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Mine / Project Details	Rum Jungle
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**TERRITORY IRON PTY LIMITED**  
**A.C.N. 125 984 401**

**ANNUAL TECHNICAL REPORT**  
**ELR125**

**For The Period**  
**23<sup>rd</sup> August 2016 – 22<sup>nd</sup> August 2017**

**Darwin SD52-04 1:250,000 Geological Map Sheet**  
**Bynoe 5072 1:100,000 Geological Map Sheet**

**NORTHERN TERRITORY**

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## **SUMMARY**

This report describes exploration activities conducted by operator Territory Iron Pty Ltd at the Rum Jungle (Yarram) Project area which is partially located within ELR125 for the period 23<sup>rd</sup> August 2016 to 22<sup>nd</sup> August 2017. ELR125 was previously held by Compass Resources Limited (100%) and was recently part of a portfolio in which the ownership was 50/50 with HNC Australia Resources Pty Ltd. ELR125 is now 100% held by Northern Territories Resources Pty Ltd. A Deed of Novation was signed on the 3<sup>rd</sup> February 2017 by the outgoing parties Compass Resources Ltd and Guardian Resources Pty Ltd, the continuing party, Territory Resources Ltd and the incoming party Northern Territories Resources Pty Ltd.

ELR125 is located about 8 km NW of Batchelor and 61 km SSE of Darwin in the Northern Territory and covers 1427.9 hectares. The Yarram Project Area covers an approximate 2.1 km<sup>2</sup> area over tenements ELR125, ELR146 and MLN1163, was originally subject to an agreement between Territory Iron Pty Ltd and previous tenement owners Compass Resources Ltd (90%) and Guardian Resources Ltd, (10%) whereby Territory Iron had the right, subject to certain royalty terms, to explore, mine and purchase iron ore from the title holders. These rights have now been transferred to Northern Territories Resources Pty Ltd.

Exploration activities during the reporting year included desktop geological studies including the assessment of earlier acquired geological data, geochemical assay and geophysical data to further evaluate the iron ore potential of the project and also monitor the status of rehabilitation for drill sites and tracks from earlier drill programmes.

Expenditure for the 2016-2017 reporting period was \$2,992.

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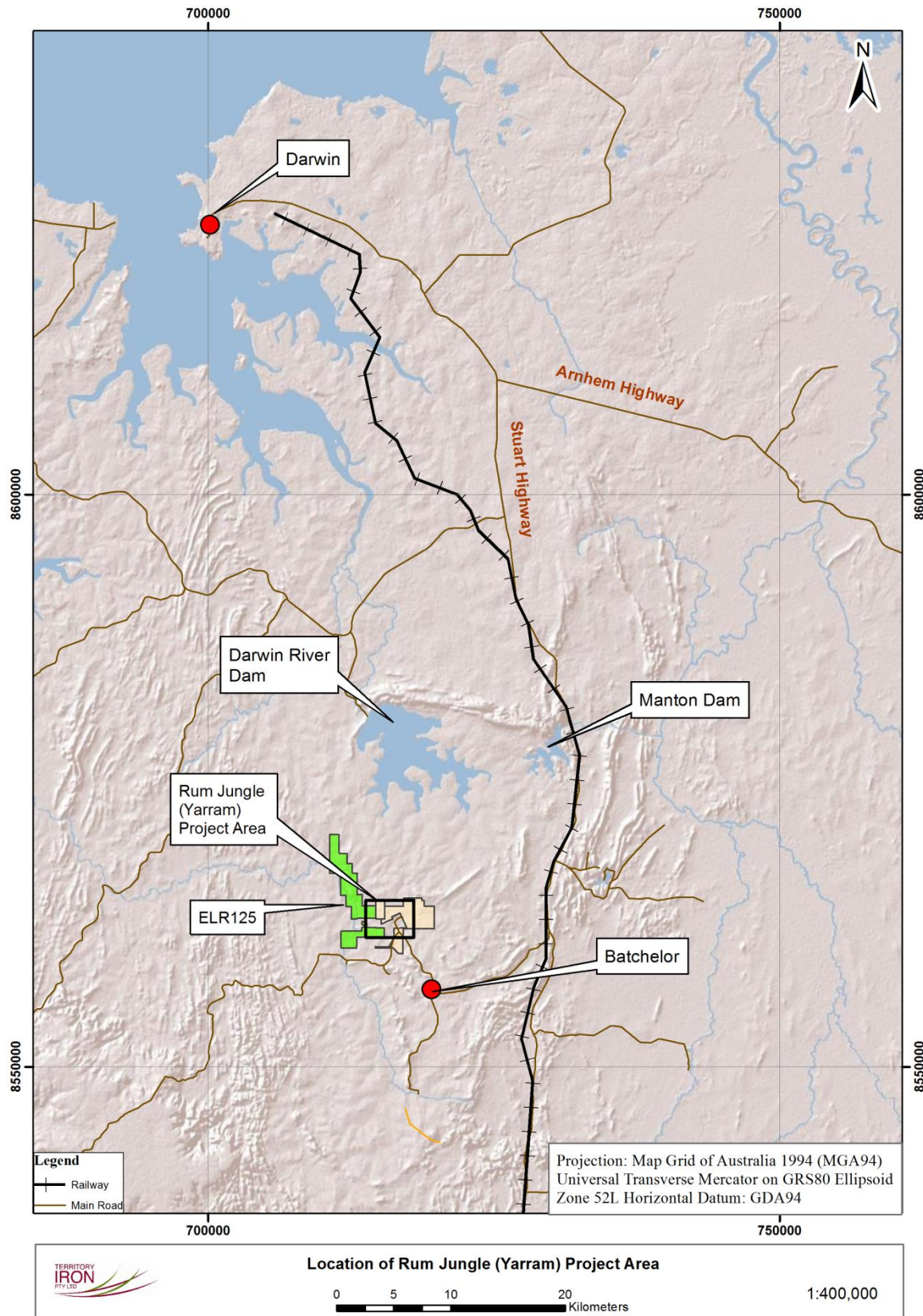
This document and its contents are the copyright of Territory Resources Ltd. The document is intended for submission to the Northern Territory Department of Primary Industry and Resources as part of the tenement reporting requirements of the Minerals Titles Act 2010. Any information included in this report that originates from historical reports or other sources is listed in the 'References' section at the end of this document.

## **1.0 INTRODUCTION, LOCATION AND ACCESS**

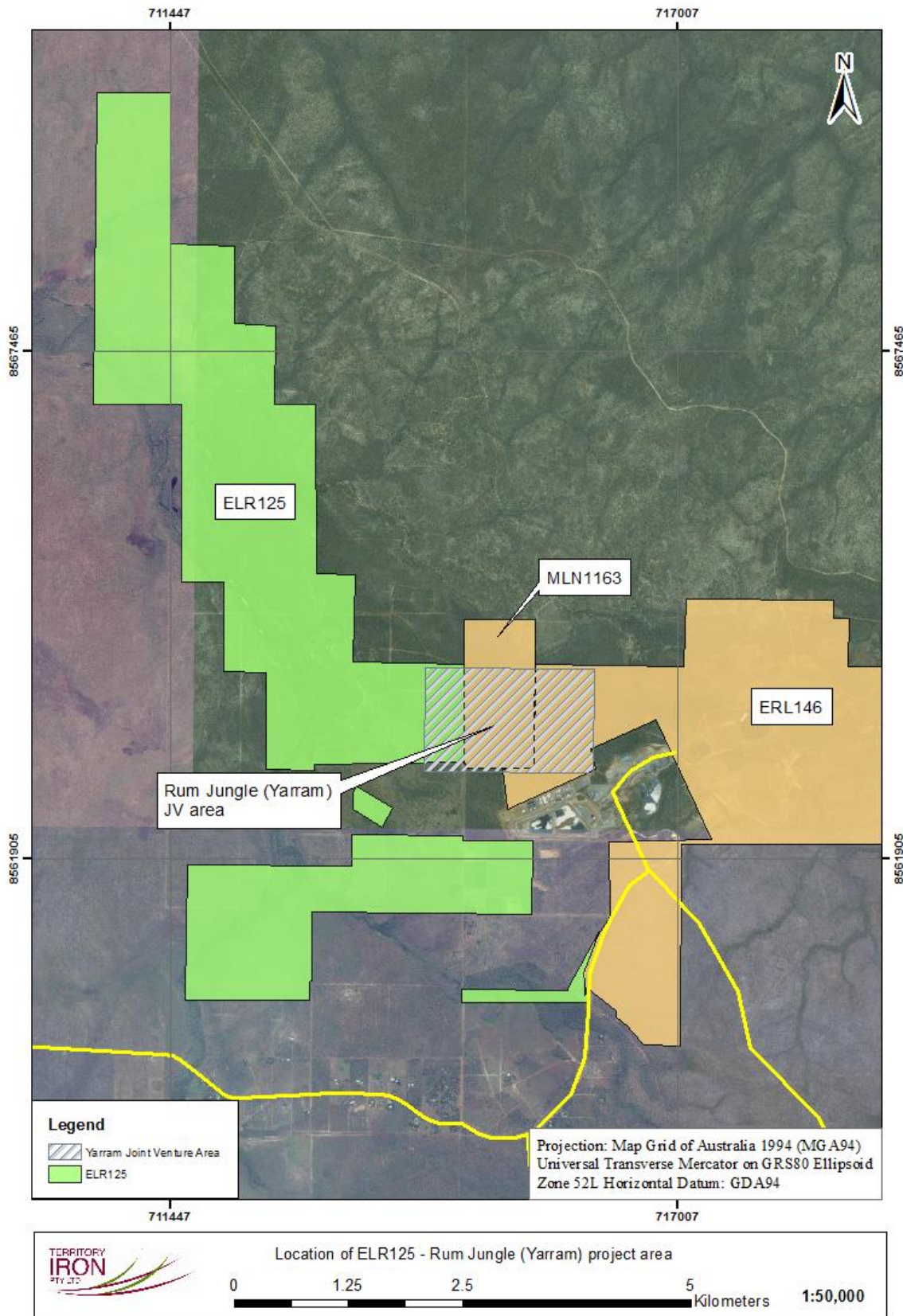
This report describes exploration activities conducted by operator Territory Iron Pty Ltd at the Rum Jungle (Yarram) project area within tenement ELR125 during the reporting period 23<sup>rd</sup> August 2016 to 22<sup>nd</sup> August 2017.

The Yarram Project Area includes portions of ELR125, ELR146 and MLN1163 and is subject to an agreement between Territory Resources Ltd and the current tenement owner Northern Territories Resources Pty Ltd.

The Yarram Project Area is located approximately 9 km NW of the township of Batchelor in the Rum Jungle Mineral Field and 61 km SSE of the city of Darwin in the Northern Territory, Figure 1. All weather road access is approximately 8 km via the Batchelor - abandoned Rum Jungle Uranium Mine access sealed road; then 1.3 km along White Road (gravel) for 1.3 km to the west.



**Figure 1:** Location Map of Rum Jungle (Yarram) Project with ESRI world shaded relief defining background topographic elevation. The black rectangle highlights the approximate location of the Rum Jungle Project Area (not to scale). The green polygon represents ELR125 and beige polygons represent adjacent Northern Territories Resources Pty Ltd tenure which form part of the project area



**Figure 2:** Location map of the Rum Jungle (Yarram) project area (hatched) and in green, ELR125. The tan polygons represent the extension of MLN1163 and ERL146 which make up part of the project area. ESRI world satellite imagery defines background relief.

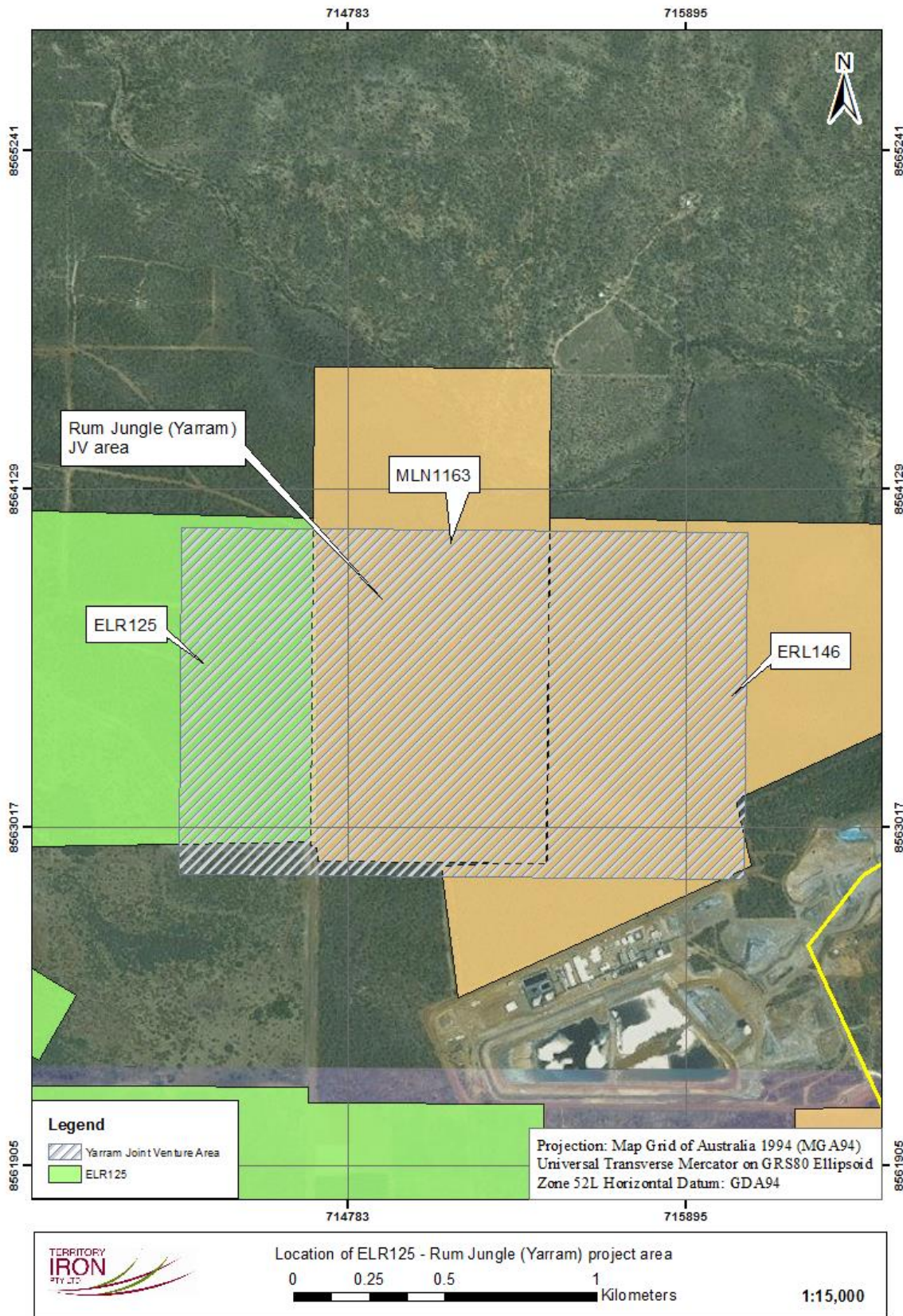


Figure 3: Detail of Rum Jungle (Yarram) project area (hatched) and ELR125. ESRI world satellite imagery defines background relief.



## **2.0 TENURE**

### **2.1 TENURE AND MINERAL RIGHTS**

ELR125 was previously held by Compass Resources Limited (100%). The tenure is now held by Northern Territories Resources Pty Ltd. The tenement covers 1,427.9 hectares, and was granted on the 23<sup>rd</sup> August 1993.

The Yarram Project Area includes portions of ELR125, ELR146 and MLN1163 (Figures 2 and 3) and is subject to a '*Heads of Agreement*' between Territory Iron Pty Ltd and previous tenement owners Compass Resources Ltd (90%) and Guardian Resources Ltd (10%) whereby Territory Iron has the right to explore and mine iron ore. The Heads of Agreement is now between Territory Iron Pty Ltd and Northern Territories Resources Pty Ltd.

## **3.0 GEOLOGY**

### **3.1: REGIONAL GEOLOGY**

The Rum Jungle (Yarram) project area is located within the Palaeoproterozoic Pine Creek Orogen which forms part of the North Australian Craton. The Pine Creek Orogen covers an area of ~50,000 km<sup>2</sup> and represents a >4 km succession of carbonate, clastic and carbonaceous sedimentary and volcanic rocks, which unconformably overlie Neoarchaeon (~2500 Ma) basement granite and gneiss. Based on the timing of sedimentation, magmatism and metamorphism, the Pine Creek Orogen has been divided into three distinct domains, from west to east; the amphibolite to granulite facies Litchfield Domain, the greenschist facies Central Domain and the amphibolite facies Nimbuwah Domain. The Frances Creek mine site and adjacent exploration area is located within the Central Domain.

In the Central Domain, the oldest rocks in the region are the Dirty Water and Stanley Metamorphics which stratigraphically underlie Neoarchaeon 2674 Ma Woolner Granite and 2545–2520 Ma, Rum Jungle Complex respectively. The Rum Jungle Complex is comprised of the Rum Jungle and Waterhouse domes. Overlying Palaeoproterozoic stratigraphy include the ~2020 Ma Woodcutters Supergroup (Namoon Group, (Masson Formation) Manton Group (Beestons Formation and Celia Dolostone) and Mount Partridge Group (Crater Formation, Coomalie Dolostone, Whites Formation) Mundogie Sandstone, Wildman Siltstone, Acacia Gap Quartzite Member, Mount Deane Volcanic Member), Ahmad and McCready, 2001). These are unconformably overlain by the ~ 1860 Ma Cosmo Supergroup (South Alligator Group, (Koolpin Formation, Gerowie Tuff and Mount Bonnie Formation) and Finnis River Group, Burrell Creek Formation, Chilling Sandstone). The stratigraphy was intruded by the Zamu Dolerite.

Syn- to post-orogenic activity is represented by intrusion of the 1835-1800 Ma Cullen Supersuite granitoids. Intrusion of the granite led to contact aureoles in the surrounding pre-orogenic Masson Formation, Mundogie Sandstone and Zamu Dolerite.

Two major episodes of folding are recognised, earlier tight to isoclinal F1 folds followed by younger open (widely spaced) folds (Stuart-Smith *et al.*, 1987). The major structural controls in the tenement area are related to D3 1-3 km scale northwest-trending non-cylindrical folds, which plunge gently to the northwest to form a series of anticlines and synclines pre-dating the intrusion of the Cullen Supersuite, and 1-3 km long northwest and northeast-trending faults.

### **3.2: LOCAL GEOLOGY AND MINERALISATION**

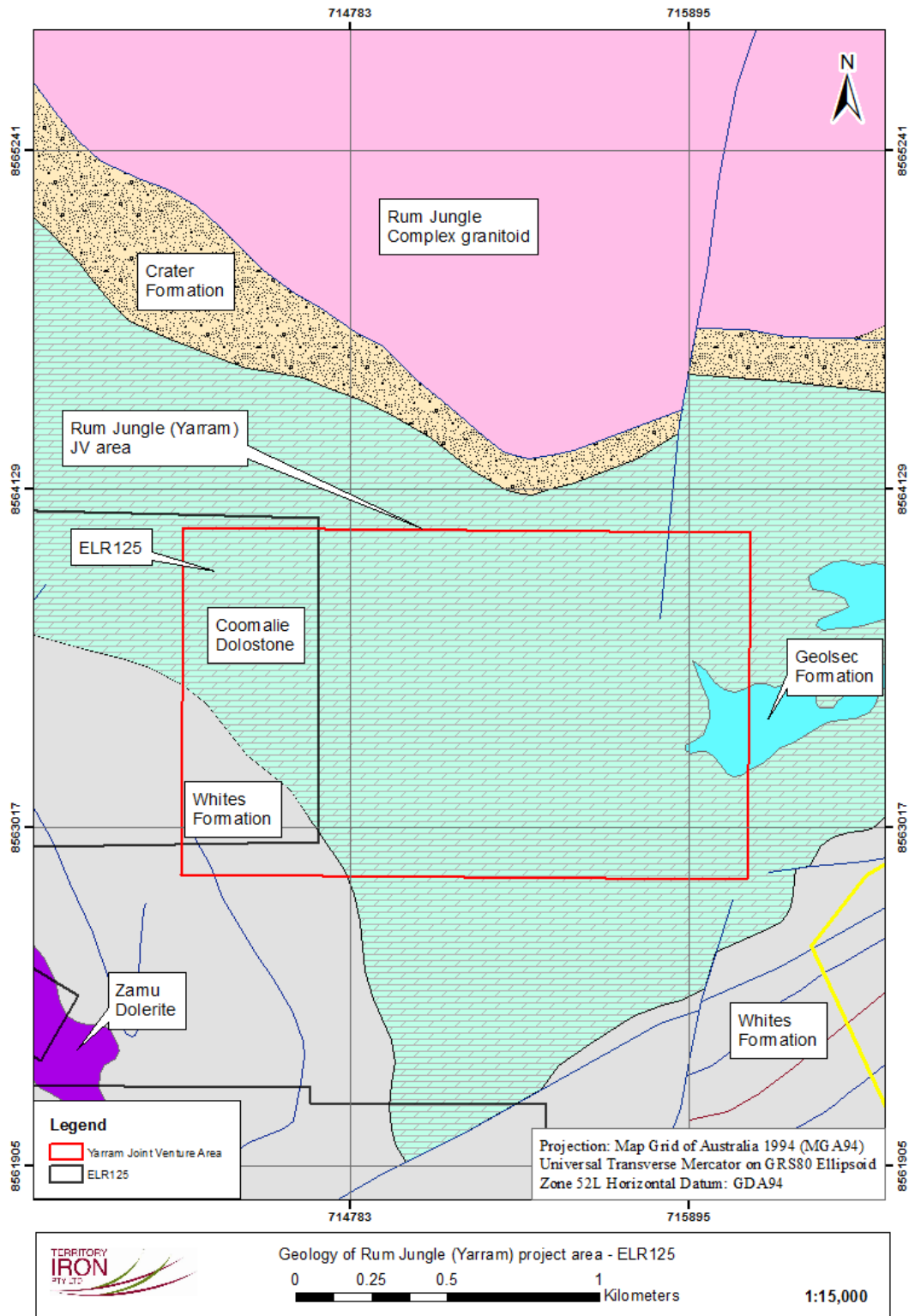
In the project area (Figure 4) the Rum Jungle Complex Neoproterozoic granite and gneiss is unconformably overlain by the Beestons Formation (Manton Group), which is comprised of a coarse, poorly sorted, feldspathic sandstone overlain by a thin, vein quartz pebble conglomerate (Ahmad *et al* 2006). Unconformably overlying the Beestons Formation is the poorly outcropping Celia Dolostone (Manton Group), a silicified dolostone, dolostone or stromatolitic magnesite.

The Manton Group stratigraphy is unconformably overlain by the Mount Partridge Group, including the basal Crater Formation, which is a poorly sorted conglomerate/sandstone unit, consisting of clasts of pebble- to boulder-sized hematitic banded ironstone and vein quartz in a quartz-hematite matrix, overlain by a well-sorted, arkosic coarse sandstone (Ahmad *et al* 2006). Conformably overlying the Crater Formation is the poorly-outcropping Coomalie Dolostone. The Coomalie Dolostone is composed of stromatolitic magnesite and dolostone, with minor interbedded units of calcareous metapelite and para-amphibolite (Ahmad *et al*, 2006). It is this unit (sub-surface) that the Rum Jungle (Yarram) project is located over, Figure 3. The Whites Formation conformably overlies and interfingers with the Coomalie Dolostone and is conformably overlain by the Wildman Siltstone (finely laminated argillite and shale) containing the Acacia Gap quartzite member and the Mt Dean Volcanics para amphibolite member.

Around the southern margin of the Rum Jungle Complex, the Geolsec Formation sedimentary strata unconformably overlie the Coomalie Dolostone. It is a hematitic quartzite breccia (HQB), including hematitic sandstone, siltstone and mudstone, with rare shale breccia. The siltstone is phosphate rich with microcrystalline fluoroapatite ( $\text{Ca}_{10}(\text{PO}_4)_6\text{F}_2$ ) associated with hematitic siltstone. Contemporaneous development of the phosphatic siltstone and breccia suggest the breccia may have been deposited into a shallow marine environment (Lally 2002).

Multiple folding and faulting events affected Pine Creek Orogen rocks from 1880-1760 Ma. Early northwest-directed thrusts were overprinted by tight to isoclinal north-trending folds, accompanied by upper greenschist-facies metamorphism. Open folding and kinking was the distal expression of granite emplacement to the east and southeast. Retrograde lower greenschist-facies metamorphism accompanied regional-scale, northwest-trending strike-slip faulting. Multiple deformation events are recorded in the Rum Jungle Mineral field.

The major structural feature in the Rum Jungle area is the >200 km Giants Reef Fault, Figure 3. The Giants Reef Fault is a major northeast-trending dextral strike-slip fault which has undergone vertical and horizontal displacement, Figure 4.



**Figure 4:** Local solid geology map for the Rum Jungle Project Area. The red rectangle defines the boundary for the Rum Jungle (Yarram) project area and the black rectangle ELR125. The overlap between the two rectangles shows the project area for ELR125. Geological background map from Lally (2003)

The portion of ELR125 that overlaps with the Rum Jungle (Yarram) Joint Venture area comprises subsurface Coomalie Dolostone and the Whites Formation, Figure 4.

Significant U, Pb Zn, Ag, Cu, Ni, Co and Au mineralisation is associated with the Rum Jungle area. Sub economic occurrences of phosphate, magnesite and iron ore are also documented in the region. Iron mineralisation was not described in the explanatory notes for the Rum Jungle region (Lally 2002) although they were annotated on the NTGS 1:100,000 Interpreted Geology Special Map (Lally 2003). Iron-bearing oxides in the region include hematite ( $\text{Fe}_2\text{O}_3$ ) and goethite ( $\text{FeO}(\text{OH})$ ).

#### **4.0: EXPLORATION ACTIVITIES – CURRENT REPORTING YEAR**

Exploration activities during the reporting year included desktop geological studies including the assessment of earlier acquired geological data, geochemical assay and geophysical data to further evaluate the iron ore potential of the project and also monitor the status of rehabilitation for drill sites and tracks from earlier drill programmes.

#### **5.0: CONCLUSIONS AND RECOMMENDATIONS**

An in-depth review of all available data including geophysical data is required to further evaluate the economic potential of the tenement. Activities should also include reconnaissance fieldtrips to the project area to map and take field samples if necessary and also to assess the ongoing remediation of drill sites and tracks to ensure they are in compliance with the Department of Primary Industry and Resources requirements. Weed surveys will also be undertaken within the project area.

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