

# **HNC (AUSTRALIA) RESOURCES PTY LIMITED**

## **BROWNS MINE LEASES MLNs 139-147 and 150-152**

**Title Holder: Compass Resources Limited  
Operator: HNC (Australia) Resources Pty Limited**

### **ANNUAL REPORT**

**FOR THE YEAR ENDED 31 DECEMBER 2014**

Bynoe 1:100 000

Darwin 1:250 000

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Date: 28/2/2015  
Target: Cu, Pb, Co, Ni, Ag, Zn

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## **INTRODUCTION**

During 2014 the mine leases were incorporated into the large regional modelling exercise undertaken during the year. All recent geophysical surveys, EM, IP and Gravity are currently being integrated and targets are being generated.

This data has been divided up into individual tenements and is being modelled in 3D and extension mineralisation is being targeted.

A scoping study that was incomplete in 2014 should be finalised in 2015.

The area is considered prospective for uranium, copper, lead, zinc, cobalt and nickel mineralisation.

## **LOCATION AND ACCESS**

The tenements are located approximately 70 kilometres south of Darwin and adjoin the original mine sites of the Whites and Intermediate (Rum Jungle) Deposits.

Access from Darwin is via sealed roads to Batchelor and thence northward to the tenements via the start of the Litchfield Road. Access is also possible during the dry season by following the old railway line south from Darwin River, then along local dirt roads.

## **TENEMENT DETAILS**

An agreement to acquire the Browns tenements from CRA Exploration was concluded in July 1994, in which Compass Resources NL (75%) and Guardian Resources NL (25%) became the new owners. Following the acquisition of Guardian Resources Pty Ltd in 2006, Compass has effective 100% ownership of the leases.

The Mineral Leases covered by this Report have been renewed until 31 December 2022.

The tenement details are as follows:

<b>Lease Number</b>	<b>Renewed to</b>	<b>Area #</b>
MLN 139	31 December 2022	16.162 hectares
MLN 140	"	16.162 "
MLN 141	"	16.036 "
MLN 142	"	16.010 "
MLN 143	"	16.162 "
MLN 144	"	16.112 "
MLN 145	"	15.757 "
MLN 146	"	15.454 "
MLN 147	"	9.611 "
MLN 150	"	15.934 "
MLN 151	"	14.720 "
MLN 152	"	6.804 "
	<b>Total</b>	<b><u>174.824</u> hectares</b>

# Calculated from imperial unit lease plan.

It should also be noted that Compass Resources NL has become Compass Resources Limited.

## **GEOLOGICAL SETTING**

The Browns deposit lies in the Rum Jungle Mineral Field. The basement geology is dominated by the Archaean Rum Jungle Complex comprising two inliers (the Rum Jungle and Waterhouse domes) of S- and I-type granitoids. These are unconformably overlain by Palaeoproterozoic sedimentary strata forming the base of the Pine Creek Orogen. This sedimentary strata hosts significant deposits of stratiform base metal mineralization and structurally controlled uranium mineralisation.

The Browns Oxide deposit is hosted in weathered Proterozoic Coomalie dolomite and Whites Formation. Beneath the base of oxidation both units dip steeply to the southeast and a large body of stratiform base metal mineralization occurs in the basal shales close to the boundary with the dolomite.

The Proterozoic Zamu Dolerite intrudes both the Whites Formation and base metal mineralization but the majority of the dolerite is to the south of the Oxide Pit.

Close to the base of oxidation the bedding is folded suddenly and becomes almost flat lying. Though some tectonic folding may be involved the majority of this change in bedding dip is in response to preferential weathering and dissolution of dolomite (acid generated from breakdown of sulphides) causing slumping of the shale/dolomite contact and associated base metal gossan.

Erosion in the Tertiary created an uneven topographic surface that has filled with fluvial deposits of Tertiary clays, sands and gravels. These deposits are part of an extensive area of Tertiary valley fill that forms low ridges immediately to the north of the mining leases.

Identification of rock units within the weathered horizon can be problematic. Major element geochemistry often provides a better indication of rock type than geological logging of drill holes and was the primary source of data when developing the geological model.

The Browns-Browns East stratabound base metal sulphide resource occurs at the base of the Whites Formation. Mineralisation extends for 2.5 km along strike essentially from the eastern edge of the historical Whites open cut pit, to the west. Mineralisation occurs on the contact with the Coomalie Dolomite, or through apparent facies change, and away from the contact up to 70 metres within the Whites formation.

## **PREVIOUS EXPLORATION**

Several CRA subsidiaries including Territory Enterprises Pty. Limited (TEP) and Australian Mining and Smelting Company Limited (AM&S) have undertaken extensive drill programmes at this Prospect, culminating with the sinking of a 400' shaft, drilling twenty underground drill holes from two levels and underground sampling programmes in 1967-1969. The underground workings were flooded on the 13<sup>th</sup> May 1969.

A resource figure of 20m tonnes grading approximately 5.6% Pb, 0.19% Cu, 0.11% Co, 0.14% Ni and 0.3% Zn was reported within the tenement by CRA.

Metallurgical studies and testing had also been undertaken on the sulphide ores, the aim of which was to produce both copper and lead concentrates by flotation methods. The results indicated that it was not possible to produce saleable copper and/or lead float concentrates due to the fine grained nature of the sulphide minerals, resulting in "dirty" concentrates.

In 1990 Troy Resources Ltd., which had an option on the tenements undertook metallurgical studies on drill core after drilling five diamond drill holes. This testwork also failed to find a route to separate copper and lead concentrates, however they did establish that "oil agglomeration" may be a potential flotation method to produce a bulk sulphide concentrate.

In 1994 Compass/Guardian completed a programme of 20 holes of reverse circulation drilling, and in 1995 completed 19 diamond drill holes. In 1996 a 117 R/C drill hole programme was undertaken. This work was all done to further determine the tenor and limits of the mineralisation in the top 100 metres of the deposit. During 1997, twenty four diamond drill holes including 17 deeper holes were completed, and in 1998 an additional 61 RC drill holes were completed at Browns. Eight holes were also completed along strike at Browns East, within EL 4880. In September 1999, a bulk sample pit was started and metallurgical test work commenced later that year on sulphide ores removed from that pit. In 2000 a series of 6 diamond drill holes were completed for geotechnical studies and 3 percussion holes were twinned with diamond holes. A series of percussion holes were drilled for magnesite evaluation.

In 2001 two deep diamond drill holes were completed, together with ore resource studies.

In 2002, seven diamond drill holes and two reverse circulation percussion drill holes were completed.

In late 2003-early 2004 Phelps Dodge/Red Metal alliance completed three dill holes (two abandoned due to excessive deviation) in the tenements. These holes did not intersect mineralisation and they have withdrawn from the joint venture without retaining any equity,

In the last quarter of 2004, independent contractors Hellman and Schofield Pty Ltd completed a new resource estimate of the Browns Deposit. This resulted in a significant increase in the copper and lead grades together with a good definition and separation of lead and copper rich

lenses. Also during 2004, a series of eight percussion drill holes was completed to obtain oxide ore samples for metallurgical test work.

During 2005, 62 RC holes (2041m) were completed, these were planned to more fully define the oxide resource. A further 19 RC holes were drilled in 2006 to gain information on the extent and grade of zinc mineralisation. There were also 4 diamond drill holes completed in 2006 – two to define mineralisation and two shallower holes for metallurgical test work.

A grade control program of RC drilling totalled 2478m over 56 holes to estimate ore grades in the location of the preliminary mining phase. A further 4654m of RC drilling helped constrain the Browns oxide resource and 4597.1m of diamond drilling was completed for the Browns sulphide feasibility study.

In 2008, the RC drillings were conducted by the Adelaide-based drill contractors Underdale Drillers Pty Ltd using an Investigator Mk10 drilling rig. Diamond drilling was also carried out by Underdale using a Hydrill rig. 5 diamond drill holes (08BD01 to 08BD05) were completed at a total of 1356m to penetrate the Browns sulphide deposit, and 15 RC holes (08BD06 to 08BD20) were completed at a total of 589m, to confine the northern extent and depth of the Browns oxide deposit. Another 2 further RC drill holes, 08EX01 and 08EX02, were completed at the end of the drilling season for grade control. 3 RC holes were drilled to sterilise for mining infrastructure and gain extra geological knowledge; 08WB03, 08WB05 and 08BS12. No ore grade mineralisation was found in these holes.

In 2008, Compass Resources begun extensive geological mapping on its tenements at Rum Jungle that included the Browns mining leases. This has improved the understanding of the surface geology in the area and has contributed to the ongoing review of the geology and controls on mineralisation. Evaluation of historical data has continued throughout the year and is being collated in a central database. This has also helped more accurately define the Browns oxide and sulphide ore bodies.

During 2009, RC drilling at Browns was conducted by the NT-based drill contractors Johannsen Drilling Pty Ltd using an Edson drilling rig. No diamond drilling was conducted during 2009.

All RC sampling was carried out, put into bags, and then sent for analysis. Wet samples which could not be split were treated by hand. Samples were assayed by Amdel using the following technique:

- \* Samples were pulverised to 85% passing 75 microns or better.
- \* A four acid “near-total” digest was used followed by ICP-AES (OG62) analysis for Cu, Pb, Zn, Co, Ni, Ag, Mn, Fe, S, Mg, Ca, and U.
- \* Samples with higher uranium values (>150ppm U) were re-analysed by XRF for U and Ti.
- \* Radioactivity was measured for each sample with a GR 110 scintillometer or a SPP2 scintillometer on site.

All of the hole-collars were surveyed using a DGPS instrument.

Extensive geological mapping of the Compass owned tenements at Rum Jungle begun in 2008 that included the Browns mining leases. This has improved the understanding of the surface geology in the area and has contributed to the ongoing review of the geology and controls on mineralisation.

Evaluation of historical data has continued throughout the year and was collated in a central database. This has also helped more accurately define the Browns oxide and sulphide ore bodies.

During the 2010 year the mine leases in this report were part of a broader detailed airborne electromagnetic/magnetic survey and an infill ground gravity survey. The airborne survey consisted of 100m flight line spacings and the gravity stations were set to infill the data existing at 500m grid spacing.

The proportions among the mine lease are as follows

<b>Lease Number</b>	<b>XTEM Line Km</b>	<b>Gravity Stations</b>
MLN 139	1.6	1
MLN 140	1.6	0
MLN 141	1.6	0
MLN 142	1.6	1
MLN 143	1.6	1
MLN 144	1.6	1
MLN 145	1.5	1
MLN 146	1.5	0
MLN 147	1.0	0



MLN 150	1.5	1
MLN 151	1.4	1
MLN 152	1.0	0
<b>Totals</b>	<b>17.5</b>	<b>7</b>

A metallurgical drilling program was undertaken during 2011. The purpose of the program was to extract enough lead rich core sample to allow the JV partners to embark on a series of detailed metallurgical tests to characterise the lead ore and examine its extractability in processing.

Hole Type	Hole Number Range	No of Holes	Total Metres
RC	11BD01-10	10	770
DD	11BD01, 11BD04-07, 11BD09	6	485.3
<b>Grand Total</b>	-	<b>16</b>	<b>1255.3</b>

Table 1 : Drilling Summary

The program was completed late in the 2011 year and due to the reactive nature of the sulphides within the core, it was immediately packed and stored in refrigerated containers awaiting further direction from the JV partners. As a result of this no logging or assaying has taken place until a processing technique is decided upon. Once this process is completed all assays and drill logs will be submitted accordingly.

The metallurgical drilling program from 2011 was completed during 2012. The purpose of the program was to extract enough additional lead rich core sample, to complete the required tonnage, to allow the JV partners to embark on a series of detailed metallurgical tests to characterise the lead ore and examine its extractability in processing.

Hole Type	Hole Number Range	No of Holes	Total Metres
RC	12BD01-04	-	186.4
DD	12BD01-04	-	261
<b>Grand Total</b>	-	<b>4</b>	<b>447.4</b>

Table 1 : Drilling Summary

This drilling program was completed to add more material to the bulk sample from 2011 (already in storage) and due to the reactive nature of the sulphides within the core, it was immediately packed and stored in refrigerated containers awaiting further direction from the JV partners.

An airborne gravity survey (FALCON) was underway at the end of December and was not completed in time for this report. Some preliminary costs are recorded this year in regard to mobilisation of the survey.

During 2012-13 these tenements were subjected to a regional airborne FALCON gravity survey. This survey included not only gravity but also acquired magnetics and LIDAR high resolution elevation data.

The line spacing was approximately 200m and was processed and divided into individual tenements. The data for these surveys has been submitted to the department. Approximately 9 line km of data acquisition fell on these tenements.

During this reporting period a large scale scoping study was also undertaken to assess the potential of an underground sulphide mining operation. The study consisted of resource modelling, stope design and underground engineering, flotation studies and existing plant redesign. At time of writing this report the final scoping study document was unavailable due to being incomplete.

#### **WORK COMPLETED DURING 2014**

We have been incorporating all of the geophysical survey data into a broad regional data set to model suitable targets for exploration drilling. There may be an opportunity to drill some of the targets generated from this exercise later in the year.

Plans have also been made for a geotechnical drilling program to assist in completion of last years' scoping study.

#### **RECOMMENDATIONS AND CONCLUSIONS**

The current modelling of the geophysical data has shown some encouraging targets and is showing a much higher degree of resolution detail. The gravity processing has generated some very high resolution preliminary images. The limited IP work has shown some promising anomalies at depth appearing to correspond with some previous EM targets and those that have been calibrated against the known deposit at the mine site. We will be looking to generate some additional quality anomaly targets for follow up with infill geophysical surveying and drill hole targeting in the coming year.

## **PLANS FOR 2015**

In 2015 it is hoped that the operations for both the oxide and the sulphide can be restarted. A geotechnical drilling program has been planned along with additional extension mineralisation drilling.

The existing plant will be looked at to see what modifications are required for a restart.

The scoping study should be finalised after additional work is carried out on suitable processing technology options.

These will all be dependent on budgetary constraints of course.

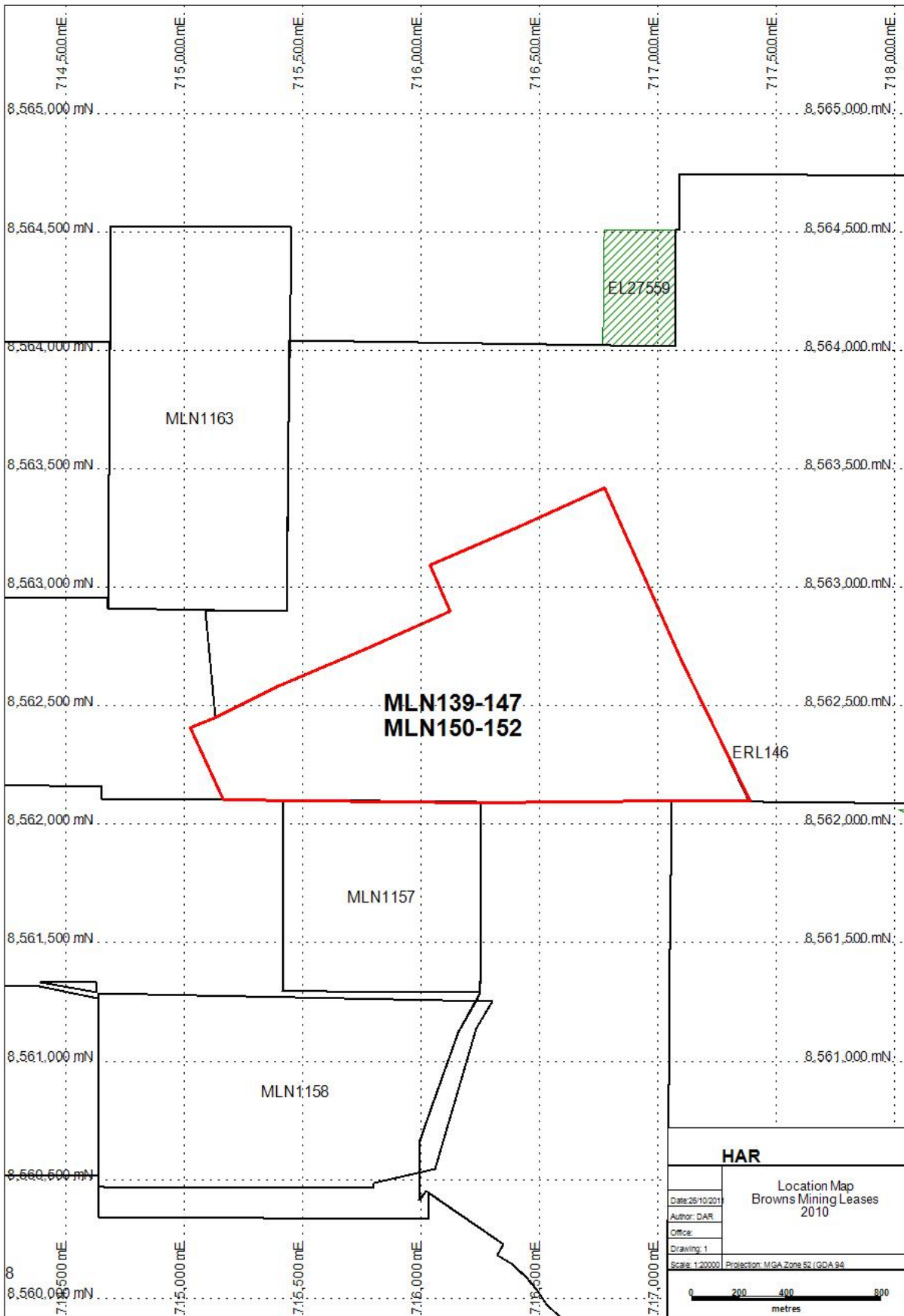


Figure 1: Location Map Browns Mining Leases