

Operator: Crossland Strategic Metals Ltd

# Charley Creek GR086/09

COMBINED ANNUAL REPORT for the period 7 February 2015 to 6 February 2016

ELs 24281, 25230, 27283, 27284, 27358, 27359, 28154, 28155, 28224 & 28226.

Tenement Holder: Crossland Nickel Pty Ltd

## **Summary**

This Combined Annual Report covers the subject licences as held by Crossland Nickel Pty Ltd and currently operated by Crossland Strategic Metals Limited. The project is centred approximately 95 km WNW of Alice Springs. The company was in a Joint Venture arrangement with Pancontinental Uranium Corporation of Canada since listing on the ASX in 2007. In late 2015 Pancontinental sold their interest to Australian-based Essential Mining Resources Pty Ltd. That company is now Crossland's JV partner.

Crossland has been exploring the region since 2005, initially for ultra-mafic hosted nickel deposits, then uranium following recognition of the potential of the Teapot Granite, a highly fractionated granitoid, which has anomalously high uranium and thorium content.

Following an aircore drilling program in 2008, which was carried out to check the potential for redox-style uranium in buried channels, some samples collected from the drill holes showed anomalous amounts of Rare Earth Elements (REE) when analysed. Extensive regional exploration has since shown that the alluvial outwash plains draining the foothills of the MacDonnell Ranges contain widespread accumulations of REE-bearing minerals derived from weathering of the various metamorphic rocks and the radioactively anomalous Teapot Granite.

Despite regular minimal financing by Malaysian-based interests since 2013, the past year has seen a continuation of Crossland's difficulties in being able to fund the level of work required on the Charley Creek project area, given its size and therefore combined expenditure commitment. Now that a new Joint Venture is in place, it is expected that exploration and more advanced activities will re-commence.

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# **Bibliographic Data**

Report Title Charley Creek Group 086/09 (Group 1) Combined Annual Report

for the period 7 February 2015 to 6 February 2016

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Project Name Charley Creek Project

Tenement Numbers ELs 24281, 25230, 27283, 27284, 27358, 27359, 28154, 28155, 28224

and 28226.

Tenement Holder Crossland Nickel Pty Ltd

Operator Crossland Strategic Metals Ltd

Commodities REE and Uranium

1:250 000 Map Sheet Mount Liebig (SF52-16); Hermannsburg (SF 53-13)

1:100 000 Map Sheet Haasts Bluff (5251); Glen Helen (5351), Narwietooma (5451) and

Anburla (5551)

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#### 1 Introduction

## 1.1 Background

The region was initially considered prospective for nickel-copper and PGE (Platinum Group Elements) accumulations associated with ultramafic phases of the Mt Hay granulite (+1780 Ma), a highly metamorphosed Palaeoproterozoic mafic intrusive complex. This exploration strategy evolved into several years of uranium exploration, centred on the radiometrically anomalous Teapot Granite and the adjacent plains country, which was considered a potential target for buried paleo-channel uranium occurrences.

Rare Earth Elements (REE) became the focus in 2010 following a review of aircore geochemical data collected during the paleo-channel drill programme. Certain drill samples showed anomalous Cerium and other REE in both alluvium and in the underlying saprolitic high grade metamorphic rocks. Additionally, the presence of Thorium anomalous phases in the Teapot Granite were realised following the geological and mineralogical characterisation of various radioactively anomalous areas in that environment. Follow-up Aircore drilling and surficial sampling of alluvium in the outwash drainage systems showed widespread REE anomalies. Sediment and soil samples collected within the Teapot Granite also proved to be anomalous in REE.

## 1.2 The Target Area

The uranium potential of the region was highlighted by historical exploration in both the Teapot Granite Complex and in the plains to the north of Mount Chapple. Exploration work by Esso in 1977 had shown the Teapot Granite (1140 Ma) to be regionally significantly elevated in uranium and thorium. This was confirmed by subsequent airborne radiometric surveys carried out by the Northern Territory Geological Survey. Based on this work, Crossland applied for and was granted EL 25230, which coverered large areas of the exposed Teapot Granite Complex. The Teapot Granite was considered to be the primary uranium target based on the initial reconnaissance by Crossland; the company identified phases of the granite which contained up to 6 times the regional uranium background level. As part of its uranium exploration strategy, Crossland considered this mass of 'hot' granite could also supply sufficient uranium to form sedimentary deposits underlying the plains to the north. The alluvial fans and buried paleochannels were considered prospective for 'secondary' uranium deposits in both calcrete hosts and in "redox" zones, which can concentrate uranium dissolved in ground water.

Exploration for REE followed the uranium exploration phase, once it was established that the high grade metamorphic suite of rocks, which are present within the project area, were the primary source of the REE-bearing minerals, Monazite (light REE) and Xenotime (heavy REE). These two minerals are the principal constituents of the company's alluvium-hosted resource. The resource is contained in the large outwash fans and buried channels located immediately north of the ranges.

The higher elevation granite terrain has also produced alluvial hosted REE concentrations but the resource here is considerably smaller and more scattered in distribution. From a geological viewpoint, a regional mapping and sampling program is required to resolve the nature of the xenotime-bearing rock type(s) and their geographic distribution. This would aid in more effective exploration, targeting the areas where there is more likely to be heavy REE concentrations in the alluvial plains.

## 2 Location and General Description

The Charley Creek Project is centred approximately 95 km WNW of Alice Springs. As of 6 February 2016, the project comprised a total tenement package of 21 exploration licences. EL 27284, though surrendered on 4 February 2016, will be included in this current report.

This report deals with Group 086/09 comprising ten (10) licences, including 27284, all of which were granted to Crossland Nickel Pty Ltd. The Charley Creek Project is located in an area bounded by the foothills of the west MacDonnell Ranges to the south and the Stuart Highway to the east. The western boundary lies approximately 30 km east of Haasts Bluff. The west MacDonnell National Park adjoins the project's southern boundary. The Tanami Highway traverses much of the tenement package. See Figures 1 and 2 for the location of the relevant ELs.

#### 3 Tenure Details

The licences, which are the subject of this report, were granted to Crossland Nickel Pty Ltd and are operated by Crossland Strategic Metals Ltd. Table 1 contains the current details of these licences. There have been numerous changes in the tenement situation in the previous 12 months, principally due to compulsory block surrenders, which were required under Section 105 (1)(b) of the Mineral Titles Act. A blanket reduction of 165 blocks of the Group 1 tenements was required by DME in a notice dated 5 September 2015. Crossland chose the tenements for reduction and the number of blocks to be surrendered. Table 2 lists the compulsory reduction details. See also Figures 1 and 2 for the various status situations of the licences in the past 12 months.

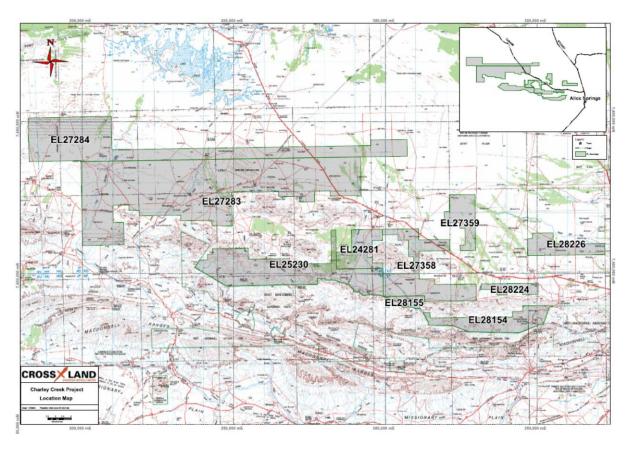
An additional voluntary reduction was made for EL 27283 on 26 January 2016. Notification by Crossland of the surrender of EL 27284 was made on the 26 January; DME officially recorded the surrender date as 4 February.

For reporting purposes, the licences were granted amalgamated reporting and expenditure status as GR086/09. The licences have had their EPA status revoked during 2015 following two consecutive years of not meeting expenditure covenant requirements. The common anniversary date is 6 February; all Expenditure Statements are submitted prior to 6 March with the Technical Report due by 6 April. The individual licences have retained their original 'operational year' date for rental payments and reductions.

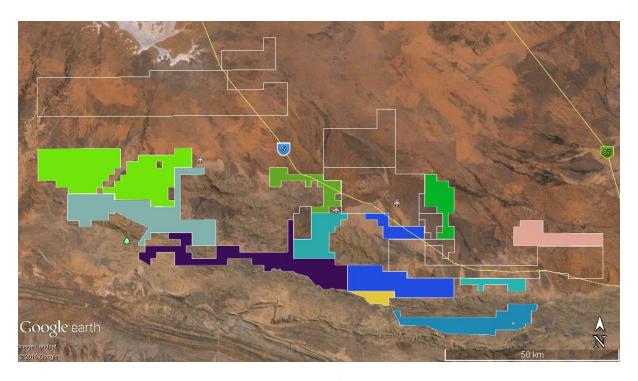
The shareholding of Pancon was acquired in late 2015 by Essential Mining Resources Pty Ltd (EMR). That company has financial backing from a Malaysian-based consortium. As a result, Crossland Strategic Metals Ltd are now in a joint venture with EMR on these tenements.

# 4 Geology

The regional setting and prospect scale geology of the Charley Creek tenements has been covered in all previous Annual Reports. The reader is referred to these reports for that information.



**Figure 1** Charley Creek Project Location Map of GR086/09 licencesprior to any Reductions or Surrenders.



**Figure 2** Charley Creek Project Location Map GR086/09 (infilled) following Reductions and Surrenders

Table 1: GR086/09 EL Situation as at 7 March 2016

EL No.	Grant Date	Expiry Date	Year of Tenure	Sub- Blocks	Area
24281	07/02/2005	06/02/2017	12	37	116.6
25230	09/11/2006	08/11/2016	10	102	289.0
27283	17/11/2009	16/11/2015	7	153	482.8
27284	17/11/2009	Surrendered	6	215	676.7
27358	17/11/2009	16/11/2016	7	82	258.3
27359	17/11/2009	16/11/2016	7	31	97.8
28154	20/04/2011	19/04/2017	5	68	171.3
28155	2/02/2011	1/02/2017	6	14	32.68
28224	8/03/2011	7/03/2017	5	15	47.25
28226	8/03/2011	7/03/2017	5	39	122.97

Table 2: GR086/09 EL Compulsory Reductions Details 30 September 2015

EL	PREVIOUS AREA (BLOCKS)	PENALTY BLOCKS	NEW AREA (BLOCKS)
24281	41	4	37
25230	178	76	102
27283 <b>#</b>	500	21	479
27284	249	34	215
27358	95	13	82
27359	39	8	31
28154	76	8	68
28155	14	0	14
28224	16	1	15
28226	39	0	39
TOTAL BLOCKS	1247	165	1082

<sup>#</sup> EL further reduced in size by voluntary relinquishment in 2016

# **5** Previous Exploration

# **5.1 Other Companies**

There were regional exploration activities undertaken by Conzinc Rio Tinto Australia Exploration (CRAE)/Rio Tinto Exploration Pty Ltd for sedimentary uranium and for Platinum Group Elements (PGE)-nickel- copper in the 1970's and the mid to late 1990's respectively. Alcoa also explored for sedimentary uranium in the early 1980s in the Derwent Creek area.

Esso Australia Limited explored the Teapot Granite in 1977 for uranium following an airborne radiometric survey. Ground follow-up of anomalies led to the discovery of secondary uranium mineralisation occurring in a phase of the granite that formed dome shaped topographic highs. They concluded that the source of the uranium was refractory minerals such as monazite and zircon occurring in the granite. Contrary to Crossland's data, they erroneously stated that the high regional background radioactivity was due to potassium.

#### 5.2 Crossland 2005-2015

Crossland is the only company in recent times to conduct mineral exploration in the region. The various activities carried out during the years of tenure of the subject licences, spanning from 2005 to 2016 are listed below. More detailed information on these activities, recorded on a year to year and tenement basis can be accessed in previous annual reports.

- Literature search and compilation of all private company and government data
- Acquisition and interpretation of NTGS geological and airborne geophysical data sets
- TEMPEST airborne EM surveys in late 2007 and in 2009
- Airborne Mag-Rad surveys over specific ELs in 2007-2008, 2010 and again in 2012.
- Widespread very detailed ground-based radiometric surveys over several years using continuous read out back-pack spectrometers
- Several geochemical sampling programs including rock chip, stream sediment and soil
- Geological mapping (regional and prospect scale) within the Teapot Granite and specific areas within the various radiometrically anomalous high grade metamorphic units
- Characterisation of various radiometric anomalies by geological mapping and geochemical sampling
- Aircore drilling programs in 2008, 2011, 2012, 2013 and early 2014
- Diamond drilling in 2010 within the Teapot Granite
- Environmental baseline studies by GHD Consultants commenced in late 2012. Scoping and Feasibility studies by various consultants were also commissioned to give preliminary estimates on the viability of the project.

### 6 **2015 Exploration Activities**

There were no field-related activities carried out during the reporting period, however the company's exploration base for the Charley Creek project was maintained throughout the year. Much of the previous 12 months has seen on-going minimal funding of Crossland from a Malaysian consortium. That consortium eventually struck an agreement with Crossland's former JV partner Pancon to acquire its interest in the project. That agreement involved the purchase of Panconoz Pty Ltd, which was Pancon's Australian-based subsidiary and joint holder of the Group 2 Charley Creek tenements. The Panconoz interest was taken over by Australian-based company EMR.

Since the acquisition of Panconoz and the announcement of the new Joint Venture in early December 2015, a preliminary budget and work program for the year ahead has been formulated. The intention is to drill duplicate holes where some of the better aircore intersections were made so as to obtain better quality samples (minimal to zero contamination) for more accurate resource assessments. A coring method is being considered for this programme.

For a future operation to be successful, a supply of water is essential. Assessment of available

geophysical data, particularly EM, is required in order to identify conductive target areas, which would be indicative of aquifers. The most productive aquifers are expected to be in suitable lithologies within the thick Tertiary sediments underlying the Burt Plain. The thickness of the sediments here are recorded as being up to 300 metres. Drilling to assess the water potential is being considered for the current year.

Other works would include on-going environmental surveys in tandem with further Scoping studies.

#### 7 Conclusions

It is envisaged that there will be a re-commencement of exploration activities and feasibility studies sometime during the current year.

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