation in the Willyama Sediments.	Mid-Amphibolite Facies
D_2	Minor folding phase, resulting in macroscopic open folds and crenulations.	Initial retrogressive greenschist facies
D_3	Macroscopic tight folding & intense development of mesoscopic crenulations & crenulation cleavage. Development of Late D_3 faulting (f_1) prior to Sedimentation.	Retrogressive greenschist facies
f_2 – Block Faulting		
D_4,f_3	Schistosity in cover metasediments, crenulations in the basement. Basement-cover interactions give tight synclines and broad anticlines in the unconformity.	Barovian-type upper greenschist facies
f_4 - Block Faulting		
D_5	Cleavage & schistosity in cover metasediments, crenulations in basement. Open anticline over granodiorite → opposite plunging F_4 synclines in cover.	Barovian-type upper greenschist facies
f_5 – Late Block Faulting		

Table 1: Deformation Events

2.2. Local Geology

EL 4022 is situated on the eastern-most part of the Adelaidian geosyncline (metasediment package), just to the west of the MacDonald Fault. The tenement comprises a package of Adelaidian sediments from the Burra subgroup of the Wilpena Group. The Burra Group comprises a succession of rock units including (oldest to youngest) the Cradock Quartzite, Saddleworth Formation, and the Belair Subgroup. The Umberatana Group comprises several subgroups, including the Yudnamatana Subgroup (Benda Siltstone & Pualco Tillite), Farina Subgroup (Tapley Hill Formation, Tarcowie Siltstone, & Enorama Shale), and the Yerelina Subgroup (Gumbowie Arkose, Pepuarta Tillite, & Grampus

Quartzite). The Ulupa Siltstone is the only member of the Wilpena Group to outcrop on the tenement (**Figure 3**).

A series of Ordovician Intermediate dykes trending NNE are seen cross-cutting the Mindaltie Syncline, an area of complex folding in the eastern-most part of the tenement. The dykes have sharp margins with narrow contact aureoles, and are coarsely porphyritic with abundant Ti-rich biotite phenocrysts (Hine, 1998). Quaternary calcrete covers roughly half of the tenement, with the majority of the cover in the northern half of the tenement.

The tenement area is dominated by a gently WSW plunging large scale, tight syncline. A few northwest trending faults can be seen cross-cutting the Burra group in the southwest of the tenement.

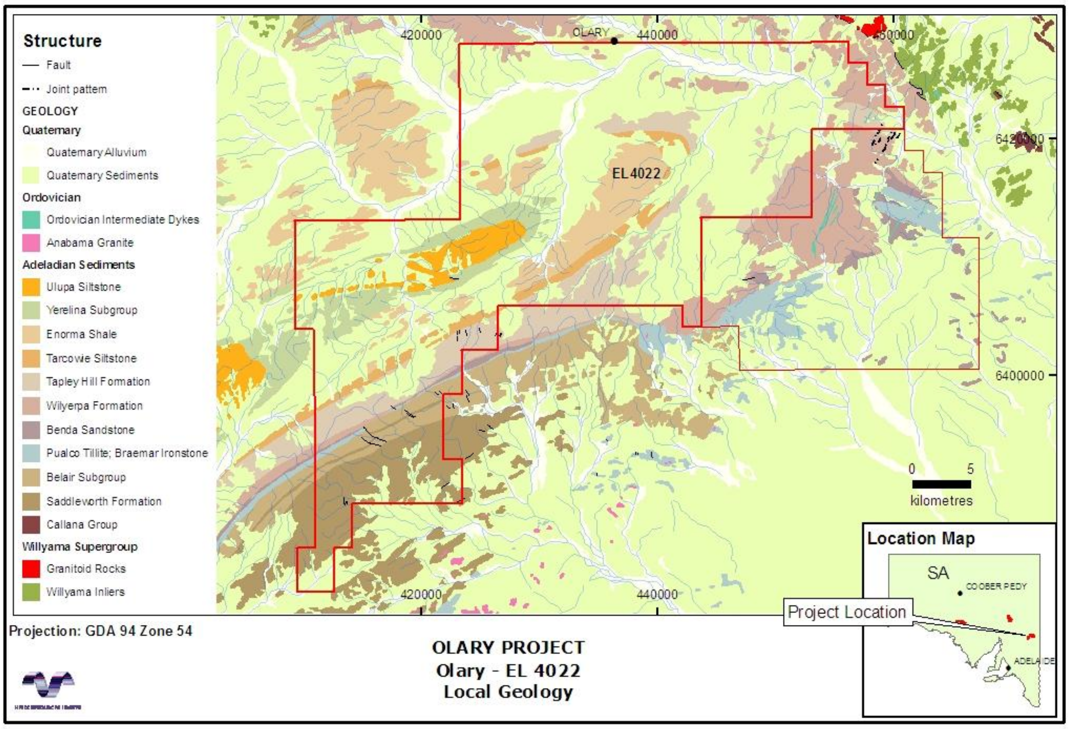

Figure 3: Geological Map for Olary (EL 4022).

3. PREVIOUS EXPLORATION

There has not been much in the way of modern, systematic exploration completed over the ground currently held by Helix Resources.

Electro-winning Pty Ltd held a Special Mining Lease (SML 98) covering the area around the Mindaltie Mine in the far-east of EL 4022 from 1965 to 1966. Electro-winning completed a field reconnaissance trip, diamond & RC drilling, as well as geochemical & geophysical surveys over the mine. The geochemical survey comprised a single line of soil and drainage samples, with the best result being 300ppm. Geophysical work comprised induced polarisation and resistivity, with some magnetics. Induced polarisation and resistivity surveys identified a broad conductor across the mine, with a strike length of 2,000ft (Irving, 1966). RC and diamond drilling, undertaken to define the source of these anomalies, identified the presence of between 1 – 10% iron sulphides (mainly pyrrhotite) as the possible source. One RC drill hole intersected 20ft of 0.77% Cu, while one diamond hole identified 7 ½ft of 0.17% Cu as chalcopyrite (Irving, 1966).

Utah Development Co held the tenement EL 1102 (Copperlinka) from early-1983 to early-1989. A partial relinquishment in January 1985 reduced the tenement coverage by around 75% (Mann, 1985). The ground that was relinquished in 1985 covered over half of what is now EL 4022. A small area of EL 1102 that overlaps with the current EL 4022 was kept. However, the ground was not explored again by Utah Development Co. Exploration on EL 1102 comprised RAB and auger drill lines over the Tapley-Tarcowie contact to an average depth of 2.5 and 3.5 metres respectively, two diamond drill holes at the Copperlinka Mine (CD001) and Two Mile Dam (CD005), and numerous rock chip samples from various areas, as well as detailed 1:25,000 & 1:10,000 scale mapping and ground & aeromagnetic surveys. Results from the RAB, auger, and rock chip programmes were weak, with only one rock chip (possibly taken from the mine) displaying a gold assay of 3.5g/t. For the rest of the samples gold was at or below detection limits and no other element displayed any significant elevation. The diamond drill holes were also lacking in mineralised zones and alteration.

Climax Mining explored the tenement EL 2246 (Wiawera) from December 1996 to December 2001. The part of EL 2246 that, today, overlaps EL 4022 was relinquished in 1999. Exploration on the ground was fairly comprehensive, comprising literature research, data compilation, airborne magnetics interpretation, calcrete auger sampling, rock chip sampling, and MMI soil sampling (Hine, 2002). Climax Mining completed a fairly comprehensive regional calcrete sampling program over the area, the results from which highlighted some key areas of gold and base metal anomalism worthy of follow-up work. During 1998, priorities were given to the various anomalies and prospect areas throughout Climax's tenement, with only one anomaly present on the area currently held as EL 4022. The ground covering EL 4022 was relinquished in 1999, with one 6 x 3.5km block that covered the Mindaltie Syncline with associated historic workings held back.

4. WORK COMPLETED

Helix did not complete any work on-ground on the EL4022 during the reporting period.

5. DISCUSSION

Previous work programs have generally indicated that whilst mineralisation for the principal targets elements of gold and copper, the structures hosting this mineralisation tend to be narrow, of limited strike extent and erratic internal distribution.

Increased interest in the magnetite bearing positions of the Pualco Tillite as a source of iron ore has led to a review of the potential of the area if the licence for this style of mineralisation as well as the recognised need for investigations into the optimal infrastructure locations and routes for any material which could be extracted from this mineralisation.

6. CONCLUSIONS AND RECOMMENDATIONS

An initial drilling assessment of magnetite iron mineralisation within Helix exploration licence tenure is recommended. This should include an assessment of the scope for this style of mineralisation on EL4022. On the basis of favourable topography in the area of EL4022 a study into optimal transport routes and infrastructure placement should be made to assist in assessing the economics of any potential mining project.

identified.

7. EXPENDITURE

MINERAL – EXPLORATION ACTIVITIES	
Employee Costs	$31,203.00
Tenement Costs (excl Rent,Rates and App'n Fees)	$70.00
Exploration Costs	$152.00
Assay	
Travel	
Vehicles	$84.00
Other	$712.00
ADMINISTRATION OVERHEADS	
Overheads	$13,618.00
Claimable Expenditure	**$45,839.00**

Expenditure for Period: **$45,839.00**

Total Expenditure for Licence: **$292,854.00**

8. REFERENCES

BERRY, R.F., FLINT, R.B., AND GRADY, A.E., 1978. Deformation history of the Outalpa area and its application to the Olary Province, South Australia. *Transactions of the Royal Society of South Australia*. **102**(2), p43 – 53.

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HINE, R., 2002. Exploration Licence 2246 (SI 54-2) Final Technical Report. *Climax Mining Ltd*, Open File Report, Env 09268.

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ACN 150 740 613

A wholly owned subsidiary of

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Annual Report for EL4022 For the 12 months ending 20th January 2012

C. Johnson

March 2012

Project: Olary Project **Prospect:** Olary

State: South Australia **Country:** Australia

Tenement: EL 4022

Organisation: Helix Resources Limited

Report Title: Annual Report for EL4022 for the 12 months ending 20th January 2012

Author: Johnson, C.

Pages:17

Key Words: Olary, Devonborough Downs, Maldorky, Adelaidian Geosyncline, Iron, Magnetite, Haematite, Braemar Iron Facies. Gold, Base Metals.

Commodities: Fe, Au, Ag, Cu, Pb, Zn **Nearest Town:** Olary

1:250k Map No: SI 54-2 **1:250k Map Name:** Olary

1:100k Map No: 6933, 7033, 6932, 7032 **1:100k Map Name:** Olary, Mingary, Alabaman, Oakvale

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FIGURES

EXECUTIVE SUMMARY

EL 4022 is located immediately south and extending south and south-west of the township of Olary. The tenement covers ~976 square kilometres of ground on the Olary 1:250k mapsheet. Access to the tenement is on gravel roads and station tracks off the Barrier Highway. Previously, Helix Resources Limited (Olary Magnetite Pty Ltd owner) focussed predominantly on exploring for Au and/or Cu on the tenement. Work during the period by Olary Magnetite Pty Ltd ("Olary") focussed on the potential for substantial magnetite iron resources hosted by the Braemar Ironstone within the Yudnamutana Sub-Group.
Work completed during the period included in this regard included;

- 2D interpretation of aeromagnetic data to assess magnetic targets and possible volumes/exploration targets for magnetite enriched material
- Investigation into forward and inversion modelling and alternate geophysical processing methodologies of the magnetite facies rocks for target scoping and assessment
- Assessment of the 11 hole 1,534 metre regional reconnaissance RC drilling program completed on the adjacent EL3956 to assist in determining Fe grade and thickness parameters used in remote assessment of the magnetite formation on EL4022
- Transport and infrastructure studies to identify optimal locations and layouts for any proposed development scenario with regard to magnetite iron

No work on-ground work was completed during the period by Olary Magnetite Pty Ltd.

INTRODUCTION

1.1. Location and Access

EL 4022 is located off the Barrier Highway, approximately 150km south-west of Broken Hill on the Olary 1:250k map sheet (**Figure 1**). The centre of the tenement is roughly 15km south-west of Olary, and covers ~976 square kilometres of predominantly semi-arid landscape of low relief, with the exception of the Maldorky and Nilpena hills. Access to the tenement is via gravel roads and station tracks.

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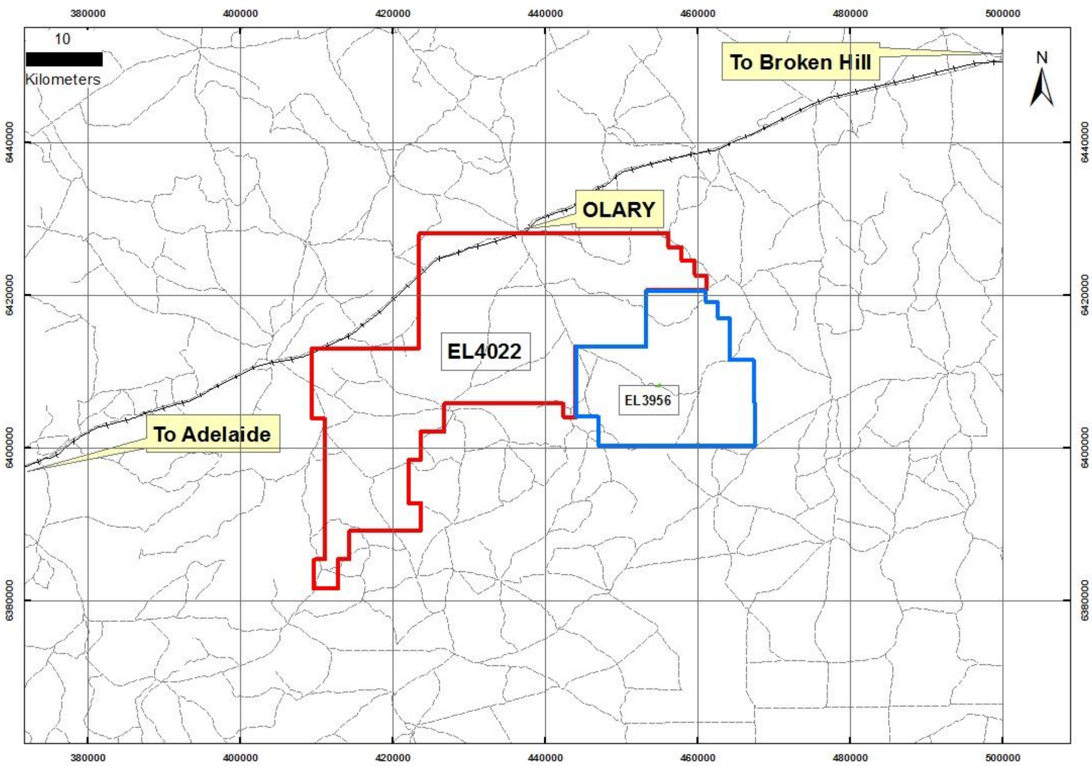

Figure 1: Locality Map for Olary (EL 4022)

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EL 4022 was acquired by Helix Resources Limited principally to explore for gold and/or copper mineralisation. A review of historical work and geological research literature supported the presence of mineralisation with affinities to several broad models namely; Carlin-type, Skarn, Telfer-style and Epithermal to and Mesothermal vein style.
Most recently the exploration potential of the magnetite iron mineralisation associated with the Braemar Iron Formation and other glacial derived sedimentary units within Adelaidean sequence have been the focus for Helix's wholly owned subsidiary Olary Magnetite Pty Ltd.

2. GEOLOGY

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Structure

Both the older Early-Proterozoic rocks and younger Adelaidian sediments have been deformed to some extent by various different generations of deformation. The deformation varies from the younger sediments to the older basement, with folding more prevalent within the younger sediments and faulting more prevalent within the older basement (Lopes, 1970). The dominant structures in the Olary region are the MacDonald and Outalpa faults, both of which have a similar trend to the Teetulpa fracture zone and a continental-scale Bouger gravity anomaly extending from the west coast of Tasmania to central Australia known as the G2.

Five deformation events (three major, two minor) have been identified for the Willyama Complex and the Adelaidian sediments, with four metamorphic events also identified, corresponding to various deformation events (Berry *et al.*, 1978). D_1 to D_3 are Lower Proterozoic deformation events associated with basement deformation and a mid-amphibolite facies metamorphism (D_1) retrograding to a greenschist facies metamorphism (D_2 & D_3). D_4 and D_5 are associated with the Delamerian Orogeny (450 – 500 Ma) and a Barrovian-type upper greenschist facies metamorphism. During D_4, reactivation of basement-intersecting faults occurred and continued through D_5 (Berry *et al.*, 1978).

Event	Deformation Description	Metamorphic Facies
D_1	Layer-parallel muscovite-biotite foliation in the Willyama Sediments.	Mid-Amphibolite Facies
D_2	Minor folding phase, resulting in macroscopic open folds and crenulations.	Initial retrogressive greenschist facies
D_3	Macroscopic tight folding & intense development of mesoscopic crenulations & crenulation cleavage. Development of Late D_3 faulting (f_1) prior to Sedimentation.	Retrogressive greenschist facies
f_2 – Block Faulting		
D_4,f_3	Schistosity in cover metasediments, crenulations in the basement. Basement-cover interactions give tight synclines and broad anticlines in the unconformity.	Barrovian-type upper greenschist facies
f_4 - Block Faulting		
D_5	Cleavage & schistosity in cover metasediments, crenulations in basement. Open anticline over granodiorite → opposite plunging F_4 synclines in cover.	Barrovian-type upper greenschist facies
f_5 – Late Block Faulting		

Table 1: Deformation Events

2.2. Local Geology

EL 4022 is situated on the eastern-most part of the Adelaidian geosyncline (metasediment package), just to the west of the MacDonald Fault. The tenement comprises a package of Adelaidian sediments from the Burra subgroup of the Wilpena Group. The Burra Group comprises a succession of rock units including (oldest to youngest) the Cradock Quartzite, Saddleworth Formation, and the Belair Subgroup. The Umberatana Group comprises several subgroups, including the Yudnamatana Subgroup (Benda Siltstone & Pualco Tillite), Farina Subgroup (Tapley Hill Formation, Tarcowie Siltstone, & Enorama Shale), and the Yerelina Subgroup (Gumbowie Arkose, Pepuarta Tillite, & Grampus Quartzite). The Ulupa Siltstone is the only member of the Wilpena Group to outcrop on the tenement.

A series of Ordovician Intermediate dykes trending NNE are seen cross-cutting the Mindaltie Syncline, an area of complex folding in the eastern-most part of the tenement. The dykes have sharp margins with narrow contact aureoles, and are coarsely porphyritic with abundant Ti-rich biotite phenocrysts (Hine, 1998). Quaternary calcrete covers roughly half of the tenement, with the majority of the cover in the northern half of the tenement.

The tenement area is dominated by a gently WSW plunging large scale, tight syncline. A few northwest trending faults can be seen cross-cutting the Burra group in the southwest of the tenement.

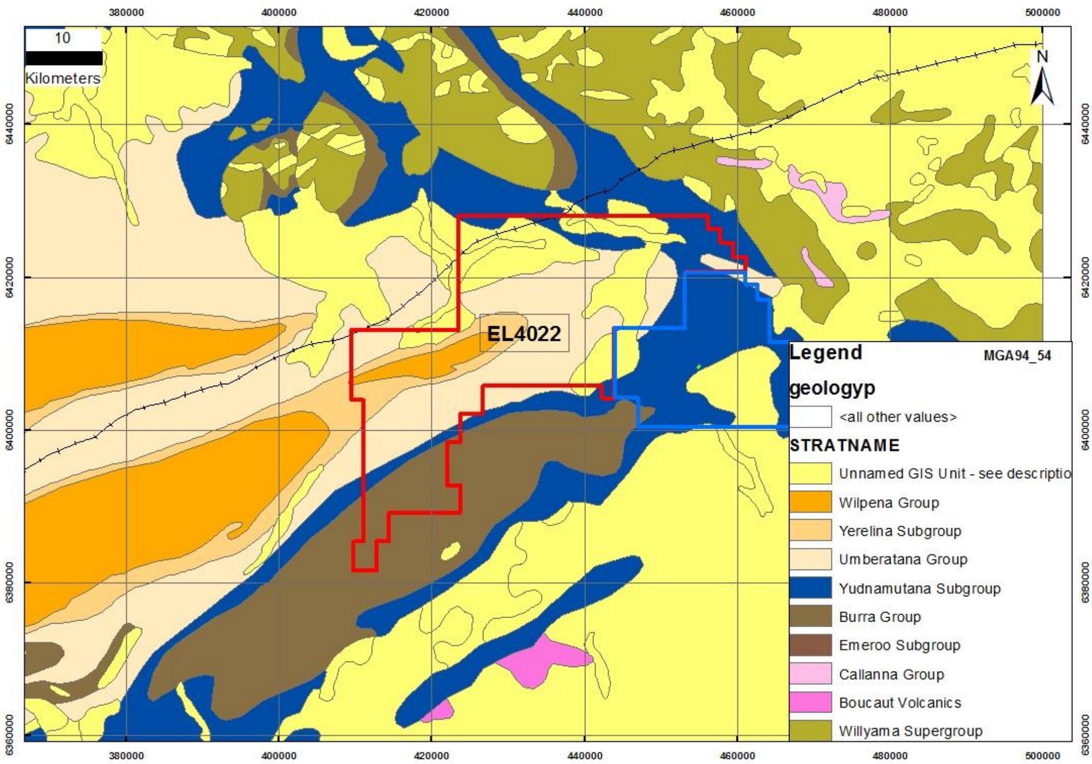

Figure 2: Geological Map for Olary (EL 4022).

3. PREVIOUS EXPLORATION

Electro-winning Pty Ltd held a Special Mining Lease (SML 98) covering the area around the Mindaltie Mine in the far-east of EL 4022 from 1965 to 1966. Electro-winning completed a field reconnaissance trip, diamond & RC drilling, as well as geochemical & geophysical surveys over the mine. The geochemical survey comprised a single line of soil and drainage samples, with the best result being 300ppm. Geophysical work comprised induced polarisation and resistivity, with some magnetics.

Induced polarisation and resistivity surveys identified a broad conductor across the mine, with a strike length of 2,000ft (Irving, 1966). RC and diamond drilling, undertaken to define the source of these anomalies, identified the presence of between 1 – 10% iron sulphides (mainly pyrrhotite) as the possible source. One RC drill hole intersected 20ft of 0.77% Cu, while one diamond hole identified 7 ½ft of 0.17% Cu as chalcopyrite (Irving, 1966).

Utah Development Co held the tenement EL 1102 (Copperlinka) from early-1983 to early-1989. A partial relinquishment in January 1985 reduced the tenement coverage by around 75% (Mann, 1985). The ground that was relinquished in 1985 covered over half of what is now EL 4022. A small area of EL 1102 that overlaps with the current EL 4022 was retained. No further work was completed.

Work completed during tenure included RAB and auger sampling lines over the Tapley Hill Fm – Tarcowie Siltstone contact to an average depth of 2.5 and 3.5 metres respectively, two diamond drill holes at the Copperlinka Mine (CD001) and Two Mile Dam (CD005) prospects, numerous rock chip samples over several prospects, detailed 1:25,000 & 1:10,000 scale mapping along with ground and aeromagnetic surveys. Results from the RAB, auger, and rock chip programmes were weak, with only one rock chip (possibly taken from the mine) assayed 3.5g/t Au. For all other samples gold was at or below detection limits with no significant elevation in other element noted. The diamond drill holes were considered to lack notable altered of mineralised zones.

Climax Mining explored EL 2246 (Wiawera) from December 1996 to December 2001. The part of EL 2246 overlapping EL 4022 was relinquished in 1999. Exploration activities comprised literature research, data compilation, airborne magnetics interpretation, calcrete auger sampling, rock chip sampling, and MMI soil sampling (Hine, 2002). Climax Mining completed regional calcrete sampling program over the area, the results of which highlighted some key areas of gold and base metal anomalism for follow-up work. One anomaly was located within EL 4022.

4. WORK COMPLETED

Desktop and data studies were completed and comprise;

- 2D interpretation of aeromagnetic data to assess magnetic targets and possible volumes/exploration targets for magnetite enriched material (**Figure 3**)

- Investigation into forward and inversion modelling and alternate geophysical processing methodologies of the magnetite facies rocks for target scoping and assessment

- Assessment of the 11 hole 1,534 metre regional reconnaissance RC drilling program completed on the adjacent EL3956 to assist in determining Fe grade and thickness parameters use in remote assessment of the magnetite formation on EL4022.

- Transport and infrastructure studies to identify optimal locations and layouts for any proposed development scenario with regard to magnetite iron.

No on ground work was completed during the period.

4.1. 2D Magnetic Interpretation

An assessment of Exploration Target size to optimise a resource development drilling program was conducted (**Figure 3**). The approach utilised Analytical Signal and 1VD RTP and 2VD RTP magnetic imagery to identify magnetic bodies of potential size >500m long, 100m wide (from similar drilled responses on EL3956) and an assumed depth of 100m.
Specific Gravity Data taken from hand samples previously collected in the field and from drill chip samples of mineralised material provided an arithmetic average of 3.3g/cc for the purpose of tonnage assessment.
A provisional assessment of dip of the magnetic bodies was made from field structural measurements and comparisons of magnetic gradients and peak shifts in aeromagnetic data.

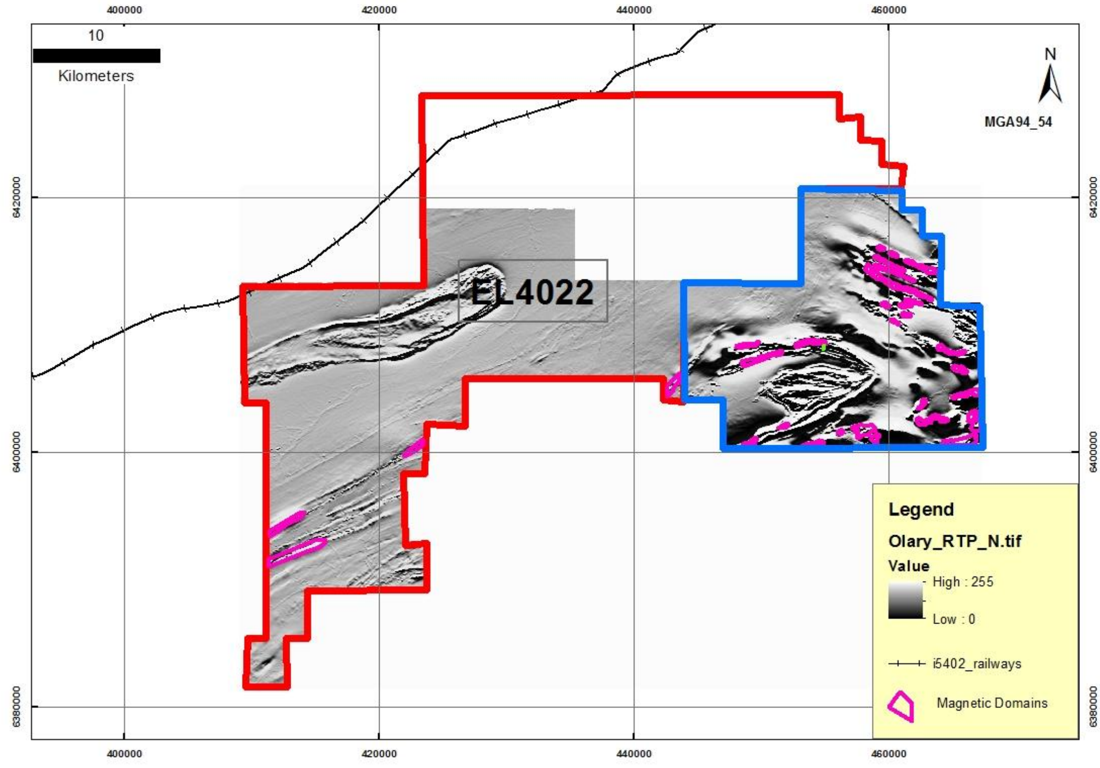

Figure 3: Magnetic Domains of Interest

4.2. Magnetic Inversion Modelling Investigation.

An investigation into the suitability of inversion modelling of the magnetic data to assist in assessment and targeting of the stratigraphy associated with the Braemar Fm was conducted.

It was concluded that the substantial remnance issues present would render such processing ineffective and misleading for the purposes of drill targeting and calculation of volumes for Exploration Target considerations (**Figure 3**). Prior to drill assessment of magnetic targets on EL4022 Forward modelling will be conducted as this methodology may allow remnance effects to be more readily identified and dealt with during processing.

4.3. Transport and Infrastructure Study

A detailed digital terrain model (DTM) generated during acquisition of detailed aeromagnetic survey along with maps of existing infrastructure, and hydrology were assessed to determine the most likely corridor/s for rail/conveyor/haul infrastructure in the event of mining development of the magnetite mineralisation.
An initial corridor was identified and will allow consideration of factors such as the effect on stakeholders and a preliminary indication of requirements which can be utilised to fast track more detailed studies as the project evolves.

5. DISCUSSION

The principal anomalous region for Au and base-metals present on EL4022 is associated with the projections of the Tindelpina Shale and Junction Anticline trend, both under cover and in outcrop. In addition the epithermal vein systems identified in the MacDonald Hill area may strike into the northern tenement area.

The Au/Cu mineralisation controls identified in all prospects visited by Helix geologists in the region have common controls and support a model for epithermal fissure vein development associated with the regional D4 – D5 Delamerian compression events in the region. Initially this is reflected in broadly N-S directed compression progressing to broadly NE-SW directed compressional to transpressional deformation as the margin of the Curnamona Craton re-oriented the compressional stresses focussed into the Adelaidean sedimentary basin.

Observations indicate that the sub-horizontal component of the mineralisation model produces narrow zones of aerially extensive anomalism however it appears that material approaching potential ore grade requires the influence of the sub-vertical fractures/fissure vein development. The fissure veins, fracture swarms are quite narrow (<1m on average) and do not appear to have a frequency of development across strike (<50m) that is sufficient to produce large tonnages of economic material where so far identified.

The significant strike length of fissure vein development in the region, of as much as 500m in some instances, suggests that several small, moderate to high grade shoots could be identified in the larger of these structures.

6. CONCLUSIONS AND RECOMMENDATIONS

An analysis of results from regional carbonate soils geochemistry programs conducted by Helix has resulted in the identification of several anomalous regions for Au and base-metals.

The apparent mineralisation controls for Cu and Au have been identified in the area and are predictable to some degree.

It is recommended that the Tindelpina and Junction Anticline (western limb) regional targets be further assessed by soil sampling and prospecting/mapping to identify locations that contain substantial scope for drill testing or contain indications of a different mineralisation style to that already identified.

This work would be directed toward the advancement of several prospects to the point that multiple targets are available for initial drill testing as a single program.

EXPENDITURE

A: Mineral – Exploration Activities		Interim 21/7/11 – 20/1/12	Annual 21/1/11 – 20/1/12
Employee Costs		78,106	93,541
Tenement Costs (excl Rent,Rates and App'n Fees		379	379
Exploration Costs		349	534
Vehicles		1,045	1,045
Other		91	91
		79,970	**95,774**
D: Annual Tenement Rent and Rates			
Rent		-	-
Rates		-	-
		-	**-**
E: Administration Overheads			
Overheads		21,431	26,763
F: Other – Land Access Native Title Costs			
Land Access and Native Title		4,392	4,392
Total		105,793	126,929
Add GST on rent		-	-
Claimable Expenditure		**105,793**	**126,929**

Total Expenditure for Tenement: $419,783

7. REFERENCES

BERRY, R.F., FLINT, R.B., AND GRADY, A.E., 1978. Deformation history of the Outalpa area and its application to the Olary Province, South Australia. *Transactions of the Royal Society of South Australia*. **102**(2), p43 – 53.

FORBES, B.G., 1991. Explanatory notes: Olary, South Australia, sheet SH53-11. *Department of Mines and Energy, South Australia*, 47p.

HINE, R., 1998. Second annual report for the period ending 12th December 1998 on exploration licence 2246, Wiawera, South Australia (SI 54-2). *Climax Mining Ltd*, Open File Report, Env 09268.

HINE, R., 2002. Exploration Licence 2246 (SI 54-2) Final Technical Report. *Climax Mining Ltd*, Open File Report, Env 09268.

LAING, W.P. AND BARNES, R.G., 1986. Metallogeny of the Willyama Supergroup, Broken Hill. *In:* 8th Australian Geological Convention, Adelaide, 1986. *Geological Society of Australia, Abstracts.* **15**, p112 – 113.

LOPES, D., 1970. S.M.L 207, Olary District, Report on exploration during period 1/7/69 to 30/3/70. *Sundowner Minerals NL and Australian Gold & Uranium Ltd*, Open File Report, Env 01343.

MCCALLUM, W.S., 1997. Report Book 98/00022 - Review of Open File Company Exploration Data Yunta, Winnininnie, Anabama, Oakvale 1:100 000 Map Sheets, Olary 1:250 000 Map Sheet, From Early 1980s to Mid-1997. South Australia. *Primary Industries and Resources SA*.

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(Olary Magnetite Pty Ltd)

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Final Technical Report EL5327

Compiled by

Dr Gavin England

April 2015

Project: Olary Project

Prospect: Olary

State: South Australia

Country: Australia

Tenement: EL5327

Organisation: Braemar Iron Pty Ltd (Olary Magnetite Pty Ltd)

Report Title: Final Technical Report for EL5327 1ST April 2014

Author: England, G

Key Words: Olary, Adelaidian Geosyncline, Iron, Magnetite, Umberatana Group, Yudnamutana Subgroup, Braemar Iron Formation.

Commodities: Fe, Au, Cu,

Nearest Town: Olary

1:250k Map No: SI 5402

1:250k Map Name: Olary

1:100k Map No: 6932, 7032

1:100k Map Name: Anabama, Oakvale

SUMMARY OF ACTIVITY

EL 5327 is located immediately south and extending south and south-west of the township of Olary. The tenement covers ~976 square kilometres of ground on the Olary 1:250k mapsheet. Access to the tenement is on gravel roads and station tracks off the Barrier Highway. In the early period of tenure (2008 -2011), Helix Resources Limited (Olary Magnetite Pty Ltd) focussed predominantly on exploring for Au and/or Cu on the tenement. In 2012, Olary Magnetite Pty Ltd ("Olary") focussed on the potential for substantial magnetite iron resources hosted by the Braemar Ironstone within the Yudnamutana Sub-Group. It was during this period that Olary was purchased by Lodestone Equities Limited and managed by its subsidiary Braemar Iron Pty Ltd by the end of 2013.

Work completed during the tenure includes preliminary field reconnaissance and prospecting, a detailed magnetic and radiometric survey, requisition of detailed IKONOS imagery, soil (44 samples) and rock chip (20 samples) geochemical sampling and an extensive literature search. These studies on the tenement suggest that the potential for a high tonnage magnetite deposit is low.

Work completed on gold and base metal potential by Helix Resources was of a low pass nature, and did not identify any high priority targets for immediate follow up. While of a low priority, work during the tenure did recommend that the Tindelpina and Junction Anticline (western limb) regional targets be further assessed by soil sampling and prospecting/mapping to identify locations that contain substantial scope for drill testing or contain indications of a different mineralisation style to that already identified. Braemar Iron Pty Ltd is an iron ore explorer and considers following these low ranked gold and base metal targets not a priority for the company and subsequently surrender the tenement.

Table 1 summarises activities on the tenement, and these are also shown on the Exploration Index Map.

Table 1: Summary of Activities

Tenement	Activity	Description
EL5327 (exEL4022)	**Drilling**	No drilling activities undertaken.
	Geophysics	Aeromagnetic and Radiometric Survey over southern portion of tenement. Magnetics were analysed for magnetite targets and found to be of low prospectivity.
	Soil Geochemistry	A total of 44 -40 mesh carbonate soil samples were collected for gold and base metals exploration. Minor anomalies identified.
	Rock Chip Geochemistry	A total of 20 rock chip samples were taken for gold and base metal exploration.
	Prospecting	Historic gold and copper prospects assessed in the field. Some anomalous base metal assays were returned from rock chip samples taken from historic workings.
	Remote Sensing	High resolution IKONOS satellite imagery of the tenement.

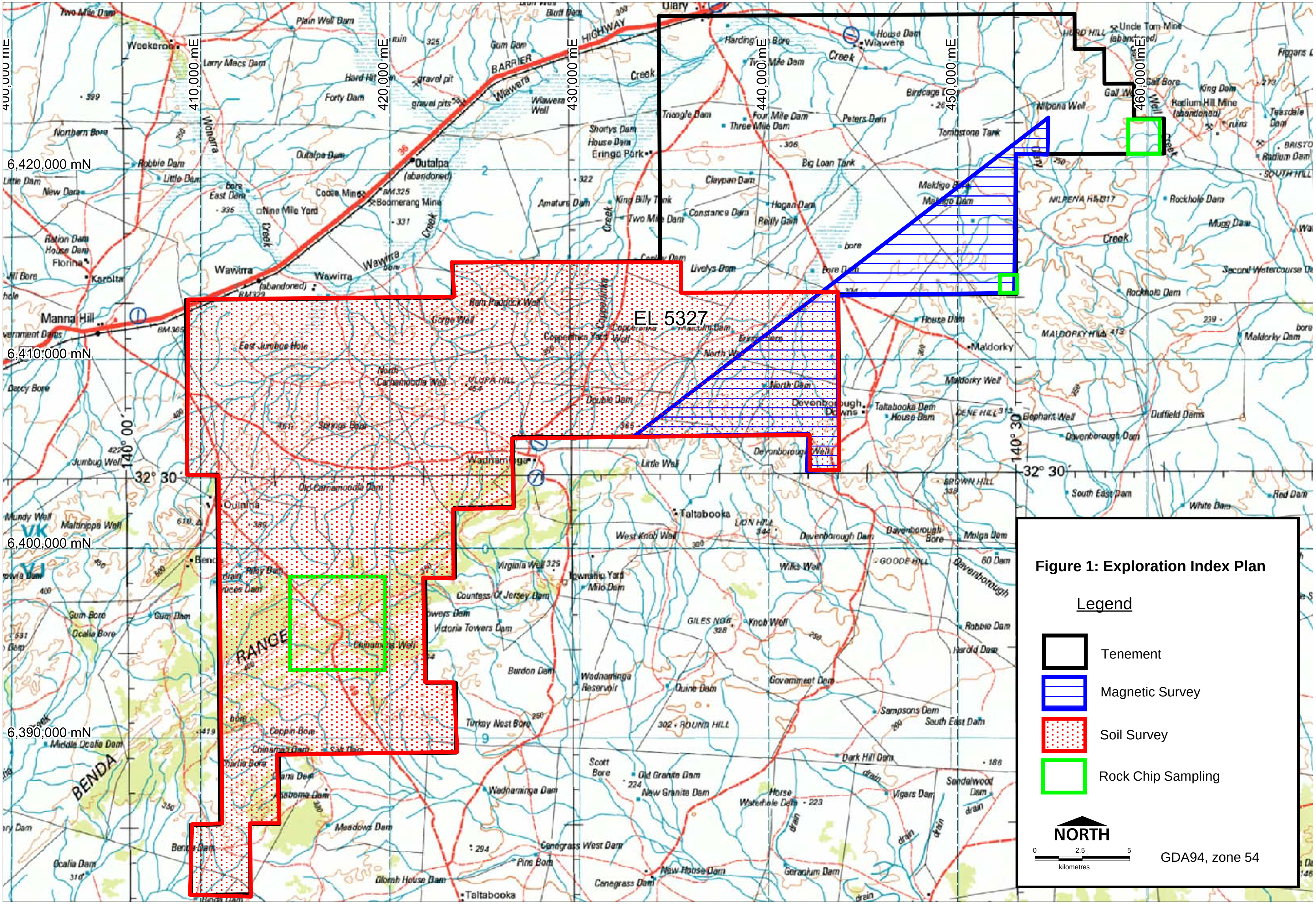

Figure 1: Exploration Index Plan

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INTRODUCTION

1.1. Location and Access

EL 5327 (ex EL4022) is located off the Barrier Highway, approximately 150km south-west of Broken Hill on the Olary 1:250k map sheet (**Figure 1**). The centre of the tenement is roughly 15km south-west of Olary, and covers ~976 square kilometres of predominantly semi-arid landscape of low relief, with the exception of the Maldorky and Nilpena hills. Access to the tenement is via gravel roads and station tracks.

1.2. Tenement

Exploration Licence 4022 was granted to Helix Resources Limited (Olary Magnetite Pty Ltd) on the 21nd January 2008. Olary Magnetite Pty Ltd was purchased by Lodestone Equities Limited in 2012 and managed by its subsidiary Braemar Iron Pty Ltd. A subsequent Exploration Licence 5327 was granted on 21nd January 2013 and the tenement was surrendered on the 20th January 2015.

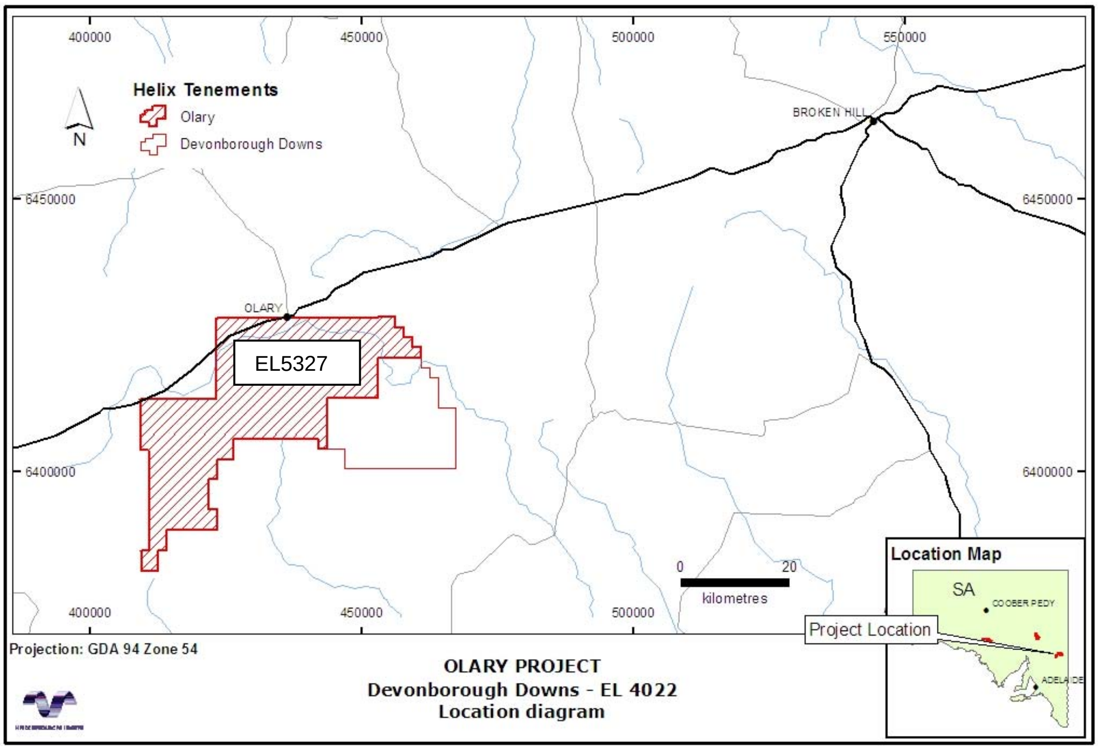

Figure 2. Locality Map for Olary EL 5327.

1.3. Exploration Rationale

EL 5327 was acquired by Helix Resources Limited principally to explore for gold and/or copper mineralisation. A review of historical work and geological research literature supported the potential of mineralisation with affinities to several broad models namely; Carlin-type, Skarn, Telfer-style and Epithermal to and Mesothermal vein style.

In 2012, the exploration potential of the magnetite iron mineralisation associated with the Braemar Iron Formation and other glacial derived sedimentary units within Adelaidian sequence were the focus for Helix's wholly owned subsidiary Olary Magnetite Pty Ltd. Olary Magnetite was subsequently acquired in 2012 by Lodestone Equity Limited, and the tenement managed by Braemar Iron Pty Ltd.

2. GEOLOGY

2.1. Regional Geology

EL 5327 is located at the eastern end of the Adelaidian Fold-Belt, within the Olary Province. The Olary region comprises Early-Proterozoic metamorphic sediments of the Willyama Supergroup, Mid-Proterozoic granites intruding fault-bounded inliers of the Willyama Supergroup, Neoproterozoic sediments of the Adelaidian Geosyncline, and the Ordovician I-type intrusive bodies.

The Willyama Supergroup

The Willyama Supergroup, along with the Mid-Proterozoic granites, form fault-bounded inliers, collectively named the Willyama Inliers, within the Adelaidian sediments (Forbes, 1991). Due to the structural complexity of the metasediments in the inliers, and the discontinuous nature of the exposures of older basement, it has been difficult to form a stratigraphic compendium for the Olary Region or to correlate it with the type section at Broken Hill (Forbes, 1991). Laing and Barnes (1986) proposed that the geological setting for the Willyama Supergroup for the Broken Hill – Olary region comprised a shallow-water carbonate shelf to the west and local acid volcanic centres in the Olary region. The central and eastern part of the Broken Hill – Olary region (i.e. Broken Hill – Mutooroo) was the site of a rift with tholeiitic volcanism and local base-metal exhalation (Forbes, 1991).

The Adelaidian Geosyncline Metasediments
The Adelaidian Geosyncline sediments vary in age from 850 to 570 Ma (Hine, 2002), with the MacDonald Fault forming a sharp contact between these sediments (to the west) and the older Early-Proterozoic metamorphic rocks of the Willyama Supergroup to the East. Within the Olary map sheet there are four distinct groups of the Adelaidian Metasediments. These include, from oldest to youngest, the Callanna, Burra, Umberatana, and Wilpena Groups. The Adelaidian sediments in the area are mostly members of the Lower and Interglacial sequences of the Sturtian Series (Lopes, 1970). The glacial periods were closely followed by widespread deposition of neritic iron formations known as the Braemar ironstone facies (Lopes, 1970), with its origin proposed as an inorganic precipitant.

Structure
Both the older Early-Proterozoic rocks and younger Adelaidian sediments have been deformed to some extent by various different generations of deformation. The deformation varies from the younger sediments to the older basement, with folding more prevalent within the younger sediments and faulting more prevalent within the older basement (Lopes, 1970). The dominant structures in the Olary region are the MacDonald and Outalpa faults, both of which have a similar trend to the Teetulpa fracture zone and a continental-scale Bouger gravity anomaly extending from the west coast of Tasmania to central Australia known as the G2.

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Table 2: Deformation Events

Event	Deformation Description	Metamorphic Facies
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f_2 – Block Faulting		
D_4,f_3	Schistosity in cover metasediments, crenulations in the basement. Basement-cover interactions give tight synclines and broad anticlines in the unconformity.	Barrovian-type upper greenschist facies
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2.2. Local Geology

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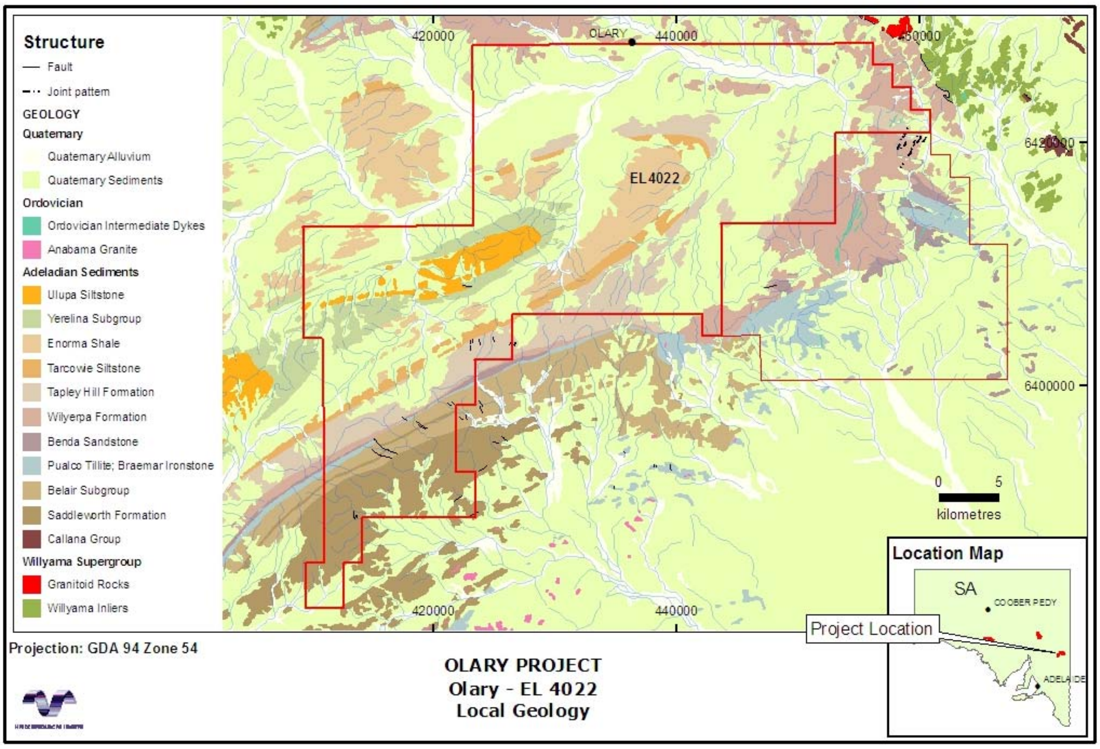

Figure 3. Geological Map for Olary EL5327 (ex EL 4022).

3. PREVIOUS EXPLORATION

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Work completed during tenure included RAB and auger sampling lines over the Tapley Hill Fm – Tarcowie Siltstone contact to an average depth of 2.5 and 3.5 metres respectively, two diamond drill holes at the Copperlinka Mine (CD001) and Two Mile Dam (CD005) prospects, numerous rock chip samples over several prospects, detailed 1:25,000 & 1:10,000 scale mapping along with ground and aeromagnetic surveys. Results from the RAB, auger, and rock chip programmes were weak, with only one rock chip (possibly taken from the mine) assayed 3.5g/t Au. For all other samples gold was at or below detection limits with no significant elevation in other element noted. The diamond drill holes were considered to lack notable altered of mineralised zones.

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4. WORK COMPLETED

Preliminary field reconnaissance and prospecting, a detailed magnetic and radiometric survey, requisition of detailed IKONOS imagery, soil and rock chip geochemical sampling and an extensive literature were undertaken by Helix and Olary Magnetite over the tenure.

4.1. Literature Review

A review of literature from various sources was undertaken by Helix Resources during the tenure.

EL 5327 contains a few historic mines/prospects. Mine-summary cards were located, where available, for some of these localities. Prospects located within EL 5327 include Copperlinka, Dalkey, Mindaltie, Nilpena, and Trinkaleena mines, as well as the Eringa Prospects and several unnamed polymetallic prosects.

An open file search using the SARIG commenced in early August 2008. The search was restricted to gold and base metal exploration on the Olary 1:250k map sheet. The review identified one company (Climax Mining LTD) that had explored the ground acquired by Helix Resources during the last 10 years, relinquishing the ground less than 6 years prior to Helix's application. Open file reports relating to Climax Mining's tenement (EL 2246) were downloaded and surveyed for valuable information. Open file documents were also reviewed for earlier exploration by Utah Development Co and Electro-winning Pty Ltd, both of which previously held ground over what is now EL 5327. Information from this historical exploration review is summarised in the previous exploration section of this report.

4.2. Geophysics

UTS Geophysics was contracted by Helix Resources to fly a 100m-spaced airborne magnetic survey at 40m flight height over the tenement in June 2008 with the survey completed in October following operational delays. The survey covered roughly half of the tenement (564km^2, Figure 4). The data was submitted to the SA Department of State Development (PIRSA) during 2009.

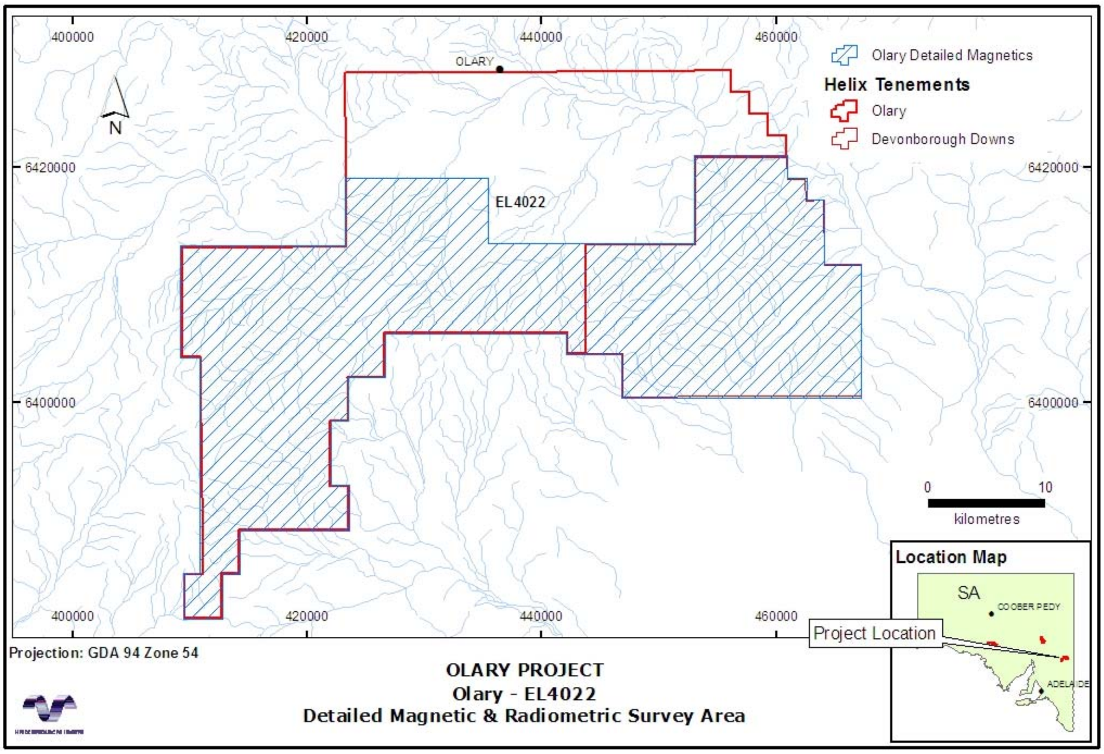

Figure 4. Detailed magnetic & radiometric survey area over EL 5327 (then EL 4022).

4.3. 2D Magnetic Interpretation

In 2012, with a focus on the project being magnetite, an assessment of the magnetic data was carried out, to determine drill targets. The approach utilised Analytical Signal and 1VD RTP and 2VD RTP magnetic imagery to identify magnetic bodies of potential size >500m long, 100m wide (from similar drilled responses on EL 3956) and an assumed depth of 100m.

Specific Gravity Data taken from hand samples previously collected in the field and from drill chip samples of mineralised material (from the adjoining Olary Magnetite Tenement EL 5267) provided an arithmetic average of 3.3 g/cc for the purpose of tonnage assessment.

A provisional assessment of dip of the magnetic bodies was made from field structural measurements and comparisons of magnetic gradients and peak shifts in aeromagnetic data.

It was determined that the magnetite potential on the tenement was low, with no further work carried out (Figure 5).

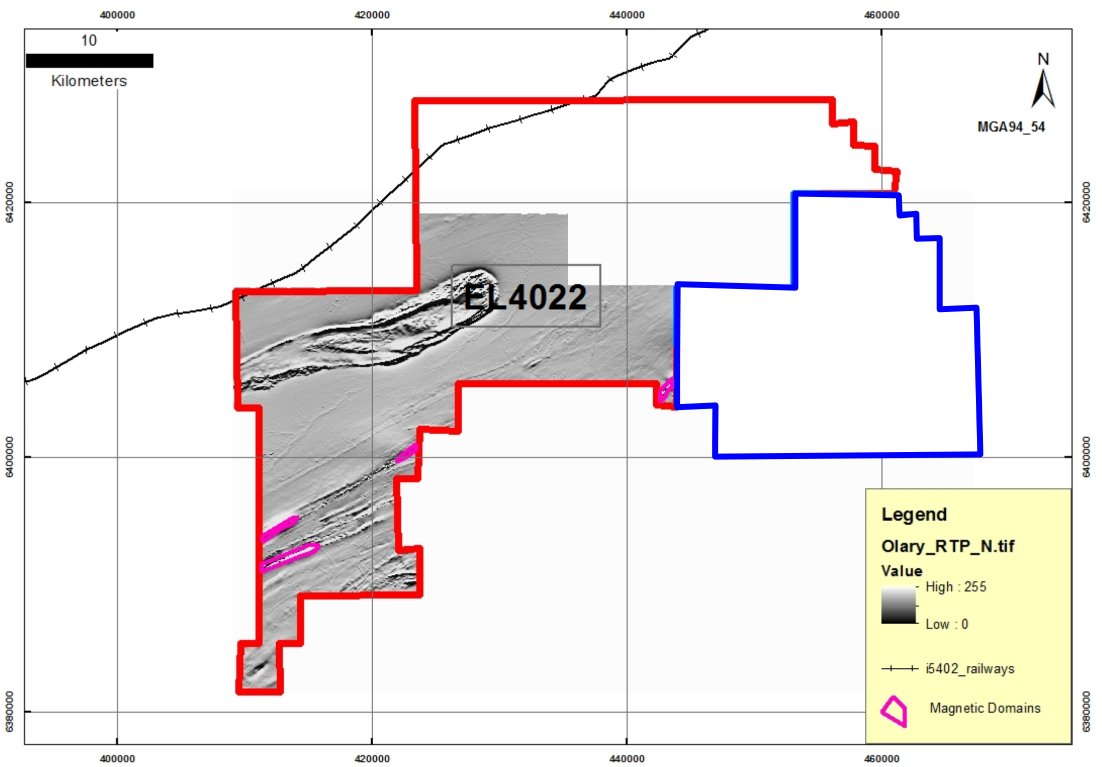

Figure 5. Magnetic Domains of Interest

4.4. IKONOS Satellite Imagery

Geoimage was contracted in 2008 by Helix Resources to collect and process high resolution IKONOS satellite imagery of the tenement. The data was received during September 2008. The images provided a basis for geological mapping and sampling program design.

4.5. Regional Carbonate Soil Sampling

A total of 44 minus 40 mesh carbonate soil samples were collected on EL 5327, with data supplied in the Appendix (EL5327_2015_F_02_SoilGeochem.txt) and seen in Figure 6. Sampling focused on the Chinamen Well area, which did not return particularly encouraging results. Sampling in the Junction Anticline area show slightly better results, but were not followed up during the tenure due to a change of focus to magnetite.

All samples were collected using a hand auger to reach the top 10-20 cm of the carbonate/calcrete horizon (generally ~40-80 cm depth range). Material from this position was collected into a minus 40 mesh sieve pan to derive ~100 g of sample.

All samples were transported to Ultra Trace Laboratories, Canning Vale, W.A. Assay was carried out for a suite of elements by several methods (Table 3).

Table 3: Analytical Methodology for Regional Carbonate Soil Sampling.

Elements	Preparation Method	Analysis Method
Au, As, Cu, Mo, Pb, Zn	Single stage mix and grind (SSMG)	Aqua Regia with ICP-MS finish
Ca, Fe, Mn, S,	Single stage mix and grind (SSMG)	Aqua Regia with ICP-AES finish
Ag, As, Mo, Pb, Sb	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPMS finish
Ca, Cu, Zn	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPAES finish

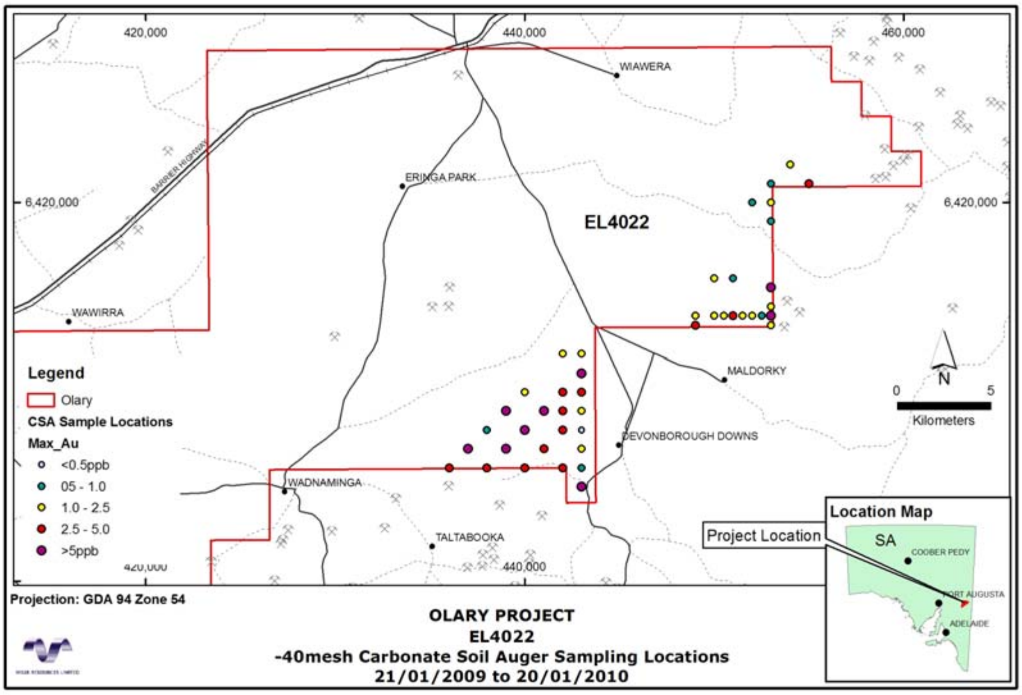

Figure 6. Maximum Gold Assay Results for Regional Carbonate Soil Sampling.

4.6. Rock Chip Sampling

Rock chip sampling of possible mineralised rock materials of interest was completed within EL 5327. A total of 20 samples were collected.

All samples were taken with a geological pick and generally represented niche samples of probable mineralised rock/vein materials or proximal alteration to these materials.

All samples were dispatched to Ultra Trace, Canning Vale, W.A. Analysis of samples was completed following the assay schedule defined below in Table 4.

Table 4: Analytical Methodology for Rock Chip Sampling

Elements	Preparation Method	Analysis Method
Au	Single stage mix and grind (SSMG)	Aqua Regia with ICP-MS finish
Ag, As, Mo, Pb, Sb, U,	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPMS finish
Cu, Zn	Single stage mix and grind (SSMG)	Four acid digest (MAD) with ICPAES finish

Sampling confirmed that material in bedding sub-parallel shearing and in bedding discordant, sub-vertical quartz-iron-oxide +/- carbonate veining was slightly anomalous in Au and base-metals. Few potentially economic indicators were obtained from the materials sampled for Au. Some anomalous base metal assays were returned (Cu Max = 12.8%, Zn Max = 2.6%, Pb Max = 1.7%).

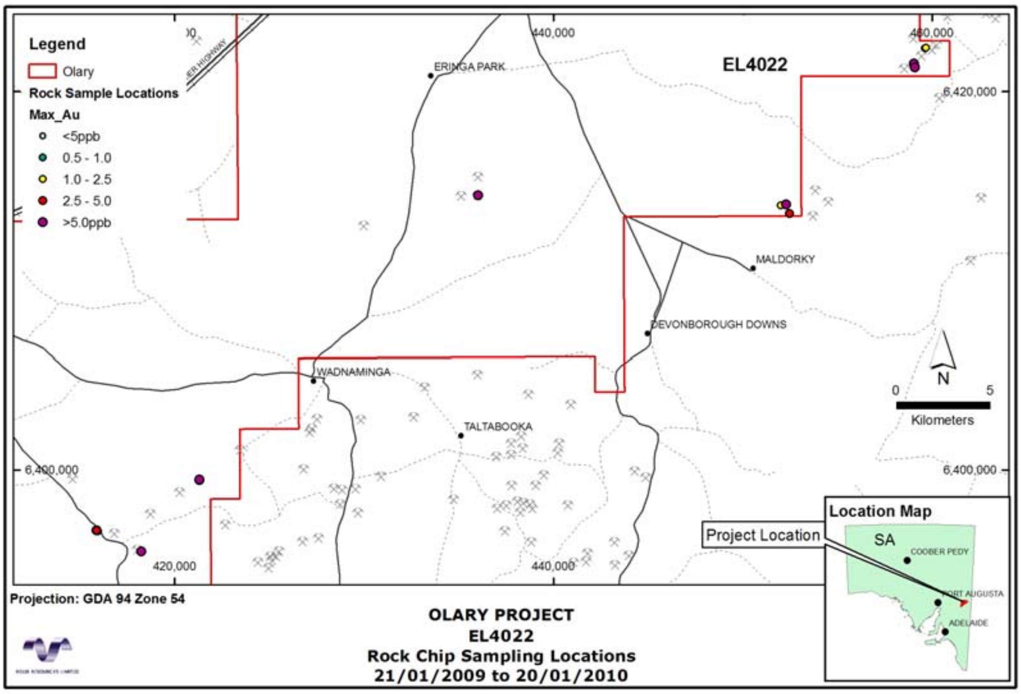

Figure 7. Rock Chip Sample Locations and Maximum Gold Results

Results are provided in Appendix 1 (as EL5327_2015_F_03_RockGeochem. txt).

4.7. Regional and Prospect Scale Reconnaissance Mapping

A program of regional prospecting/mapping was completed in conjunction with the regional carbonate soil sampling between 2008 and 2011. Areas of anomalism in Climax Mining Ltd regional sampling, areas of historic mine/prospecting activity and those areas with apparent anomalous geophysical response were traversed to assist in identifying the principal controls on mineralisation in the region.

At the regional scale the prospecting/mapping confirmed that most, if not all of the known mineralisation have common lithological and structural controls.

Features resolved include:

- Magnetic high responses are not consistently associated with any particular unit and are a result of alteration. As such, magnetic response cannot be used as a consistent surrogate for mapping out rock units.

- Visible copper mineralisation +/- Au and other metals are consistently associated with macro to micro scale iron rich veining developed initially as a conjugate set perpendicular to the far field effects of the Curnamona Craton edges and progressing to faulting and sub-vertical vein development associated with differential slip on these planes. The vein orientation can usually be identified as perpendicular to the nearest craton margin.

- Development of sub-vertical joint sets, fractures, fissure veins as a progression of deformation intensity most commonly occurs where massive/brittle units are confined (e.g. in fold noses and over-tightened limbs) or in interaction with low angle dipping buck quartz veins developed during earlier folding by sub-vertical extension. The shape of historical mining voids indicates that this is the principal high grade control.

- Where well developed, these veins have a bleached silica-sericite-carbonate-iron oxide core with a darker silica-dolomite-chlorite halo that is resistant to weathering and is weakly inverted in the landscape even in areas of poor outcrop.

- Fracture/fault thickness (<1m) and frequency (>50m) generally suggested that large and focussed mineralised volumes of rock are uncommon/of low likelihood with connectivity generally appearing to be poor. Some of the well developed fissure veins demonstrate strike extents in the order 100s of metres.

- The overall stratigraphic dips are quite shallow resulting in any low angle mineralised controls having irregular and complex outcrop patterns further complicated by differential erosion/incision. This could render any significant sub-horizontal lode targets effectively blind to surface and difficult to identify and define.

4.8. Transport and Infrastructure Study

A detailed digital terrain model (DTM) generated during acquisition of detailed aeromagnetic survey along with maps of existing infrastructure, and hydrology were assessed to determine the most likely corridor/s for rail/conveyor/haul infrastructure in the event of mining development of the magnetite mineralisation.

An initial corridor to the rail line was identified by Helix. However, Braemar Magnetite has subsequently identified an infrastructure corridor for any future magnetite development outside EL 5327, involving a proposed slurry pipeline direct to the coast.

5. CONCLUSIONS AND RECOMMENDATIONS

The Conclusions and Recommendations of Tenement EL 5327 are as follows:

- Work completed during the tenure include Preliminary field reconnaissance and prospecting, a detailed magnetic and radiometric survey, requisition of detailed IKONOS imagery, soil and rock chip geochemical sampling and an extensive literature search.
- Studies on the tenement suggest that the potential for a high tonnage magnetite deposit is low.
- Work completed on gold and base metal potential by Helix Resources was of a low pass nature, and did not identify any high priority targets for immediate follow up.
- While of a low priority, work during the tenure did recommend that the Tindelpina and Junction Anticline (western limb) regional targets be further assessed by soil sampling and prospecting/mapping to identify locations that contain substantial scope for drill testing or contain indications of a different mineralisation style to that already identified.
- Braemar Iron Pty Ltd is an iron ore explorer and considers following these low ranked gold and base metal targets not a priority for the company and subsequently surrender the tenement.

REFERENCES

BERRY, R.F., FLINT, R.B., AND GRADY, A.E., 1978. Deformation history of the Outalpa area and its application to the Olary Province, South Australia. *Transactions of the Royal Society of South Australia*. **102**(2), p43 – 53.

FORBES, B.G., 1991. Explanatory notes: Olary, South Australia, sheet SH53-11. *Department of Mines and Energy, South Australia*, 47p.

HINE, R., 1998. Second annual report for the period ending 12th December 1998 on exploration licence 2246, Wiawera, South Australia (SI 54-2). *Climax Mining Ltd*, Open File Report, Env 09268.

HINE, R., 2002. Exploration Licence 2246 (SI 54-2) Final Technical Report. *Climax Mining Ltd*, Open File Report, Env 09268.

LAING, W.P. AND BARNES, R.G., 1986. Metallogeny of the Willyama Supergroup, Broken Hill. *In:* 8th Australian Geological Convention, Adelaide, 1986. *Geological Society of Australia, Abstracts.* **15**, p112 – 113.

LOPES, D., 1970. S.M.L 207, Olary District, Report on exploration during period 1/7/69 to 30/3/70. *Sundowner Minerals NL and Australian Gold & Uranium Ltd*, Open File Report, Env 01343.

MCCALLUM, W.S., 1997. Report Book 98/00022 - Review of Open File Company Exploration Data Yunta, Winnininnie, Anabama, Oakvale 1:100 000 Map Sheets, Olary 1:250 000 Map Sheet, From Early 1980s to Mid-1997. South Australia. *Primary Industries and Resources SA*.

File Verification Listing

Exploration Work Type	**Filename**	**Format**
Office Studies		
Report preparation	EL5327_2015_F_01_ReportBody.pdf	.pdf
Geochemical Surveying		
Surface sampling	EL5327_2015_F_02_SoilGeochem.txt EL5327_2015_F_03_RockGeochem.txt	txt
File Verification Listing	EL5327_2015_F_04_FileListing.pdf	.pdf