# Quarterly Report

Period ending 31 December 2018

MINOTAUR EXPLORATION

Minotaur Exploration Limited ACN 108 483 601 ASX: MEP

www.minotaurexploration.com.au

## CORPORATE

A Rights Issue offer to shareholders was well supported, raising net $1.8 million and positioning Minotaur with cash of $2.2 million at the end of December 2018. The Company maintained a high level of activity through the Quarter, investing $2.4 million into its work programs, the bulk of which was contributed by joint venture partners. Due to the annual field season shutdown in North Queensland Minotaur's activity level and expenditures will, by contrast, be lower through the March 2019 Quarter.

## EXPLORATION, R&D

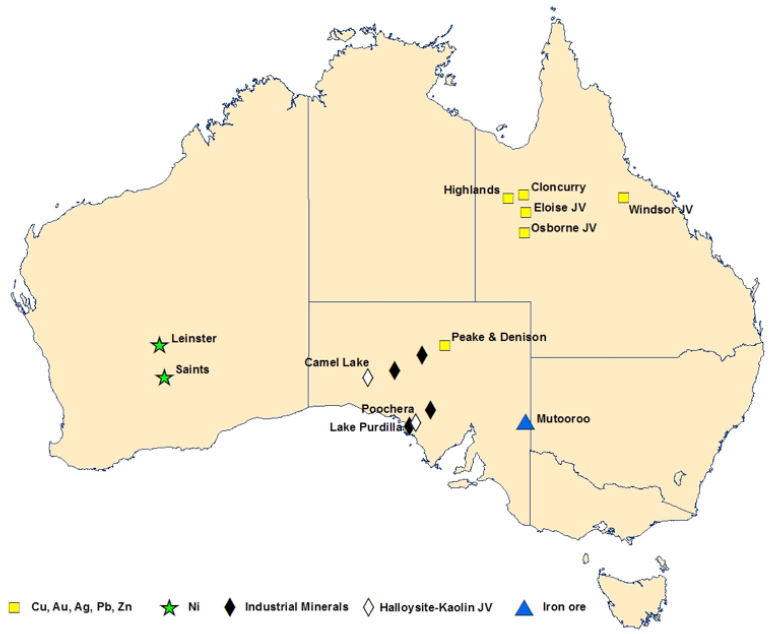


*Figure 1: Minotaur Exploration's project locations*

| Project Location | Tenement Area km² |
|---|---|
| South Australia§ | 6,079 |
| Queensland§ | 3,513 |
| Victoria | 120 |
| Western Australia | 196 |
| **Total Area** | **9,908** |

*Table 1: Minotaur Exploration's tenement areas, under application and/or held 100% and/or in joint venture§*

# QUEENSLAND

The Cloncurry region maintains Minotaur's primary activity hub (Figure 2), where drilling on behalf of the Eloise JV into the Jericho copper discovery continued apace.

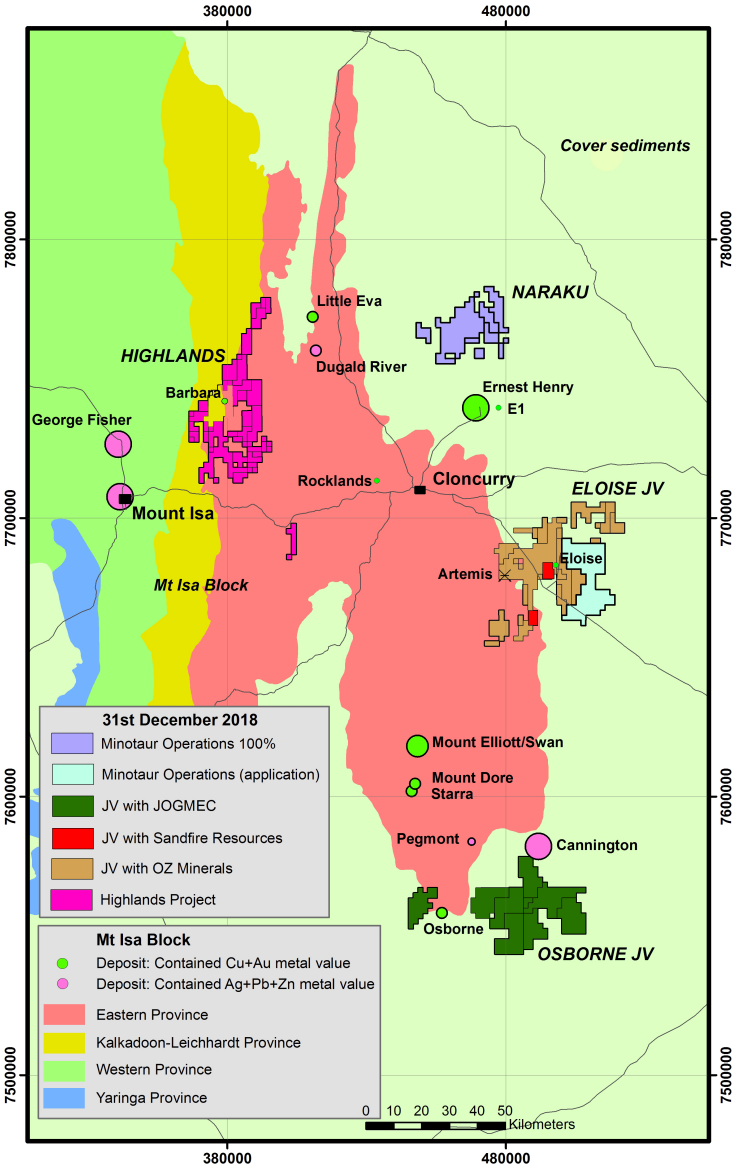


*Figure 2: Location of Minotaur tenements in the Cloncurry and Mount Isa regions of Northwest Queensland*

## QUEENSLAND

# Eloise Farm-In (OZ Minerals)

*Minotaur 49%, OZ Minerals 51% (except on those parts of MDL431 and EPM17838 where Sandfire Resources NL 60% and Minotaur 40%); Area 766km²*

The Eloise project (Figure 3), 60km south-east of Cloncurry, is a joint venture ('Eloise JV') between Minotaur and OZ Minerals Ltd (ASX: OZL). OZ Minerals has 51% beneficial interest in the tenements and is forecast to increase its interest to 70% through total A$10M of project investment by end March 2019.

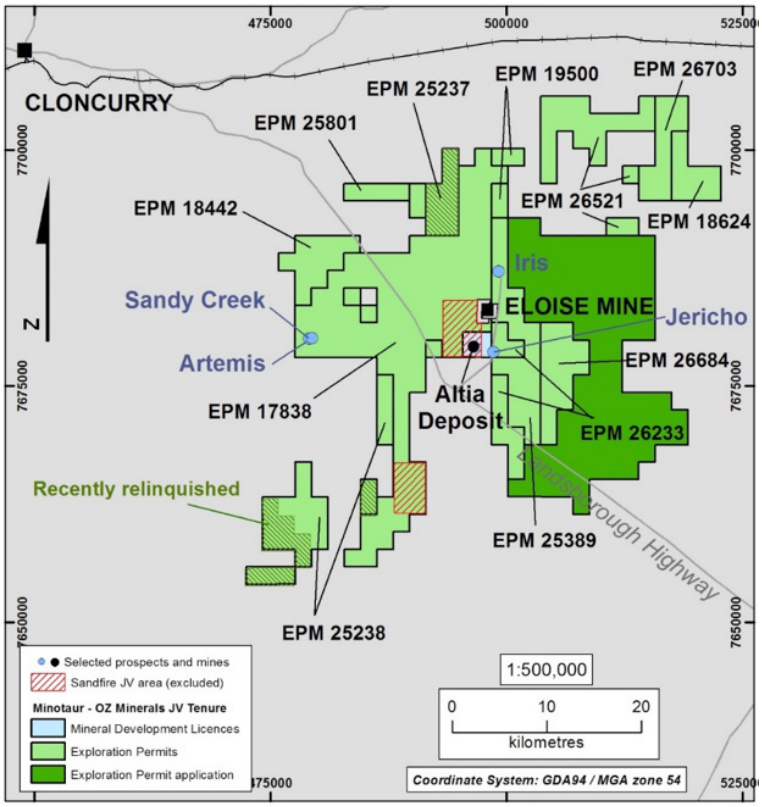


*Figure 3: Eloise project location*

## Jericho

Drilling at Jericho was suspended with the onset of the northern wet season. 10 holes were completed in the Quarter, bringing the total to 38 for around 14,850m (Figure 4). Drilling continues to deliver copper-gold mineralisation and strengthen the JV's view that Jericho may prove to be a significant discovery.

## QUEENSLAND

Given the large scale of the J1 and J2 parallel mineralised structures, each extending for +3km along strike and open in all directions and with strong copper grades, there is clear potential for a significant mineral system to exist at Jericho (Figure 5). To develop this objective, the Joint Venture has agreed to an intensified drilling program at Jericho, commencing in April 2019 after cessation of the wet season.

An initial phase of drilling is expected to comprise around 23,000m with 2 rigs drilling continuously. The focus will initially be in the central portion of Jericho, in the top 300m, where recent drilling shows good continuity of +2% copper intersections at relatively shallow depth.

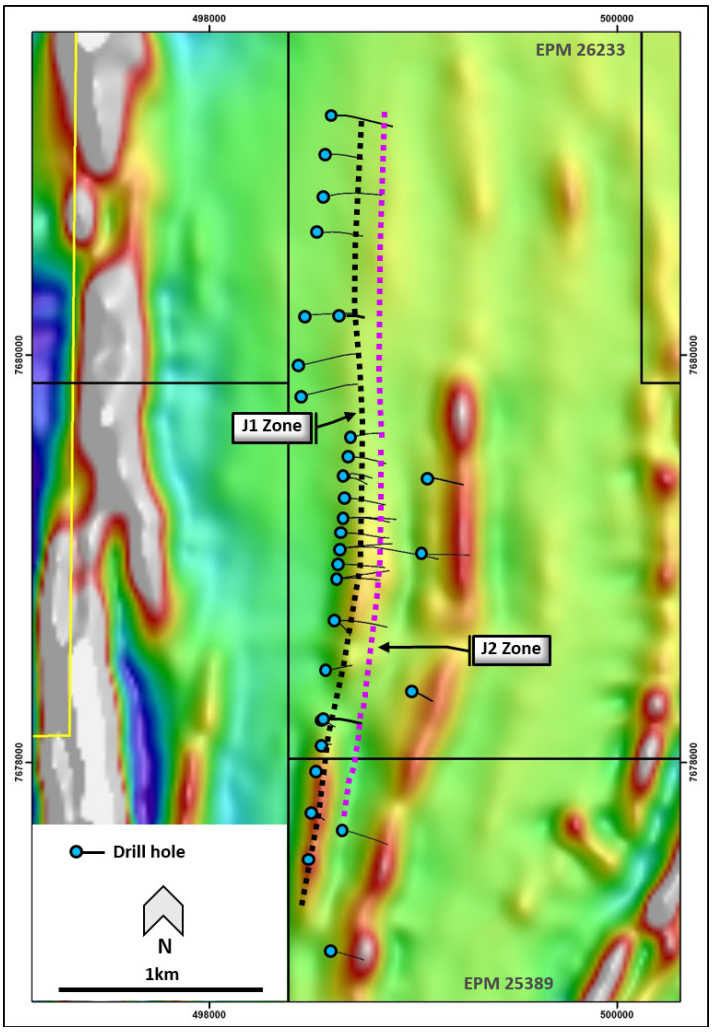


*Figure 4: Drill collars and location of J1 and J2 zones over magnetics image*

## QUEENSLAND

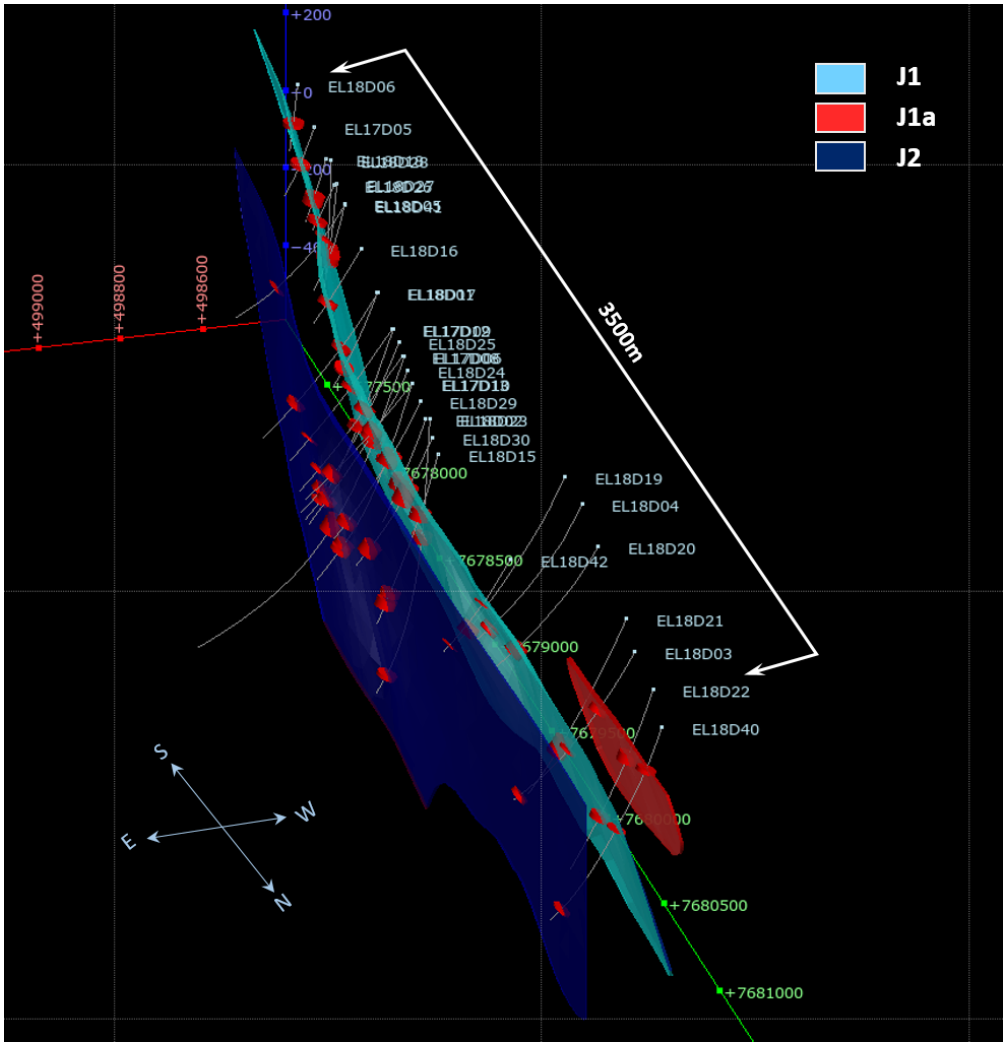


*Figure 5: 3D perspective of the Jericho structures, looking southwest. Mineralised drill intercepts are displayed as red discs*

### Nearby Drill Targets

Several targets were identified in mid 2017 as part of the 'Route 66' EM survey, all within 15km of Jericho, however most were not drilled due to early success at Jericho elevating it to be the primary focus. Eight holes were completed for a total of 2,849m testing Defiance, Winona, Pasadena, Bagdad, Clementine and Navajo EM conductors. All holes intersected pyrrhotite, which appears to be the source of each conductor, however only relatively minor copper is present. There are no plans to follow up any of these targets.

## QUEENSLAND

### Regional Geophysical Targets

Two ground EM surveys, Mammoth East and Sybellah, were completed. The surveys were an extension of the JV's regional exploration approach, aimed at covering large areas of prospective basement concealed by younger cover, to assist drill targeting. A very large basement conductor, named 'Seer', has been identified in the Sybellah survey area (Figure 6). The conductor is around 4km long, has a modelled depth to top of 200m and lies coincident with a weak (60nT) linear magnetic feature. The nearest historical drill hole in the area is 2km distant to the east.

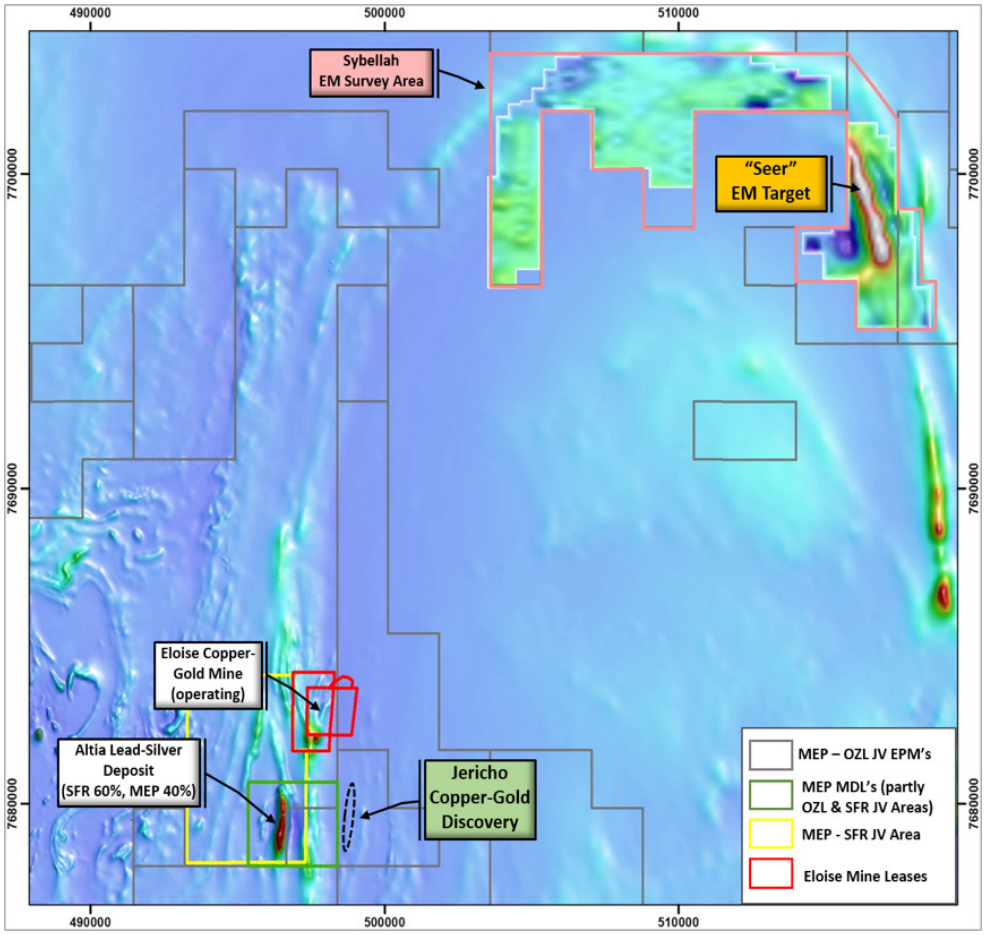


*Figure 6: Gridded EM data (X component, channel 30) from the Sybellah EM survey with new 'Seer' EM conductor; background image is regional magnetics*



## QUEENSLAND

# Altia Joint Venture

*Sandfire 60%, Minotaur 40% on parts of MDL431 and EPM17838 excised from the Eloise JV with OZ Minerals*

No activity reported by Sandfire Resources (Operator).

# JOGMEC Osborne Joint Venture

*Minotaur 100%; Area 715km$^2$*

The Osborne project, 175km south of Cloncurry, is a joint venture between Minotaur and Japan Oil, Gas and Metals National Corporation (JOGMEC) where basement is overlain by 100m of cover sediments. A diamond rig drilled 2 holes for 730.7m to test two conductors at each of the sites during the Quarter.

Results were disappointing, graphite being intersected in each anomaly. The JV partners are currently assessing future directions for the project.

# Highlands Project

*Minotaur 100%; Area 667km$^2$*

The Highlands Project is located 50km northeast of Mount Isa and 80km northwest of Cloncurry in northwest Queensland (Figure 7).

Minotaur was awarded exploration funding, from the Queensland Government's Collaborative Exploration Initiative (CEI), for airborne and ground EM geophysical surveys at the Highlands project.

Minotaur will receive up to $251,000 towards the survey (75% of the estimated survey cost). The survey will cover 3 main areas targeting geological units considered prospective for conductive Iron Sulphide Copper Gold (ISCG) style mineralisation similar to the Jericho discovery for the Eloise JV.

## QUEENSLAND

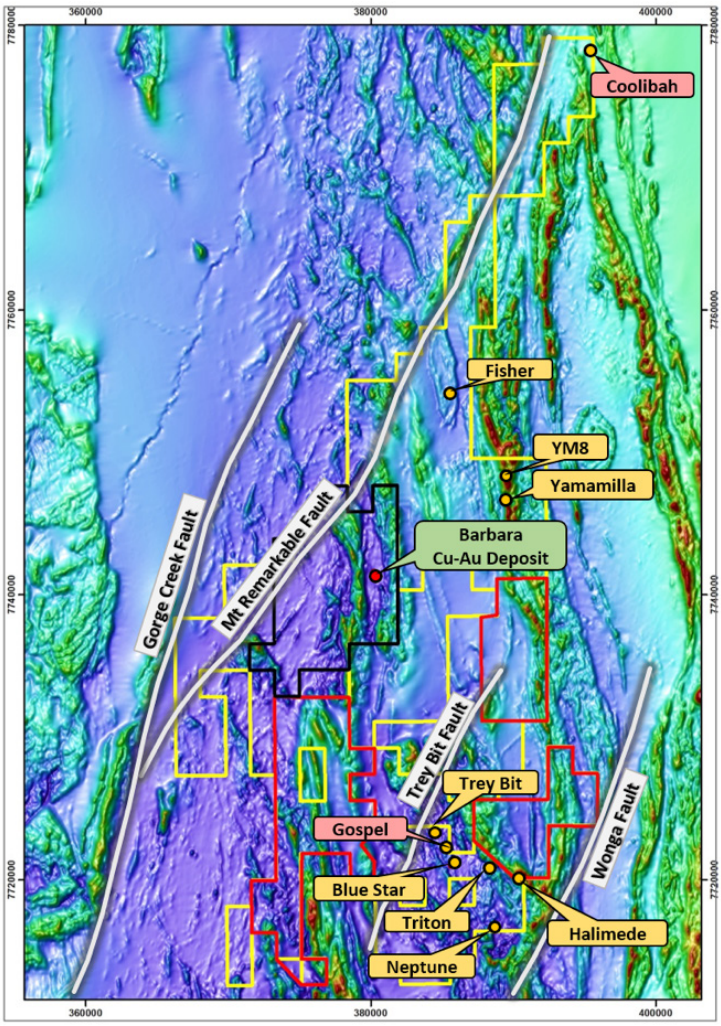


*Figure 7: Highlands project showing the location of main prospects over magnetics and proposed EM survey areas shown in red. Projection: GDA94, zone 54*

A drilling program of 3 scout RC holes was completed at the Gospel prospect (Figure 8) prior to the wet season. Mineralisation was intersected at the targeted position in holes HL18RC02 and HL18RC03, however the overall conductive sulphide content in each hole does not appear to adequately explain the strong conductor. Mineralisation in hole HL18RC04 is best developed in a strongly weathered fault zone well above the targeted EM conductor position where only minor sulphide was intersected. The prospect remains valid and will be revisited with downhole EM.

## QUEENSLAND

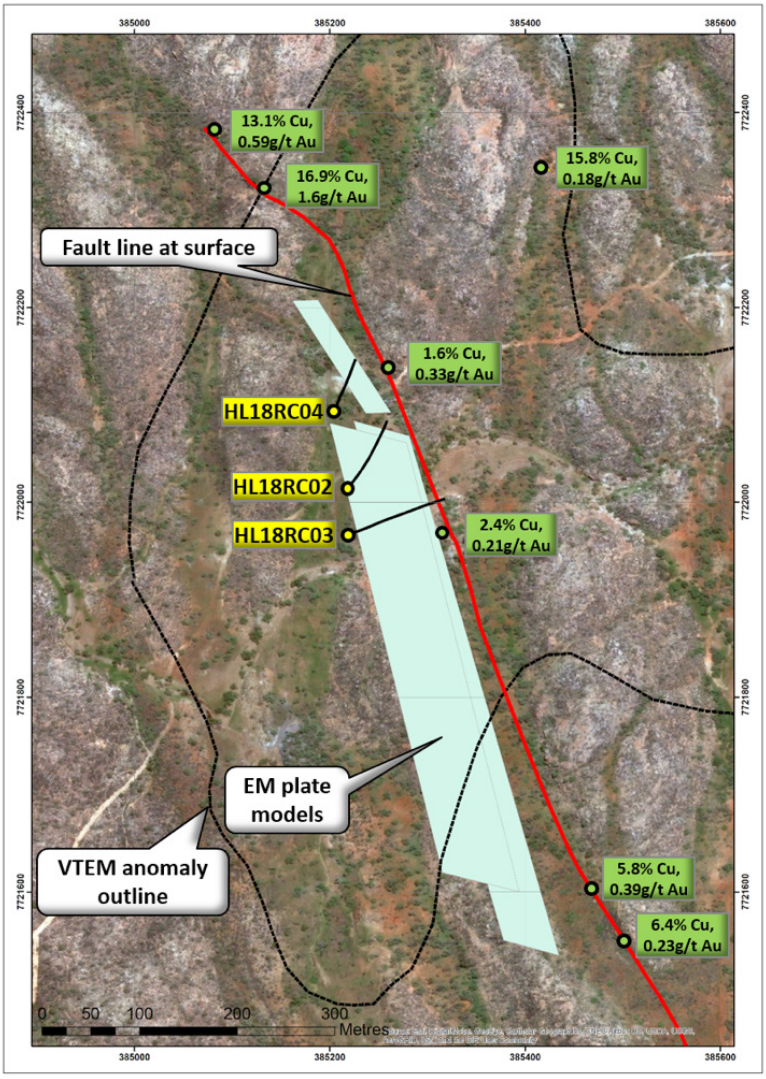


*Figure 8: Gospel prospect showing VTEM anomaly outline, ground EM plate models, rock chip samples with Cu-Au assays (green dots) and drill hole locations (yellow dots)*

# Regional Cloncurry Project

*Minotaur 100%, in which EPM 8608 carries a net smelter royalty of 2% payable to South 32; Area 412km²*

Minotaur seeks to introduce a new JV partner into the tenement package.

## QUEENSLAND

# Windsor Joint Venture

*Private Entity 100%; Area 667km²*

Windsor, centered 200km south-west from Townsville (Figure 1), is a newly created joint venture between Minotaur and a private entity. The tenement area encompasses 667km² and is held 100% by the private entity.

Minotaur intends to apply its skill set to advance geological understanding of VMS potential within the tenement package. Minotaur's approach will be to use its interpretive techniques to search under highly conductive cover for base metal mineralisation.

The region hosts several high-grade VMS style mines, such as Thalanga, Highway-Reward, Waterloo and Liontown (Figure 9). Stratigraphic horizons encapsulating those deposits are interpreted to continue through the Windsor ground. Past exploration has been inhibited by the highly conductive nature of the cover sequence across significant parts of the project area overlying basement, such that drilling is sparse and shallow. Where basement does outcrop drilling has been shallow, especially in modern-day terms; thus most of the tenement area is described as relatively lightly explored.

Minotaur considers its approach, as successfully deployed around the Eloise mine near Cloncurry, could provide a predictive mechanism to search the Windsor basement for sulphide sources of base metals

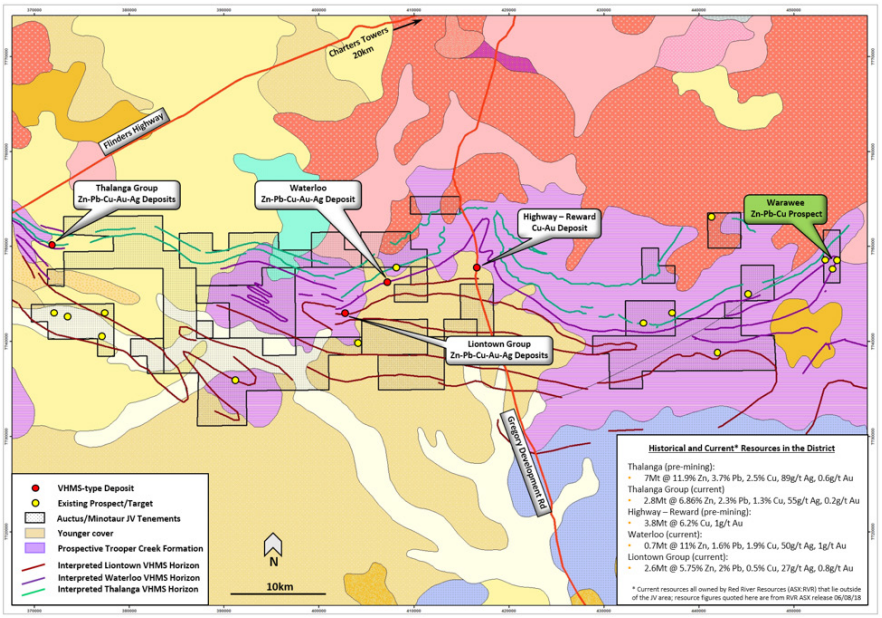


*Figure 9: Windsor Regional Geology, Targets, Regional Mineral Resources & Mines*


# SOUTH AUSTRALIA

## Border Base Metals JV

*Sumitomo 52.7%, Minotaur 47.3%; Area 243km$^2$*

No activity during the reporting period.

## Poochera Kaolin

*Minotaur 100%; Area 1,576km$^2$. Andromeda Metals in joint venture to earn up to 75%*

Andromeda Metals (ASX: ADN, Andromeda) has significantly advanced the Poochera kaolin project focussing on its unique high content of halloysite, the nanotubular form of kaolin (Figure 10). As highlighted in Andromeda's ASX announcement of 22 January, it has:

- Reaffirmed customer non-binding offtake agreements
- Upgraded the "bright white" kaolinised granite Mineral Resource to JORC 2012 guidelines
- Continued to quantify the halloysite content of the deposit with assistance from CSIRO and University of Newcastle which is expected lead to an independent calculation of a halloysite resource in the next Quarter
- Successfully completed a bulk sampling exercise for >200 tonnes of halloysite-kaolin, extracted for commercial scale processing and sampling trials
- Shipped raw material to Western Australia and China for commercial scale wet and dry processing trials and subsequent customer evaluation
- Collected extensive geological and geotechnical data during the bulk sampling exercise which is now being used for Scoping Study mine design work
- Successfully achieved and subsequently confirmed by repeat analysis 99.99% (4N) purity HPA with only a single purification stage, proving that Poochera kaolin-halloysite represents a world class premium feed for high purity alumina manufacture.

## SOUTH AUSTRALIA

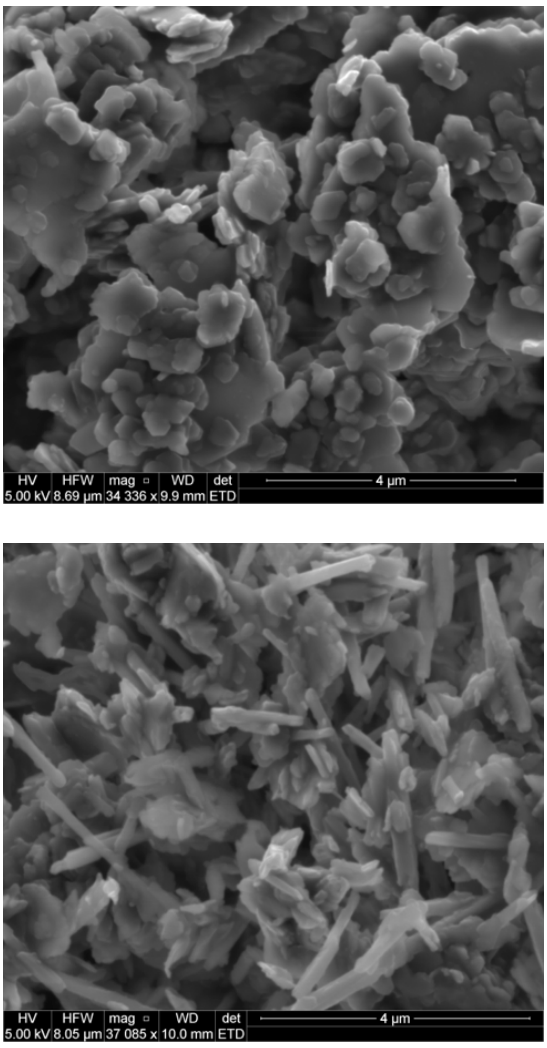


*Figure 10: Poochera processed kaolin samples dominated by platy kaolinite (upper image) and nanotubular halloysite (lower image)*

Minotaur also continued its research in conjunction with the University of Newcastle into innovative technological applications for Poochera halloysite nanotubes including energy storage, electrocatalysis, clean fuel generation and water treatment applications. At Flinders University an Honours student completed a positive investigation into the benefits of using high halloysite kaolin additive in geopolymer ('green') cement, demonstrating significant increases in compressive and tensile strength of mortar and concrete products and with the added attraction of a marked reduction in carbon emissions compared to existing geopolymer additives such as metakaolin, slag and flyash.

## SOUTH AUSTRALIA

# Peake & Denison Ranges R&D

*Minotaur 100%; Area 2,547km²*

Minotaur continued its new IOCG model investigations for this poorly understood, under-cover terrane. New dating technologies and innovative magnetic processing routines are being employed prior to target area prioritisation across this large and prospective region. Broad areas of intense magnetic anomalism (Figure 11) associated with diverse magnetic sources create difficulties in isolating specific IOCG targets using traditional geophysical analysis.

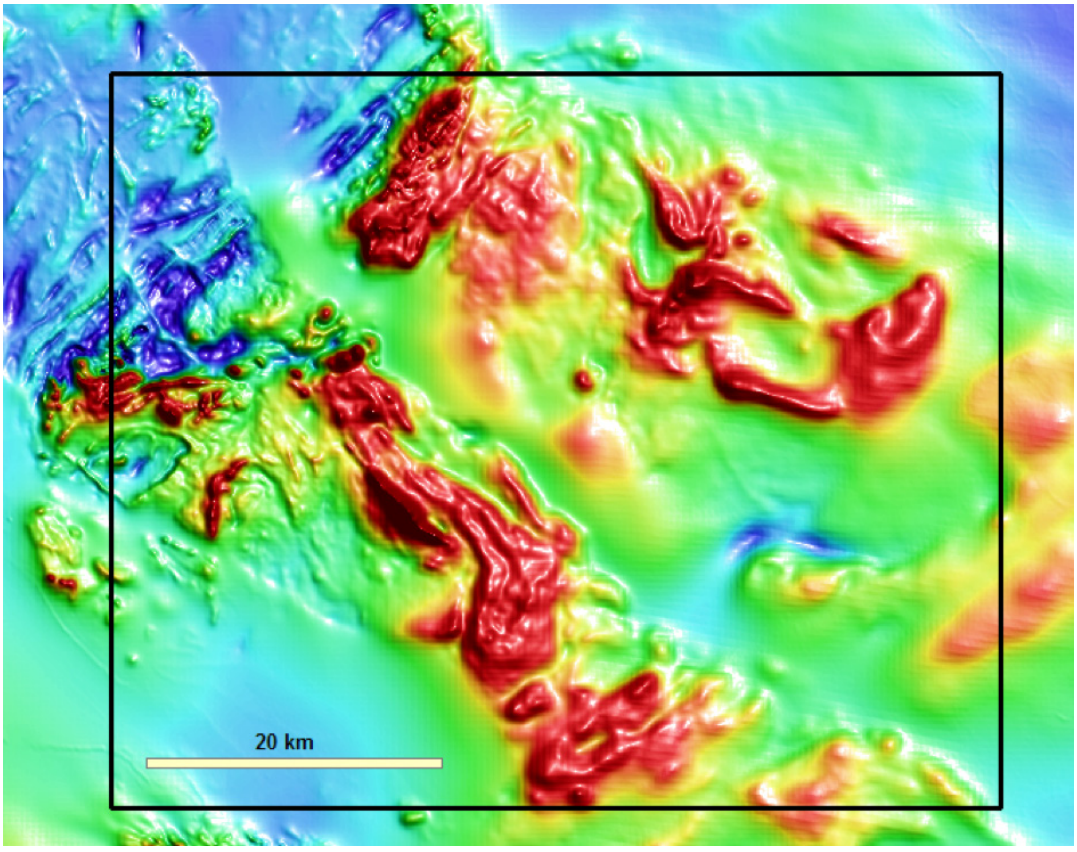


*Figure 11: Aeromagnetic image (RTP TMI) of Peake & Denison terrane. The outlined area of interest is almost entirely under 50 – 200m of cover*



## SOUTH AUSTRALIA

Initial results from University of South Australia trialling U-Pb zircon and titanite dating within intense IOCG alteration aureoles are generating 1500 – 1530 Ma ages. This is much younger than IOCG mineralisation elsewhere on the Gawler Craton - typically 1590 Ma - and more akin to the major Cloncurry IOCG event as exemplified by Ernest Henry.

A second front in this new area investigation is a 'big data' approach to magnetic processing and analysis. Historically, magnetic anomalies have been analysed and modelled singularly on an anomaly by anomaly basis. Besides being very time consuming, this has proved problematic in the Peake and Denisons where intense and overlapping anomalism caused by a variety of subsurface magnetic sources makes individual target selection problematic.

A new method widely used in the oil and gas industry is being trialled in which computer programs automatically process aeromagnetic data, line by line, calculating the location of the causative magnetic bodies and their magnetic susceptibilities using sophisticated curve matching algorithms. The 3-D Magnetic Source Mapping project underway with external geophysical consultants is generating multi-million solution point data sets which allow the interrogator to synoptically view a myriad of potential magnetic subsurface bodies in 3-D. Similar to seismic mapping the density of magnetic source data points allows physical structures such as faults, folds, diatremes and intrusions to be recognised and interactively compared with gravity, basement elevation, drillhole and other key data sets. Although this method uses inversion techniques it should not be confused with 3D inversion of magnetic data.

Analysis is ongoing, but of particular interest in the Peake & Denison subsurface 3-D magnetic source data cube is the ability to visually recognise pipe- or diatreme-like magnetic source clusters, as opposed to stratal-like responses which most likely represent Banded Iron Formations or volcanic units (Figure 12). Magnetically-intense, diatreme-like bodies within areas of intense IOCG-style alteration will clearly be of great interest in the search for Ernest Henry style targets.

## SOUTH AUSTRALIA

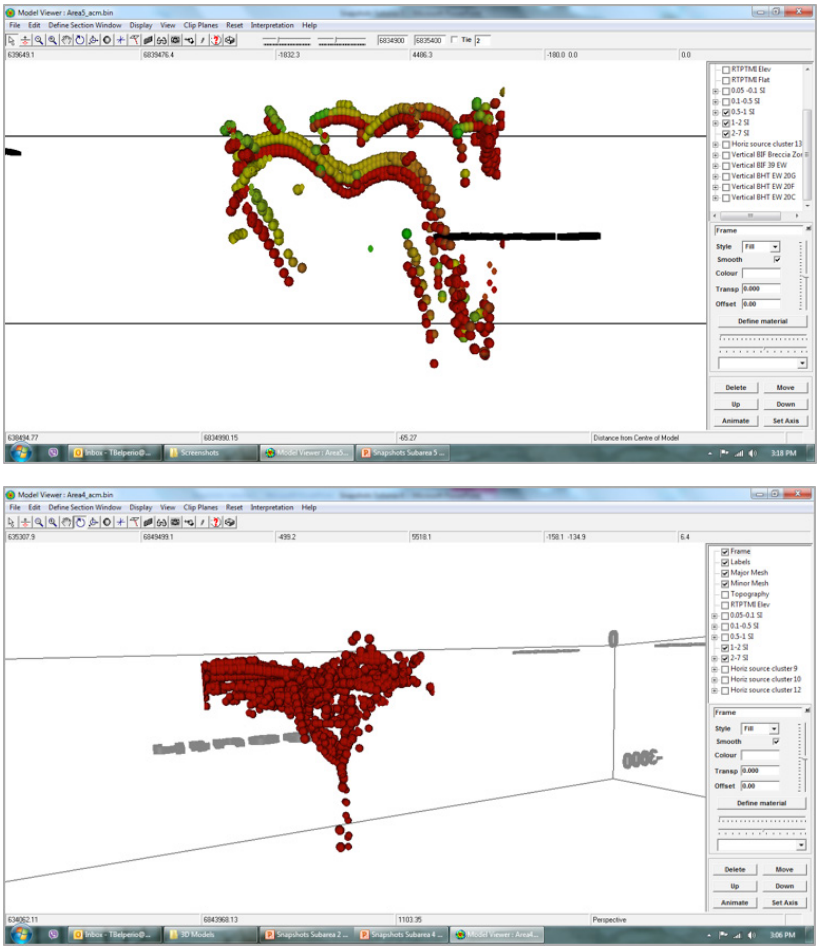

*Figure 12. Computer screen 3-D snapshot images of stratal-like (upper) and diatreme-like (lower) magnetic sources, Peake & Denison Ranges*

# North Flinders Project

*Minotaur 10%, Perilya 90%; Area 601km²*

No activity reported by Perilya (Operator).



# WESTERN AUSTRALIA

## Saints Nickel Project

*Minotaur 100%; Area 20km²*

Saints is a modest, but expandable, nickel sulphide resource located 65km north of Kalgoorlie. Parties interested in potentially acquiring the two mining licences outright are assessing technical data.

## Leinster Nickel Prospects

*Minotaur 100%; Area 176km²*

Nickel endowed tenements E36/899 and E36/936 remain available for sale.

### COMPETENT PERSON'S STATEMENT

Information in this report that relates to Exploration Results is based on information compiled by Mr G. Little, a Competent Person and a Member of Australian Institute of Geoscientists (AIG). Mr Little is a full time employee of the Company and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Little consents to inclusion in this document of the information in the form and context in which it appears.

This report contains information extracted from previous ASX releases which are referenced in the report and which are available on the company's website. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.


# Note: December 2018 Quarter ASX Announcements

The following significant announcements were lodged with ASX during the December Quarter:

- Jericho delivers more copper results for Eloise JV, 9 October 2018
- Minotaur enters base metals JV near Thalanga, 15 October 2018
- Drilling underway at Highlands copper prospects, 23 October 2018
- Shallow, high grade copper zones in Jericho, 25 October 2018
- Eloise JV continues to drill into Jericho copper discovery, 7 November 2018
- CEI grant recognises Highlands copper potential, 6 December 2018
- Eloise JV steps up for stellar 2019 field season, 17 December 2018

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