TNG LIMITED

ENIGMA MINING LTD

EL30207 (HIGH BLACK RANGE)

ANNUAL REPORT

For the period 20/08/14 - 19/08/15

Tenement/s	EL 30207	1:250 000 Sheet Name	Urapunga (SD5310) Katherine (SD5309)
Holder	Enigma Mining Ltd	1:100 000 Sheet Name	Moroak (5668) Mataranka (5568)
Manager Operator	N/A Enigma Mining Ltd	Datum	GDA94
Keywords	Sherwin Formation, Oolitic, pisolitic, Roper, BHP, iron ore		
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Report Date	October 2015		
Distribution	TNG Limited Department of Mines & Energy		(1) (1)

EXECUTIVE SUMMARY

Exploration Licence 30207, was granted to Enigma Mining Limited (Enigma) on 20/08/2014. Enigma is a wholly owned subsidiary of TNG Ltd. The licence forms part of the High Black Range Project along with EL 30208.

EL 30207 is located approximately 150km ESE of Katherine via the Stuart and Roper Highways, and then on station tracks to the licence area. The licence falls in the south-eastern portion of the Katherine (SD53-09) and Urapunga (SD53-10) 1:250,000 mapsheets.

Enigma applied for the licences to undertake exploration for iron ore within the Sherwin Formation. During year 1 of tenure a summary of the existing knowledge of the Sherwin Formation was prepared and a helicopter assisted reconnaissance trip was undertaken to enhance the knowledge of the area.

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1. INTRODUCTION

Exploration Licence 30207, was granted to Enigma Mining Limited (Enigma) on 20/08/2014. Enigma is a wholly owned subsidiary of TNG Ltd. The licence forms part of the High Black Range Project along with EL 30208.

During the reporting year a summary of the existing knowledge of the Sherwin Formation was prepared to enhance the knowledge of the area and a helicopter assisted reconnaissance trip was undertaken to assess the level of outcrop within the licence.

2. LOCATION AND ACCESS

EL 30207 is located approximately 150km ESE of Katherine via the Stuart and Roper Highways, and then on station tracks to the licence area (Figure 1). The licence falls in the south-eastern portion of the Katherine (SD53-09) and Urapunga (SD53-10) 1:250,000 mapsheets. It lies within the Goondooloo and Moroak Perpetual Pastoral Leases and is subject to native title.

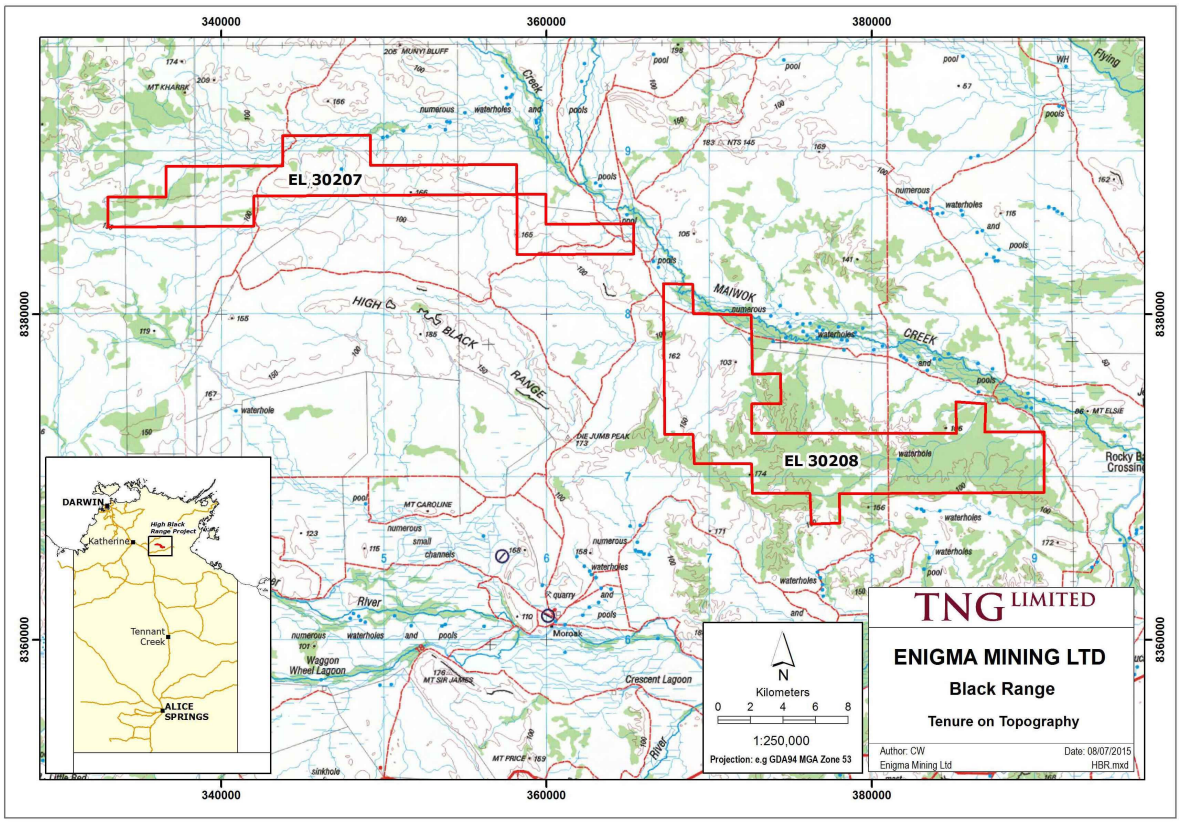

Figure 1: Location of EL 30207.

3. TENURE

Exploration Licence 30207 covers an area of 82.40 km^2. It is 100% held by Enigma Mining Limited, a wholly owned subsidiary of TNG Limited. Tenure details for EL 30207 are summarised in Table 1.

Table 1: EL 30207 tenement details.

TITLE	PROJECT	AREA (blocks)	GRANT DATE	EXPIRY DATE
EL 30207	High Black Range	25	20/08/2014	19/08/2020

4. REGIONAL GEOLOGY

Exploration Licence 30207 occurs within the central part of the McArthur Basin on the northern edge of the Urapunga Fault Zone. Depositional geometries and the deformation history of the McArthur Basin were influenced by the northerly structural trends inherited from the underlying basement. Subdivision of the province into shelf areas and fault zones reflects its sedimentary and deformational history (Figure 2; Abbott, et al., 2001).

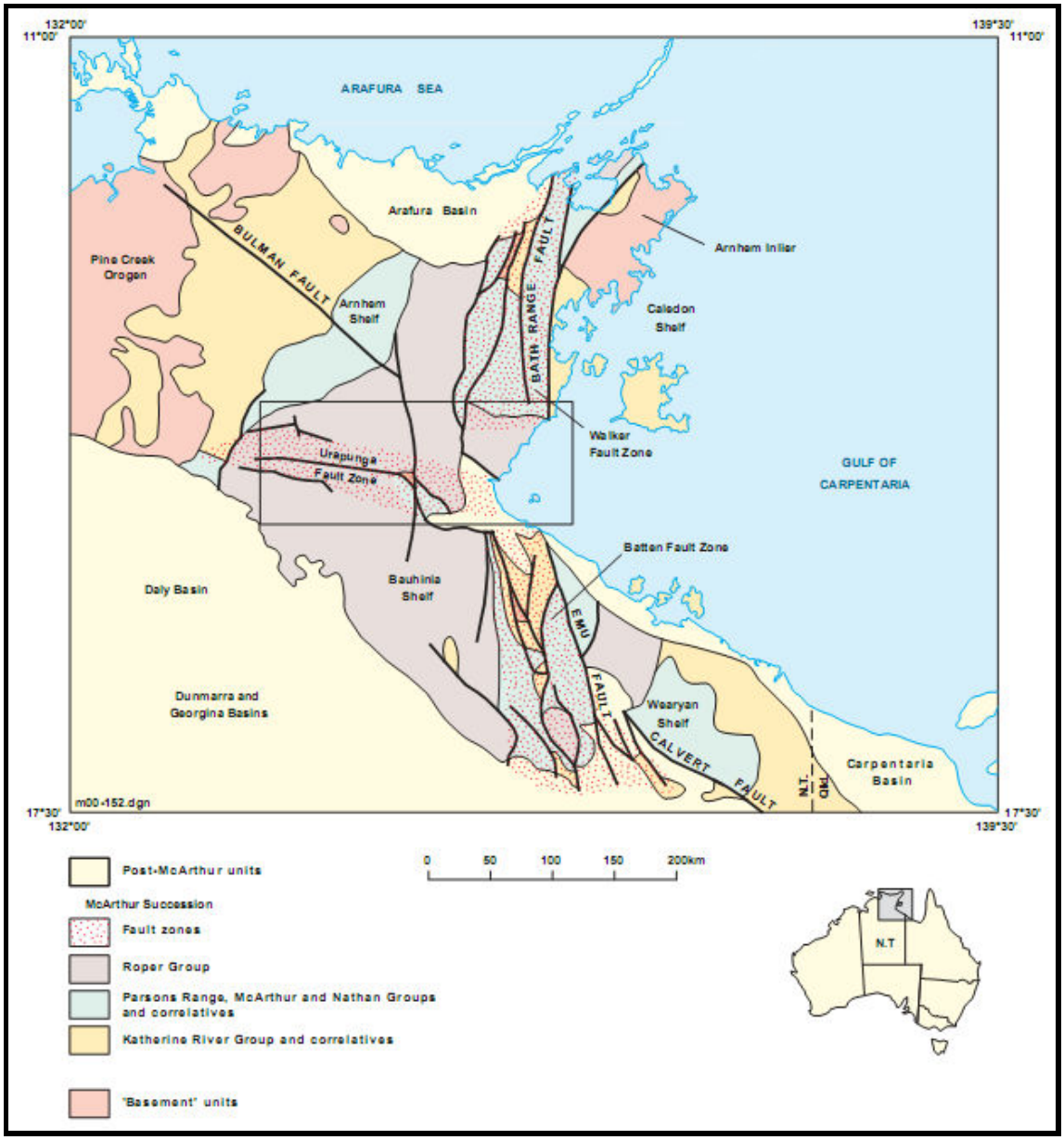

Figure 2: Regional tectonic setting of the Roper Region (from Abbott et al., 2001).

The Urapunga Fault Zone is situated over a reversely faulted basement high which separates the Bauhinia Shelf to the south, from the Arnhem Shelf to the north (Abbott, et al., 2001). A comparatively thin succession of McArthur Basin sediment accumulated in this area.

The local stratigraphy includes rocks of the Roper Group (Prk – Moroak Sandstone, Prv – Velkerri Formation, Pre – Bessie Creek Sandstone; Figure 3). The Roper Group is comprised of undivided quartz sandstones alternating with micaceous and glauconitic sandstones, siltstone and shales and the iron-rich Sherwin Formation which forms significant deposits in the Roper River area.

Dolerite sills (Pdd – Derim Derim Dolerite) intruded the Roper Group around 1300 Ma before the McArthur Basin was deformed.

The Sherwin Formation is mapped (by the NTGS) over a strike length of 60km within TNG's tenements. The underlying Moroak Sandstone forms the main breakaway along the Black Range, but Sherwin Formation outcrop was noted as low ridges in several localities along the gently dipping backslope to this unit. On the ground Sherwin Formation outcrops were both massive hematite ironstone and oolitic to pisolitic hematitic ironstones.

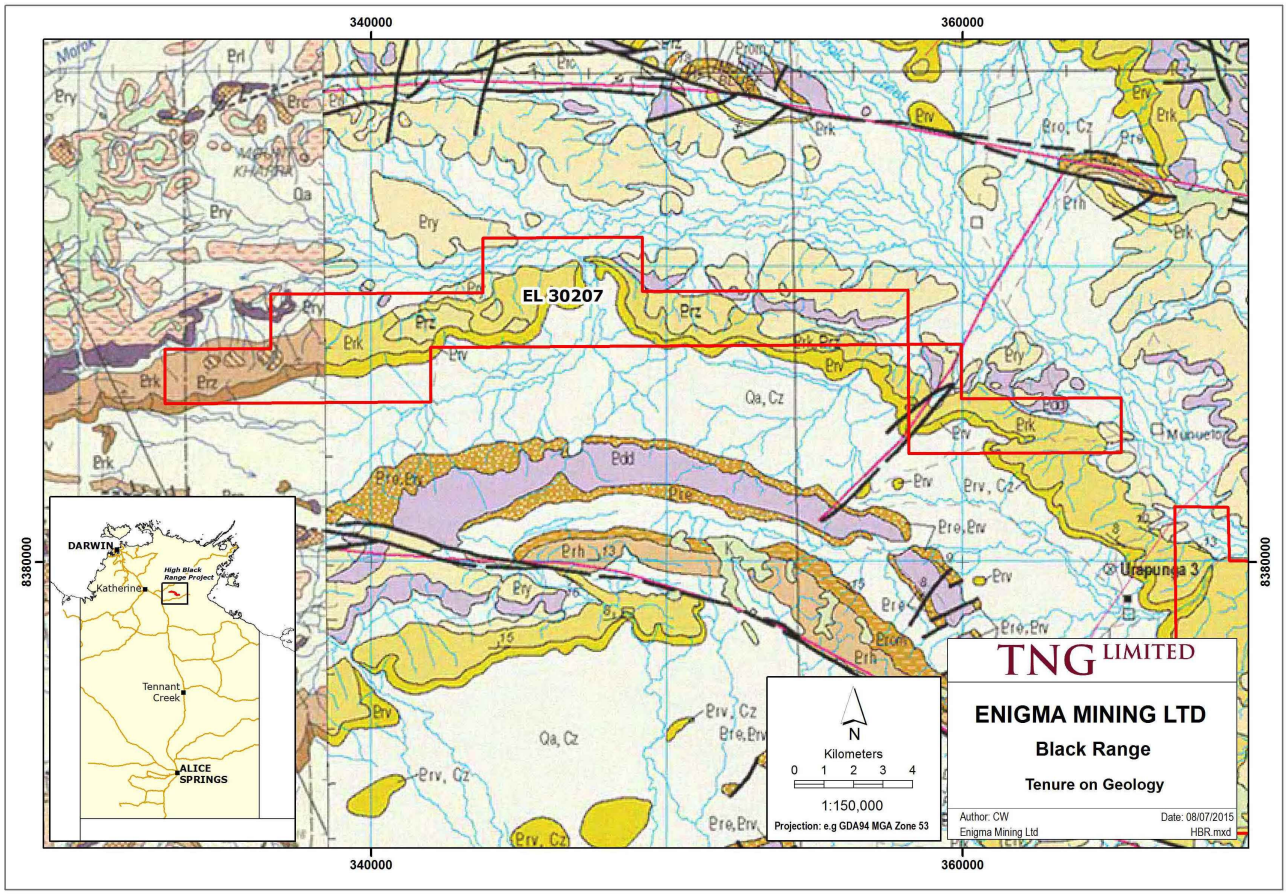

Figure 3: 250K geology within EL 30207.

5. PREVIOUS EXPLORATION

The area has mainly been explored for diamonds. Ashton Mining Ltd (Ashton Mining, 1982) and Stockdale Prospecting have both held licences in the area in the 1980's and early 1990's.

Ashton identified a single chromite from the 87 samples taken and this was found to be non-kimberlitic (Ashton Mining, 1982). No further exploration was undertaken.

Stockdale collected 223 samples in the region (Podolsky, 1990) and no kimberlitic indicators were returned. Stockdale also carried out limited geochemical exploration within their licence areas. Several anomalies were identified from the sampling programme (Podolsky, 1991) but further investigation downgraded the anomalies and the licences were surrendered (Podolsky, 1992). Sample locations are shown on Figure 4.

CRA Exploration Pty Ltd held EL 8942 in 1995. Auger drilling, loam and soil sampling and magnetic geophysical surveys were done within the project area. No targets were identified as worthy of followup.

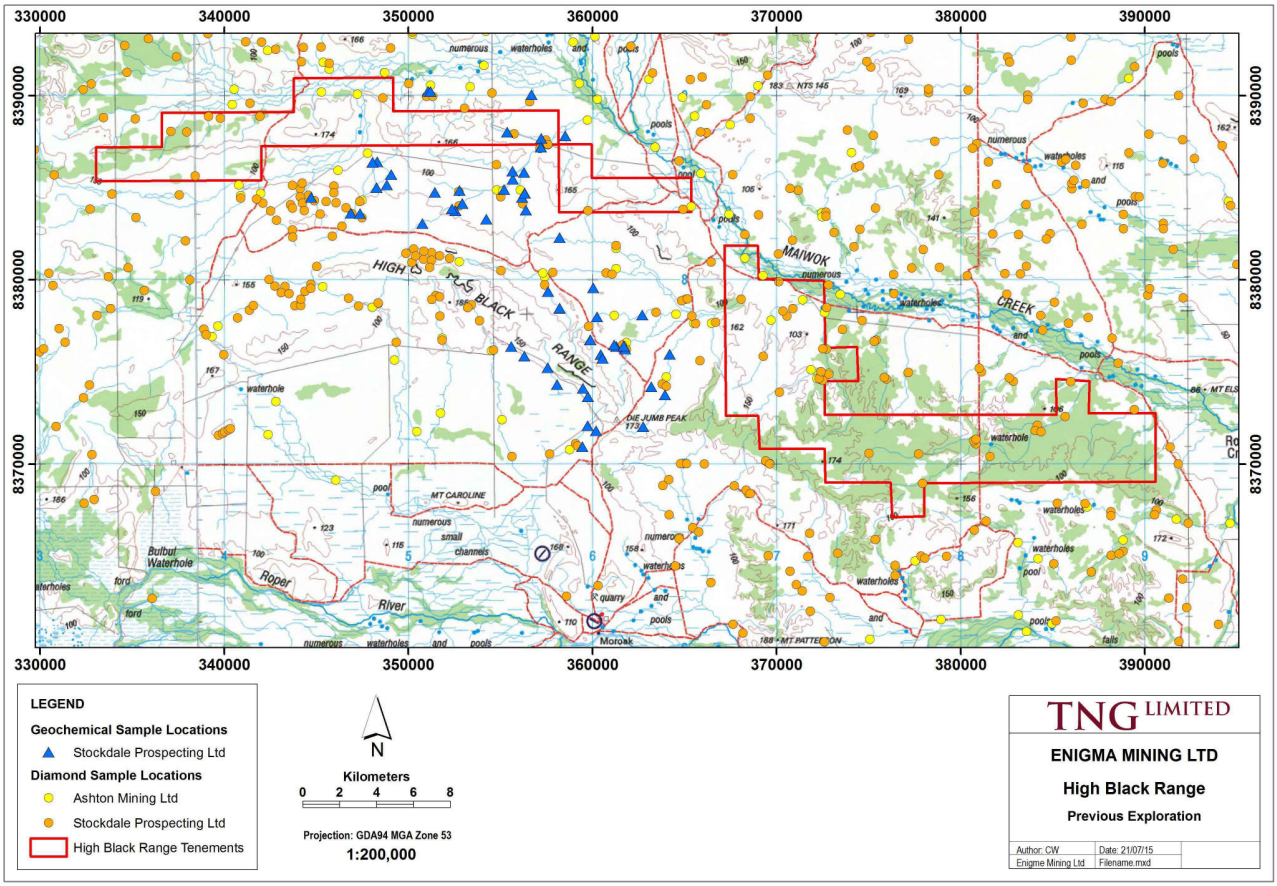

Figure 4: Sample locations within EL 30207 and EL 30208.

A number licences in the region were granted to Exploration and Resource Development Pty Ltd (ERD) in 2009. The licences were initially explored for uranium before the company changed its focus to heavy minerals and became Australian Ilmenite Resources Pty Ltd (AIR). During the tenure several areas were chosen for airborne magnetic and radiometric surveys and the licence was appraised for iron ore (Ryall, 2013). The company surrendered a number of licences in the area in 2013 to further concentrate on its major projects.

6. 2014 – 2015 EXPLORATION

Enigma applied for exploration licences EL 30207 and 30208 because of the outcropping Sherwin Iron Formation within the tenements (Figure 5). During the reporting year a summary of the existing knowledge of the Sherwin Formation was prepared and a helicopter assisted reconnaissance programme was undertaken to enhance the knowledge of the area.

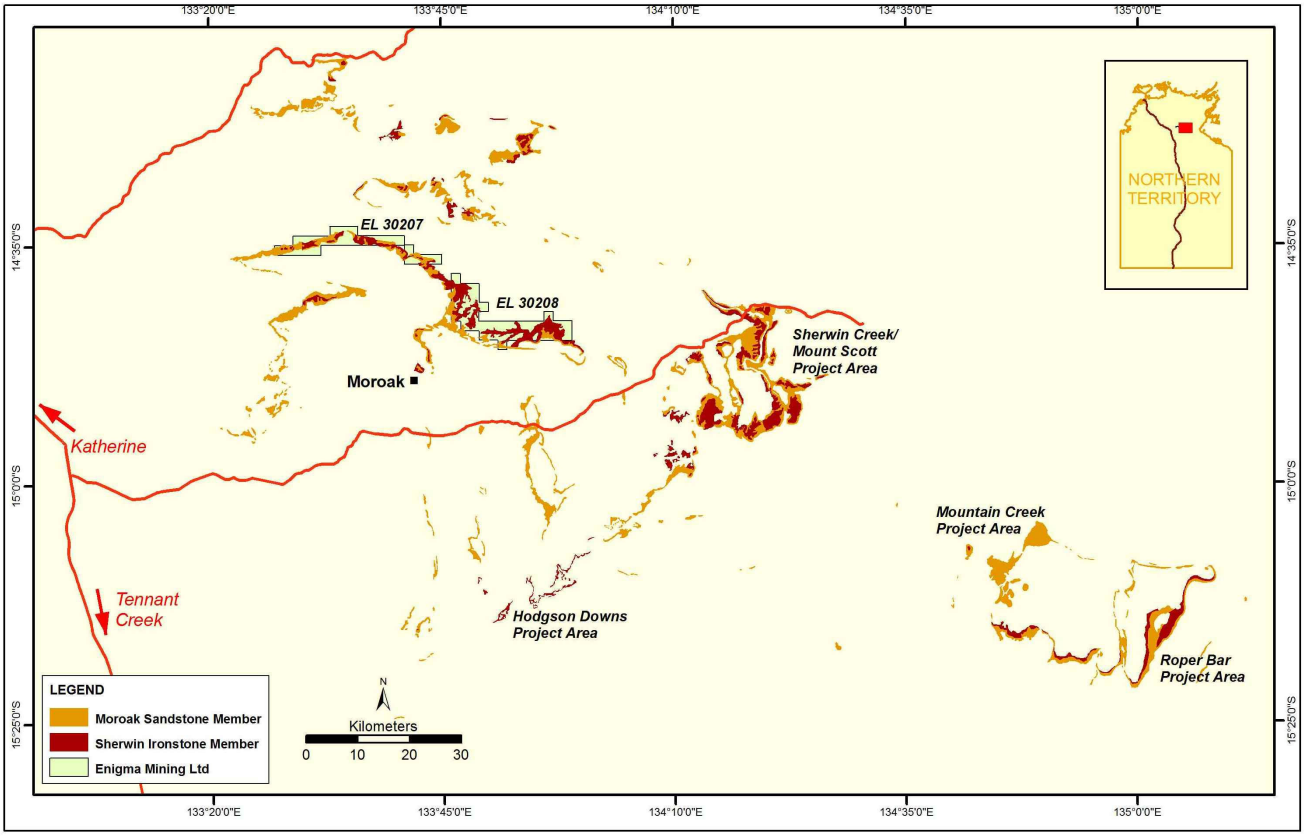

Figure 5: Sherwin Formation ironstones within Enigma licences and throughout the Roper River region.

6.1 Iron Ore Exploration

Iron ore was first discovered in the NT in the McArthur Basin in 1911. *Murphy's* prospect near Roper Bar is a series of concordant siliceous lenses up to 100m long and 7m thick, containing massive to disseminated hematite in arkosic sandstone (Ahmad et al., 2013). The Kipper Creek iron prospect was discovered 11.5km ENE of Murphys by the Carpentaria Exploration Company in the 1960's. Oolitic (Clinton-type; Pratt, 1993), ironstone outcropped in the area and shallow drilling intersected two ironstone beds – the lower being oolitic hematite with interstitial siderite (40.4% Fe) and the upper oolitic and pisolitic with siderite and calcite cement (31.0% Fe; Williams, 1962).

BHP moved into the area in 1955 and investigated the region further. This led to the discovery of Hodgson Downs (Deposits T, U, V, and W), Mount Fisher (Deposit M) and Sherwin Creek (Deposits A, B, C, and E). Diamond drilling, bulk sampling and metallurgical testing was undertaken and Canavan (1965) estimated iron ore resources of 200Mt grading 27-33% Fe at Sherwin Creek and 200Mt grading 37-52% Fe at Hodgson Downs (Ferenczi, 2001).

In 2010 Sherwin Iron once again undertook exploration across the BHP prospects. Exploration infill drilling conducted by Sherwin Iron during 2013 has resulted in significant resources being reported at Deposits C, W and X (Table 2, Sherwin Iron, Annual Report, June 2013).

Table 2: Sherwin Creek Deposit C and Hodgson Downs Deposits X and W, higher-grade resources – October 2012.

Roper River Iron Ore Project Sherwin Creek Deposit C and Hodgson Downs Deposits X and W Higher Grade Resources- Oct 2012								
Deposit / Category	**Category**	**Cut-off (Fe %)**	**Tonnes (Mt)**	**Fe (%)**	**Al_2O_3 (%)**	**SiO_2 (%)**	**P (%)**	**LOI (%)**
Sherwin Creek C Deposit	Indicated	55	18.34	58.3	1.07	12.36	0.03	2.47
Sherwin Creek C Deposit	Inferred	55	0.08	57.6	1.52	12.68	0.02	2.91
Sherwin Creek Higher Grade Total#	**Sub Total**	55	**18.42**	**58.3**	**1.07**	**12.36**	**0.03**	**2.47**
Hodgson Downs X Deposit	Indicated	55	8.15	57.7	2.11	12.14	0.09	2.62
	Inferred	55	0.85	58.1	2.58	11.04	0.10	2.37
Hodgson Downs W Deposit	Indicated	55	13.05	57.3	2.36	11.78	0.08	2.65
	Inferred	55	0.69	56.7	2.38	11.11	0.09	3.46
Hodgson Downs Higher Grade Total	**Sub Total**	55	**22.74**	**57.5**	**2.25**	**11.91**	**0.09**	**2.66**
PROJECT TOTAL	**Total**	55	**41.1**	**57.8**	**1.8**	**12.1**	**0.06**	**2.6**

NB. The Mineral Resource estimates were carried out in accordance with the guidelines of the JORC Code (2012) by Sherwin's internal consultant, which was audited and signed off by Coffey Mining.

Bulk sampling and extraction of DSO from Deposit C began in 2013 with plans to move onto areas X and W. The current proposed mining development in Area C will be developed in two stages. Stage 1 is the initial DSO project development to generate cash flow, and Stage 2 is processing the low-grade ore, or selling it directly (Sherwin Iron, 2013).

Additional exploration, particularly from the Mount Scott area will significantly add to the current resources defined in the area.

Southeast of the original BHP work, Western Desert Resources (WDR) has established JORC compliant (2004) resource estimates (Table 3) within the Roper Bar Project Area (Figure 5). WDR sent its first shipload of 'Roper Red' ore to China in December 2013 (WDR, 2013b). The Mountain Creek Project Area is also within WDR tenure and provides additional resource potential.

Table 3: JORC compliant mineral resource estimates from WDR's Roper Bar Project (30% Fe cut-off; From WDR, 2013a).

DEPOSIT AREA	Classification	Mt	Fe %	SiO_2 %	P %	Al_2O_3 %	LOI %	Published
Area D	Inferred	90.7	37.2	31.5	0.008	3.2	9.6	Oct-09
Area D (north)	Inferred	116.5	40.3	26.3	0.002	2.2	11.0	Feb-11
Area E (south)	Inferred	17.5	36.1	30.8	0.003	2.4	12.4	Jun-12
Area E (south)	Indicated	75.8	38.7	29.9	0.005	2.6	9.9	Jun-12
Area E (east)**	Inferred	27.6	41.0	26.3	0.004	1.8	10.2	Jun-12
Area E (east)**	Indicated	15.6	41.2	26.3	0.004	1.9	10.0	Jun-12
Area E (east)**	Measured	28.3	42.2	26.4	0.004	2.0	8.9	Jun-12
Area F (east) *	Inferred	216.1	41.3	31.0	0.004	2.9	4.9	Apr-13
Area F (east) *	Indicated	15.7	47.3	24.9	0.006	2.7	3.0	Apr-13
Area F (east)*	Measured	7.7	50.0	20.8	0.005	3.4	2.7	Apr-13
TOTAL		**611**	**40.3**	**29.2**	**0.004**	**2.6**	**8.1**	

** Includes DSO grade of 30.8Mt @ 59.0% Fe, 9.9% SiO2, 2.5% Al2O3, 0.01% P and 2.0% LOI*
*** Includes DSO grade of 16.6Mt @ 54.2% Fe, 15.9% SiO2, 1.2% Al2O3, 0.01% P and 4.0% LOI*

6.1.1 Oolitic Ironstone Deposits

Oolitic ironstones are massive stratiform units within marine terrigenous clastic sediments. Kimberley (1978) has named them sandy-clayey and oolitic, shallow-inland-sea iron formations or SCOS-IF's, also known as Clinton-type oolitic ironstones (Ferenczi, 2001). The ironstones are usually interbedded with shale and quartz sandstones which were deposited in an agitated, shallow marine depositional environment. The main minerals are goethite, hematite, limonite, siderite, chamosite, greenalite and traces of magnetite (Ferenczi, 2001).

Many theories have been published on the origin of oolitic ironstones (See Kimberley 1978 and 1989), but the most appropriate model seems to involve the mechanical accretion of iron-rich gelatinous coats onto nuclei of fine quartz or rock fragments on the sea-floor during periods of reduced sediment influx. The iron-rich solutions may have been derived from volcanogenic or hydrothermal processes (Ferenczi, 2001). During marine transgressions the iron-rich (deeper) waters occupied a shallow shelf or embayment (Figure 6) that allowed extensive production of chamositic and hematitic ooids.

Mesoproterozoic iron ore deposits in the Roper River region are examples of this type of iron mineralisation.

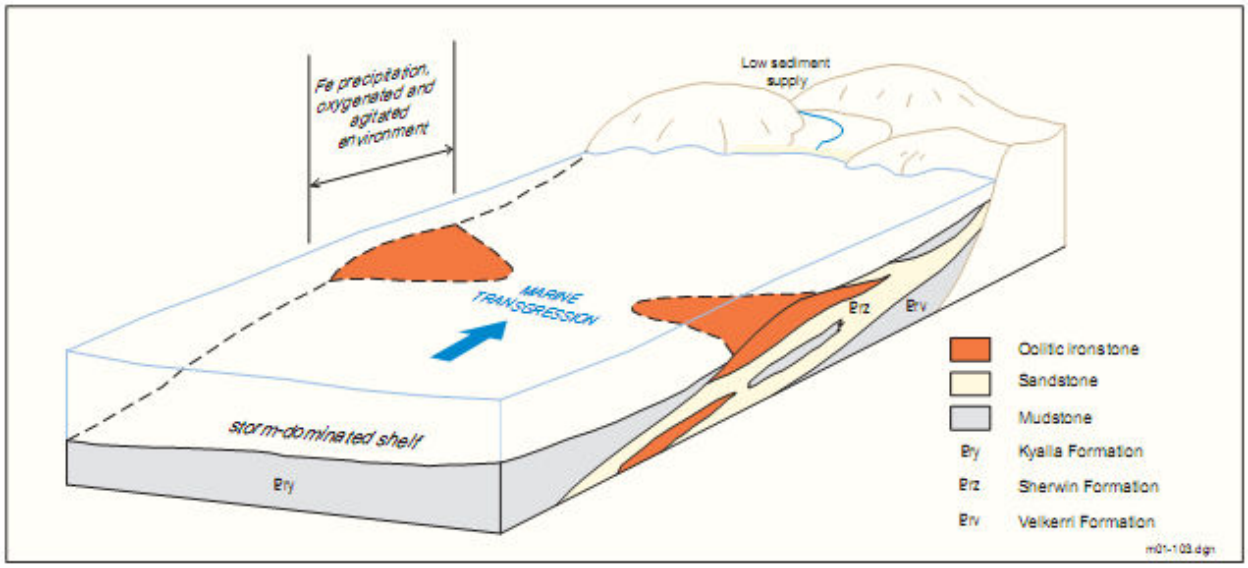

Figure 6: Schematic model for the development of SCOS-IF type (Clinton-type) iron ore deposits (from Ferenczi, 2001).

6.1.2 Sherwin Formation

The Sherwin Formation is characterised by the presence of massive oolitic to pisolitic ironstone (Plate 1, 2), but is dominated by interbedded medium to very coarse ferruginous, ripple marked sandstone, siltstone and mudstone. The upper boundary is defined as the last occurrence of oolitic ironstone (Ahmad et al., 2013). Massive ironstone beds are typically 1-4m thick and are often exposed at the top of cliff faces. At least four distinct ironstone beds have been identified within the Sherwin Formation
(Ahmad, et al., 2013) and it is the soft, ochreous oolitic ironstone near the base of the formation that has better economic potential than the harder, upper ironstone beds which contain less iron and more silica (Ferenczi, 2001).

Sedimentary features within the Sherwin Formation suggest that it was deposited as an offshore bar in an active shoal environment (Figure 6) that transgressed over lagoonal mud and beach sand (Moroak Sandstone; Ferenczi, 2001).

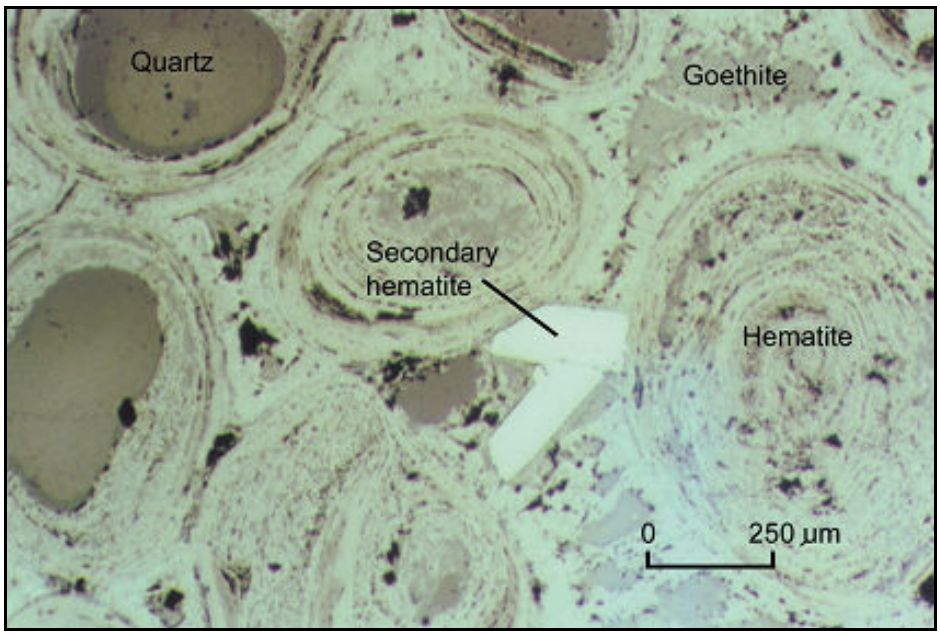

Plate 1: Hematite-goethite ooliths and secondary hematite laths from Mount Fisher deposit (From Ferenczi, 2001).

Plate 2: Cemented oolitic ore sample from the Roper Bar area (A. Wygralak collection; From Ahmad et al., 2013).

6.2 Helicopter Reconnaissance

A helicopter reconnaissance trip was undertaken in August 2014 to assess the outcrop of ironstone across the tenure area. In addition to flying along the mapped exposures of Sherwin Formation several landings were made where possible (Figure 7), and the prospective stratigraphy was traversed to identify the position of the formations within the tenement boundary. Waypoints are attached in Appendix 1.

The Sherwin Formation is mapped (by the NTGS) over a strike length of 60km within TNG's tenements (Figure 5). The underlying Moroak Sandstone forms the main breakaway along the Black Range, but Sherwin Formation outcrop was noted as low ridges in several localities along the gently dipping backslope to this unit. On the ground Sherwin Formation outcrops were both massive hematite ironstone and oolitic to pisolitic hematitic ironstones.

No samples were taken from within EL 30207.

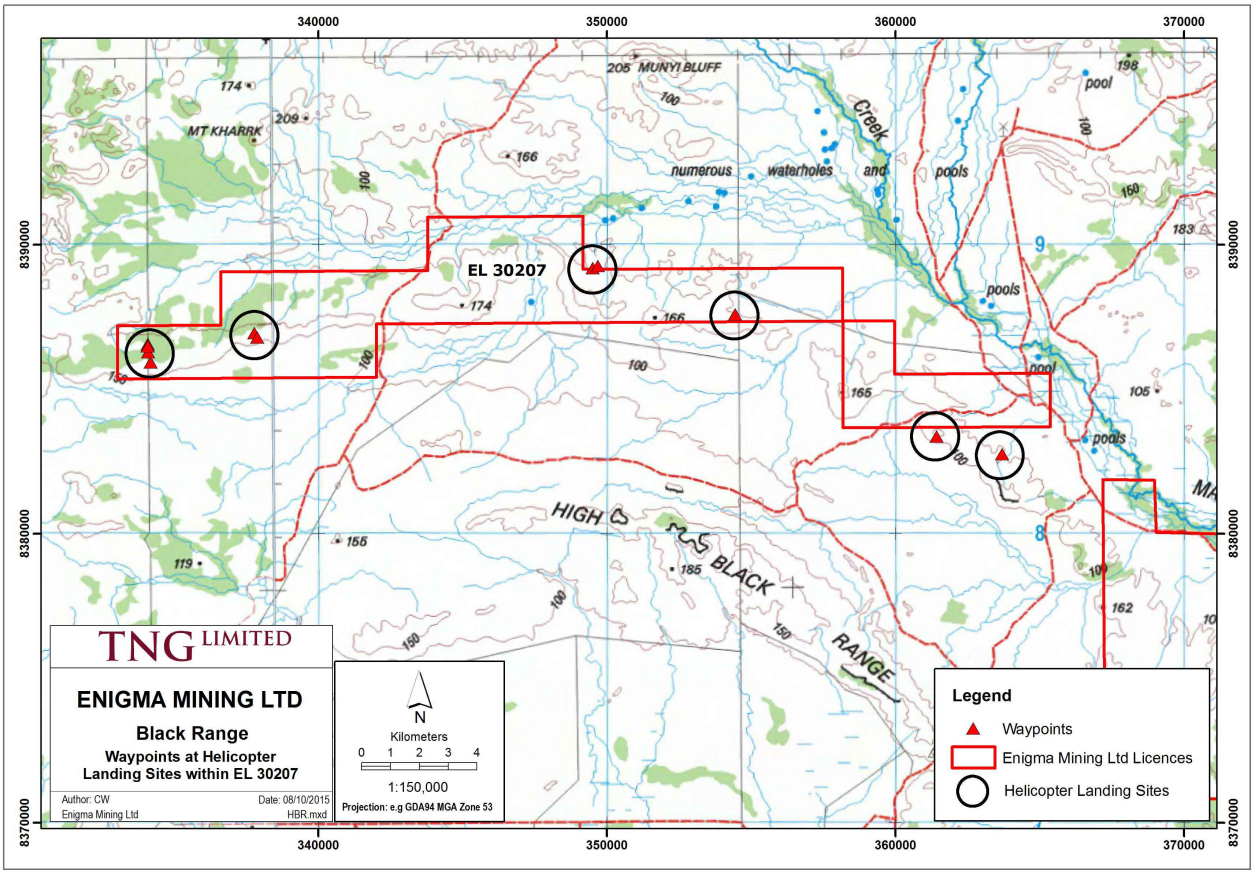

Figure 7: Helicopter Landing Sites with EL 30207.

7. 2015 - 2016 EXPLORATION PROGRAM

A field mapping and NITON sampling programme is expected to take place during 2016. Samples returning high Fe readings will also be collected for laboratory analysis. Results of this programme will determine how exploration proceeds into the next reporting year.

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