



FINAL SURRENDER and ANNUAL REPORT MINERAL AUTHORITY 364 2 JULY 1993 – 30 NOVEMBER 2022

Title Holder	Northern Territories Resources Pty Ltd
Project Operator	Northern Territories Resources Pty Ltd
Titles/Tenements	MA364
Project Name	Rum Jungle
Report Author	Greg Molloy
Date of Report	13 December 2022
Target Commodity or Commodities	Cu Pb Zn Ag Co Ni
Datum/Zone	GDA94 / Zone 52
1:250 000 Map Sheet	Darwin SD52-04
1:100 000 Map Sheet	Bynoe 5072
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1 Abstract

This is the Final Surrender Report for MA364. It includes a description of exploration activity over the title during the reporting period from 2 July 2022 to cessation on 30 November 2022. MA364 was granted to Compass Resources Limited on 2 July 1993. It is located approximately 60 km south of Darwin, and is dominated by extensive sequences of the Mount Partridge Group, known to host several polymetallic mineralisation occurrences, including the Browns polymetallic (Pb-Zn-Cu-Co-Ni) sulfide deposit. Activities over the title formed part of the Company's regional exploration strategy targeting discovery of polymetallic mineralisation within the highly prospective Rum Jungle Mineral Field. Several regional geophysical surveys were conducted over the area, including induced polarisation, electromagnetics, magnetics, LiDAR, and ground and airborne gravity. During the reporting period the Company conducted a number of projects across its tenement package, including metallogenic and pre-feasibility studies. As MA364 lies entirely within RL31445, which reserves the land from exploration for or extraction of minerals, renewal of the title could not be approved, and the title was ceased on 30 November 2022.

2 Copyright

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3 Introduction

This is the Final Surrender Report for Mineral Authority (MA) 364. It includes a description of exploration activity over the title during the reporting period from 2 July 2022 to cessation on 30 November 2022.

3.1 Location, Physiography and Access

MA364 is located approximately 60 km south of Darwin and 15 km northwest of Batchelor (see Figure 1). Access from Darwin is via sealed roads to Batchelor and then north via Litchfield Road. The title forms part of a broader and in part contiguous tenement package held by Northern Territories Resources (NTR, or the Company).

The title is located within the Pine Creek Bioregion, characterised by a tropical monsoonal climate. The area records an average annual rainfall of 1,564 mm, with most occurring during the wet season between November and March. The title is generally characterised by low topography with limited outcrop. Vegetation comprises eucalyptus woodland of moderate density.

3.2 Tenure and Title History

The title lies on privately owned Freehold Land under NT Portion (000) – Parcel 3516 and Hundred of Goyder (315) – Parcels 871 and 950.

MA364 was granted to Compass Resources Limited on 2 July 1993 for a period of five years. The title was subject to a Joint Venture between Compass Resources Limited and Billiton Australia Gold Pty Ltd (later Acacia Resources Limited) commencing on 4 August 1993. The joint venture was managed by Acacia Resources Limited until mid-June 1997, with Compass Resources Limited resuming management thereafter. NTR acquired MA364 in December 2016.

In December 2016, Cove House and NTR entered into a Heads of Agreement (HOA) with Doe Run, a United States-based mining company. Under the terms of the HOA, Doe Run was granted an exclusive right to complete a detailed geological assessment of nominated tenements held by NTR, including MA364. The HOA also provided Doe Run with the right to acquire some or all the NTR tenure at an agreed date.

On 14 February 2019, Doe Run advised termination of the HOA and withdrawal from all involvement in the nominated tenements. NTR subsequently resolved to re-market the Company assets. Following Doe Run's withdrawal, NTR subsequently resolved to re-market the Company assets with the sale process concluding in January 2020 on execution of a purchase agreement.

Northern Territories Resources (NTR) was acquired by Beijing Jinhong, a China-based investment and development company, in December 2019. It comprises four blocks (approximately 3.49 km²), and was last renewed on 2 September 2020 for a two year term, expiring on 1 July 2022.

A renewal application for a further two year term was lodged on 28 June 2022. NTR received a letter dated 30 November 2022 stating that as MA364 lies entirely within General Reservation of Land (RL) 31445, renewal could not be approved. The title was ceased on 30 November 2022.

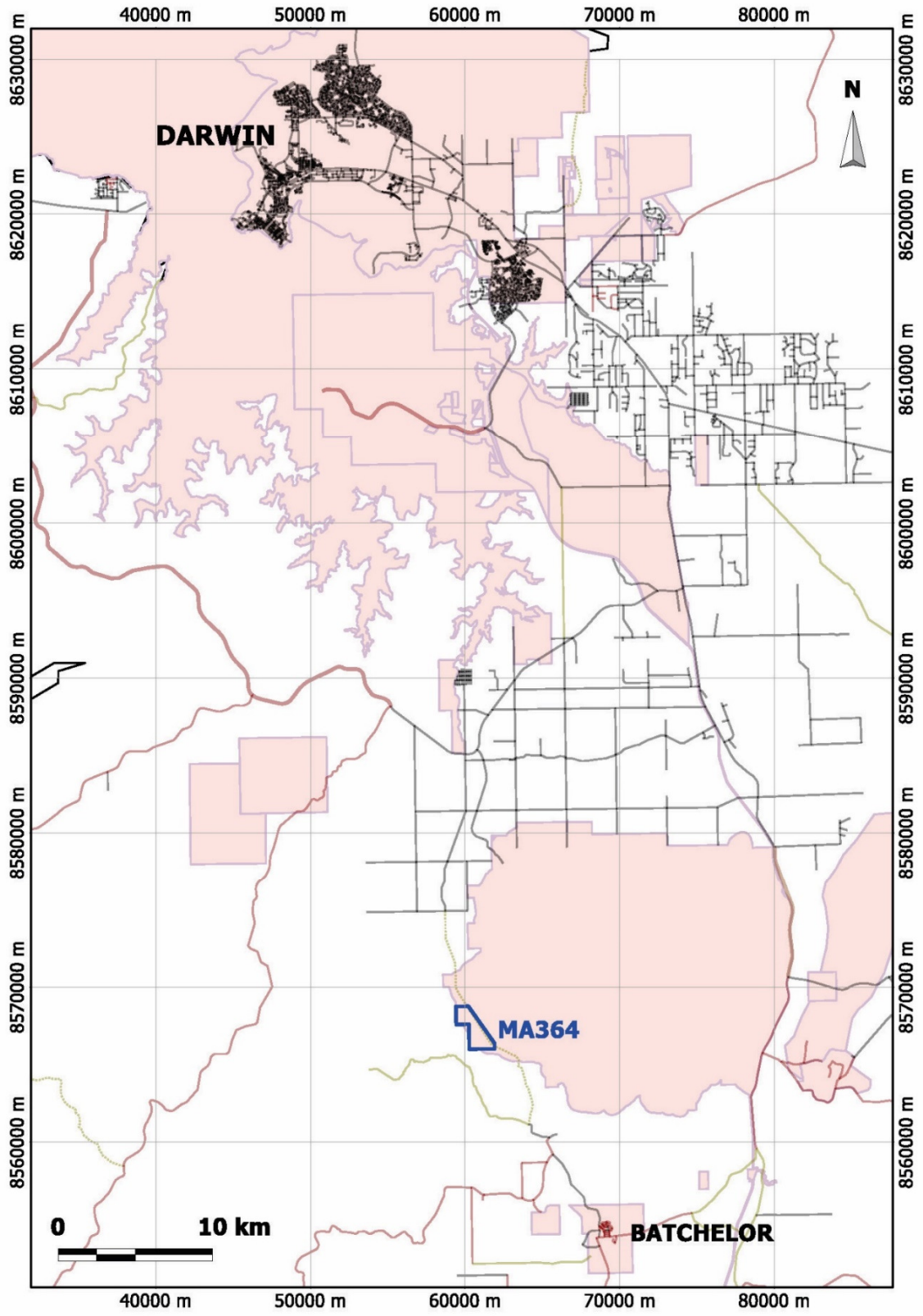


Figure 1: MA364 location plan

4 Geological Setting

4.1 Regional Geology

MA364 lies in the Rum Jungle Mineral Field, within the Palaeoproterozoic Pine Creek Orogen, which forms part of the North Australian Craton. The Pine Creek Orogen covers an area of approximately 50,000 km², and represents a >4 km succession of carbonate, clastic and carbonaceous sedimentary and volcanic rocks, which unconformably overlie Neoarchaeon (~2,500 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 Woolner Granite (2,674 Ma) and Rum Jungle Complex (2,545–2,520 Ma), respectively.

The Rum Jungle Mineral Field comprises two granitic basement domes (the Rum Jungle and Waterhouse domes) of the Archean Rum Jungle Complex, which are unconformably overlain by a thick sequence of Paleoproterozoic metasedimentary and volcanic rocks (McCready, et al., 2004). The overlying stratigraphy includes the ~2,020 Ma Woodcutters Supergroup (Namoona 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 ~1,860 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 has been intruded by the Zamu Dolerite.

Of the overlying stratigraphy, the Mount Partridge Group is of particular economic significance as it includes the Whites Formation, a sequence of metamorphosed carbonaceous siltstone, mudstone and shale that hosts the Browns polymetallic (Pb-Zn-Cu-Co-Ni) sulfide mineral deposit (McCready, et al., 2004). The Browns deposit is the largest mineral deposit identified in the Rum Jungle area (McCready, et al., 2004). MA364 covers sequences of the Coomalie Dolostone and the overlying Whites Formation.

Syn- to post-orogenic activity is represented by intrusion of the 1,835-1,800 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 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.

4.2 Local Geology and Mineralisation

MA364 is covered by extensive colluvium with limited outcrop.

In the Rum Jungle area the Rum Jungle Complex Neoproterozoic granite and gneiss is unconformably overlain by the Beestons Formation (Manton Group), which comprises 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 haematitic banded ironstone and vein quartz in a quartz-haematite 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 Area overlies. 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. The Geolsec Formation is a haematitic quartzite breccia, including haematitic sandstone, siltstone and mudstone, with rare shale breccia. The siltstone is phosphate-rich with microcrystalline fluorapatite ($\text{Ca}_{10}(\text{PO}_4)_6\text{F}_2$) associated with haematitic siltstone. Contemporaneous development of the phosphatic siltstone and breccia suggests that the breccia may have been deposited in a shallow marine environment (Lally 2002).

Multiple folding and faulting events affected Pine Creek Orogen rocks from 1,880-1,760 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 Project Area is the >200 km Giants Reef Fault, a major northeast-southwest trending dextral strike-slip fault which has undergone vertical and horizontal displacement, and which separates the Rum Jungle and Waterhouse Domes.

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 it was annotated on the NTGS 1:100,000 Interpreted Geology Special Map (Lally 2003). Iron-bearing oxides in the region include haematite (Fe_2O_3) and goethite ($\text{FeO}(\text{OH})$).

5 Exploration History

In late 2010, MA364 was covered by a regional aerial electromagnetic (AEM) survey utilising a gpX-TEM Heliborne Time Domain EM system (Rosewall, 2011). Completed on 100 m east-west flight lines, the survey was reportedly affected by military radar signals and minor internal inaccuracies which were rectified by post-processing in 2011 (Rosewall, 2011). Approximately 43-line km fell within MA364 (Lori, 2018).

A regional ground gravity survey was also completed during 2010; eleven stations were situated within MA364 (Rosewall, 2011).

During 2012, MA364 was included in a regional airborne gravity survey utilising the Falcon AGG system, allowing simultaneous acquisition of magnetics and high-resolution elevation data (LiDAR) (Rosewall, 2012). The survey covering MA364 was completed on 200 m north-south flight lines with approximately 18-line km falling within MA364 (Lori, 2018).

During 2012, a ground induced polarisation (IP) survey line of approximately 900 m was also acquired on the title (Lori, 2018).

Subsequently, MA364 was included in several regional scale desktop assessments targeting synthesis of the various geophysical datasets (including electromagnetics, magnetics and gravity) to enhance exploration targeting (Rosewall, 2015).

In 2015, two IP lines were completed across the title between 8568000mN and 8535000mN (Edgar, 2016).

In 2018, NTR and Doe Run continued with detailed desktop studies and data compilation of all available technical data covering MA364. Doe Run completed a review of previous technical reports for the title as well as historical drilling including the 2000 and 2007 MFN drill hole series. In addition, all geophysical data collected during 2010-2015 by Compass Resources was compiled into a GIS database for the title.

The title was subject to a regional LiDAR survey using 2-point coverage or one-metre resolution (Lori, 2018). The survey was conducted by Earl James & Associates and covered the Company's broader tenement holding.

In 2019-20, consulting geologist Mr Garry Johansen conducted a regional prospectivity analysis, including MA364 as part of NTR's broader tenement holding. This assessment comprised the compilation and synthesis of historical geophysical and geological data, and assessment of the strategic value of the title for development of prospects and/or deposits located within the Company's tenure. The analysis included revision of historical exploration, synopsis of exploration potential by commodity and mineralisation style and recommendations for future exploration. The study concluded that MA364 offered strong exploration potential for sulfide base metal and to a lesser extent oxide base metal mineralisation along the contact between the Coomalie Dolostone and the overlying Whites Formation.

Exploration activity during the 2021-22 reporting period was limited to desktop studies, including a review of all data (3D model, drilling database and geophysics) to familiarise Beijing Jinhong personnel with the title, and to prioritise exploration targets.

6 Exploration Rationale

MA364 is dominated by extensive sequences of the broader Mount Partridge Group known to host several polymetallic mineralisation occurrences, including the Browns polymetallic (Pb-Zn-Cu-Co-Ni) sulfide mineral deposit.

Of the broader Mount Partridge Group, the contact between the Coomalie Dolostone and the overlying Whites Formation is considered particularly prospective; several zones of polymetallic mineralisation have been intersected in this position. In addition, the chemical contrast between these sequences (dolomite and shale) is considered to act as a favourable precipitation mechanism for oxide mineralisation characteristic of the Mt Fitch oxide deposit.

7 Exploration Activity during the Reporting Period

During the reporting period from 2 July 2022 to 30 November 2022 the effects of the Covid-19 pandemic continued to impact the Company's ability to conduct on-ground exploration. Under adverse conditions, NTR continued to raise funds for geological research. Various exploration activities and metallurgical testing of existing resources were carried out, preparations were made for resource development, and efforts were made to satisfy the covenant requirements of the Company's tenement package. During the reporting period NTR focussed on projects as discussed in Sections 7.1 and 7.2.

7.1 Update of Resource Data and Model

In May 2022 Ao Wang commenced the generation of a geological model and updating of resource data with cobalt as the main element.

7.2 Pre-Feasibility Studies

In June 2022 the team of Chengyan Wang, Faculty of Bio-Metallurgy, University of Science and Technology Beijing commenced pre-feasibility studies, focused on metallurgical test studies, to determine a feasible technical route/plan.

8 Rationale for Surrender

RL31445 was gazetted on 1 February 2017, reserving the land from the following activities:

- Exploration for minerals generally;
- Extraction of minerals generally;
- Exploration for extractive minerals; and
- Extraction of extractive minerals.

As MA364 lies entirely within the reserved land area, the renewal application lodged on 28 June 2022 could not be approved, and the title was ceased on 30 November 2022.

9 References

- Ahmad M, Lally JH and McCready AJ, 2006. Economic geology of the Rum Jungle Mineral Field, Northern Territory. Northern Territory Geological Survey, Report 19.
- Ahmad M and McCready A, 2001. Rum Jungle Region and the Pine Creek Orogen: synthesis and evaluation of existing data: in 'Annual Geoscience Exploration Seminar (AGES) 2001. Record of abstracts'. Northern Territory Geological Survey, Record 2001-006.
- Edgar, H., 2016. Annual Technical Report - Year Twenty Three Mineral Authority 364 2 July 2015 - 1 July 2016, s.l.: Compass Resources Limited.
- Lally JH, 2002. Stratigraphy, structure and mineralisation, Rum Jungle Mineral Field, Northern Territory. Northern Territory Geological Survey, Record 2002-005.
- Lally JH, 2003. Rum Jungle Mineral Field integrated interpretation of geophysics and geology, Edition 1, 1:100,000 geological map series. Northern Territory Geological Survey, Darwin.
- Lori, J., 2018. Annual Technical Report Year Twenty Four Mineral Authority 364 2 July 2017 - 1 July 2018, s.l.: Northern Territories Resources.
- Lori, J., 2018. Group Technical Report (Group Report 437) for the period 3rd December 2017 to 2nd December 2018, Darwin: Northern Territories Resources Pty Ltd.
- McCready, A. et al., 2004. Polymetallic Mineralization at the Browns Deposit, Rum Jungle Mineral Field, Northern Territory, Australia. *Economic Geology*, Volume 99, pp. 257-277.
- Northern Territory Mineral Titles Act 2010
- Northern Territory Geological Survey Bynoe 5072 1:100,000 Geological Map Sheet
- Northern Territory Geological Survey Darwin SD52-04 1:250,000 Geological Map Sheet
- Northern Territory Resources. 2022. Annual Technical Report Mineral Authority 364 2 July 2021 – 1 July 2022.
- Rosewall, D., 2011. EL27560 Annual Report for the period 3rd March 2010 to 2nd March 2011, Sydney: HNC (Australia) Resources Pty Ltd.
- Rosewall, D., 2015. MA364 Annual Report from 2nd July 2014 to 1st July 2015, s.l.: HNC Australia Resources Pty Ltd.