



# TODD RIVER RESOURCES

## TODD RIVER METALS PTY LTD

### SOLDIERS CREEK PROJECT

### ANNUAL REPORT

**EL 31209**

**05/12/18 to 04/12/19**

<b>Tenement/s</b>	EL 31209	<b>1:250 000 Sheet Name</b>	Fergusson River (SD5212)
<b>Holder</b>	Todd River Metals Pty Ltd	<b>1:100 000 Sheet Name</b>	Wingate Mountains (5069)
<b>Manager</b>	NA	<b>Datum</b>	GDA94-52
<b>Operator</b>	Todd River Metals Pty Ltd		
<b>Commodity</b>	Sn-Ta-Li-Zn-Pb-Ag-Cu		
<b>Elements Analysed</b>			
<b>Keywords</b>	Muldiva-Buldiva, Colliia, Bynoe Pegmatite Field, Wingate Mountain pegmatite, Tin, Lithium		
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<b>Report Date</b>	January 2020		
<b>Distribution</b>	Todd River Resources Limited		(1)
	Department of Primary Industry and Resources		(1)

## **Executive Summary**

The Soldiers Creek project is located in the Daly River region approximately 200km south of Darwin in the Northern Territory. The project comprises a single exploration licence (EL 31209; Figure 1) which lies in the western part of the Pine Creek Orogen.

The project area contains the historical Muldiva/Buldiva and Collia prospects from which 103t of tin was mined from 1923 through to 1980 (Frater, 2005).

No on-ground exploration was completed during the reporting year. A reduction of blocks was undertaken at the second anniversary of the licence with target areas retained for further exploration.

Review of the project has been undertaken by several companies with the aim of securing a joint venture partner or sale agreement on the licence area. This work is currently ongoing.

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# 1. INTRODUCTION

The Soldiers Creek project is located in the Daly River region approximately 200km south of Darwin in the Northern Territory. The project comprises a single exploration licence (EL 31209; Figure 1) which lies in the western part of the Pine Creek Orogen.

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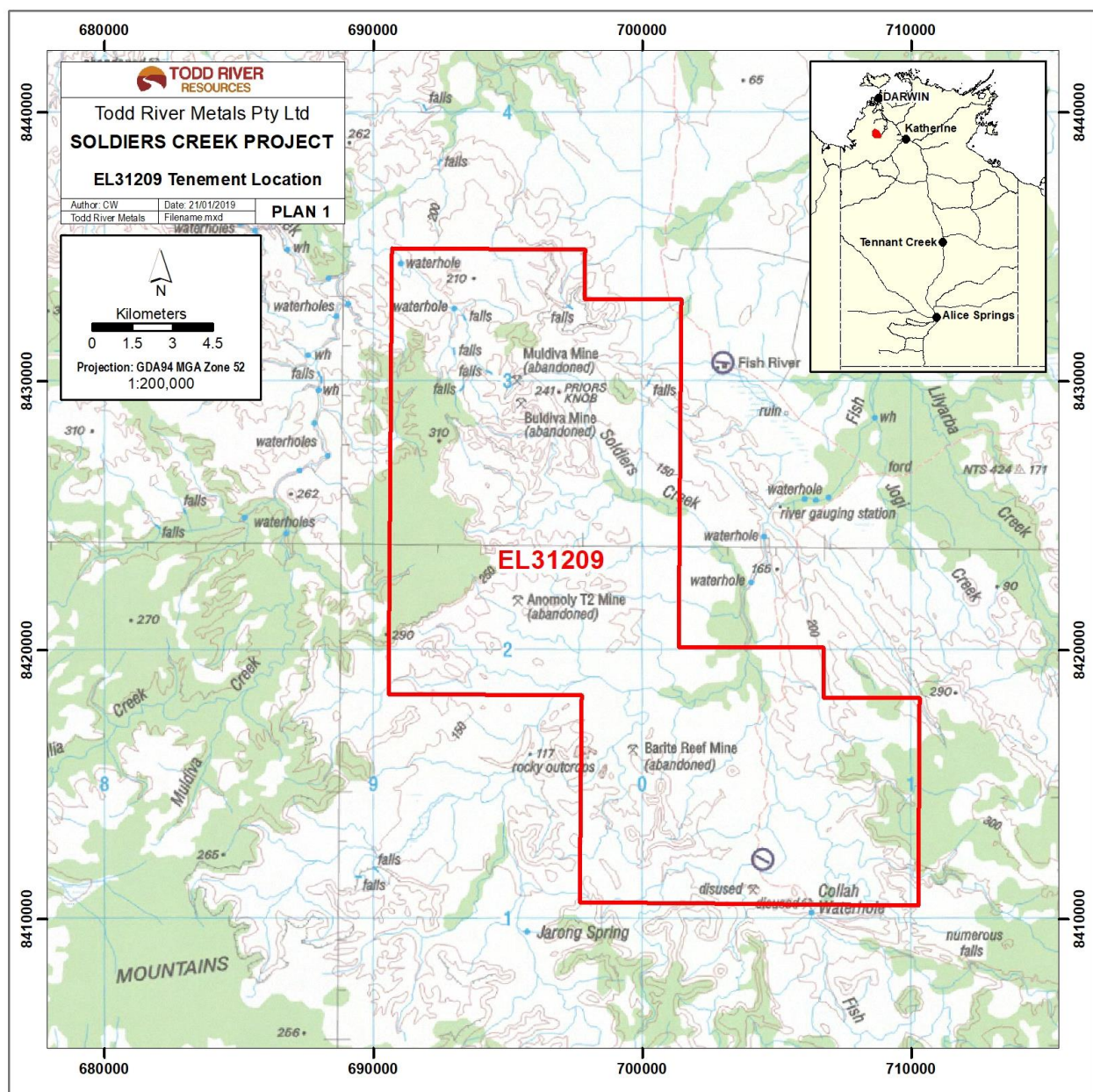


Figure 1: Location of Soldiers Creek project area.

## 2. LOCATION AND ACCESS

EL 31209 is located in the Daly River region and is centred approximately 200 km south of Darwin. Geographically it straddles the northeastern corner of the Wingate Mountains, an extensive peneplained surface. The tenement has several landform types based on the varied geological framework.

The nearest settlement is Daly River, which comprises an aboriginal community (Naiyu), police station and hotel. The region has several tourist facilities. The licence is situated predominantly within the NT Parks and Wildlife administered Fish River Gorge Block which is managed by the Indigenous Land Corporation (ILC).

## 3. TENURE

The Soldiers Creek Project Area comprises one exploration licence, EL 31209 which was granted to Todd River Metals Pty Ltd on 5 December 2016 (Table 1; Figure 1). The licence was reduced at its second anniversary from 181 to 90 blocks.

**Table 1: Soldiers Creek Project tenure details.**

TITLE	AREA (blocks)	AREA (km <sup>2</sup> )	GRANT DATE	EXPIRY DATE
EL 31209	90	280.4	05/12/2016	04/12/2022

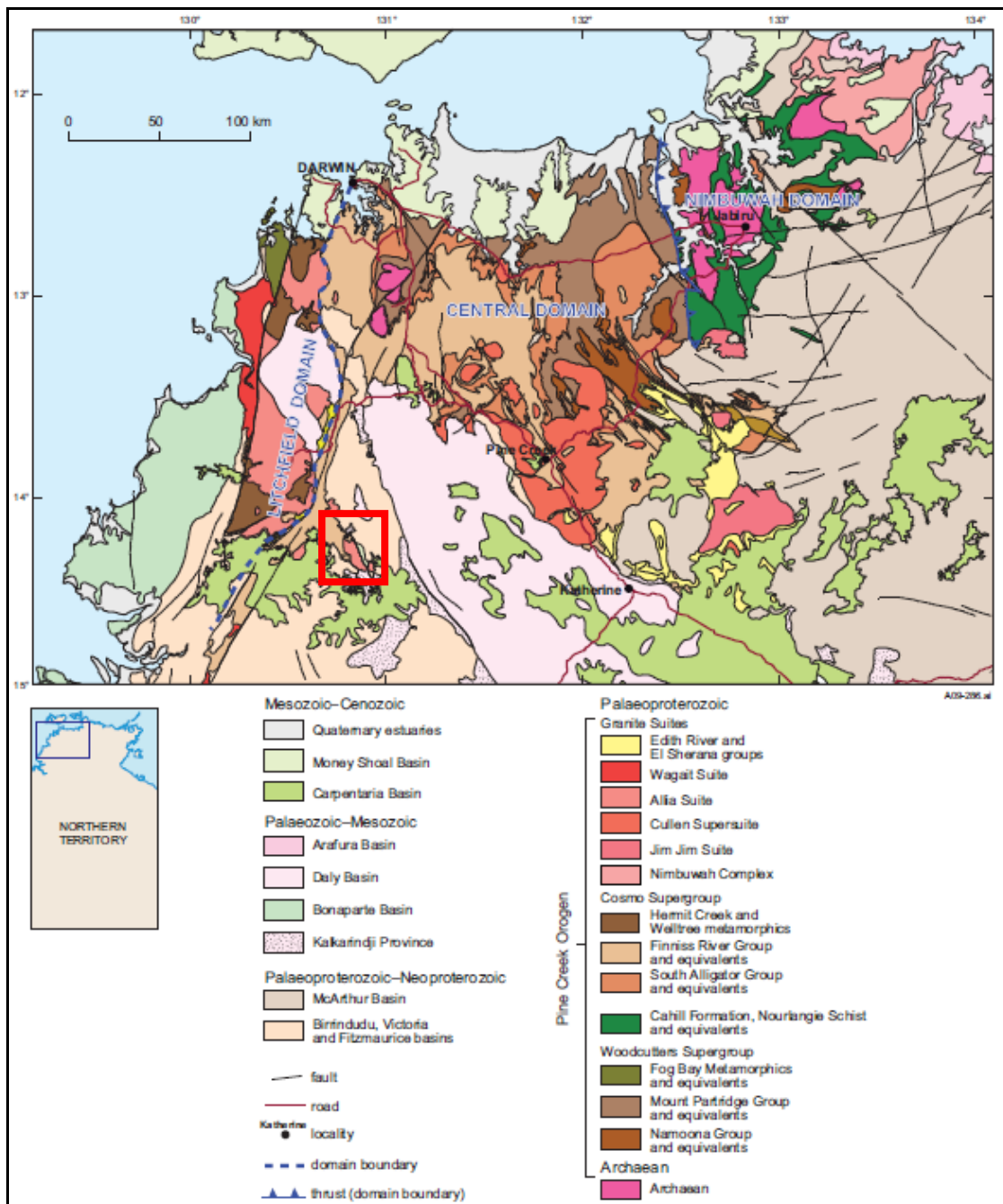
## 4. GEOLOGY

The Soldiers Creek Project falls within the Central Domain of the Pine Creek Orogen (Figure 2), which is exposed over 47,500km<sup>2</sup> and comprises a thick (>4km) succession of Palaeoproterozoic clastic, carbonate and carbonaceous sedimentary and volcanic rocks, unconformably overlying Neoproterozoic granitic and gneissic basement (Ahmad & Hollis, 2013).

The Central Domain is the most well exposed and well-characterised part of the Pine Creek Orogen and is subdivided into the Woodcutters Supergroup, deposited at or prior to ca 2020 Ma, and the Cosmo Supergroup deposited between 1865 and 1855 Ma. These are separated by an unconformity of at least 160 Ma (Ahmad & Hollis, 2013).

The oldest rocks within the tenement are the Early Proterozoic Burrell Creek Formation (Finniss River Group, Cosmo Supergroup; Figure 3), which discontinuously crop out across the licence. The Burrell Creek Formation comprises interbedded phyllite, slate, mudstone, feldspathic greywacke and minor pebble conglomerate (Ahmad & Hollis, 2013).

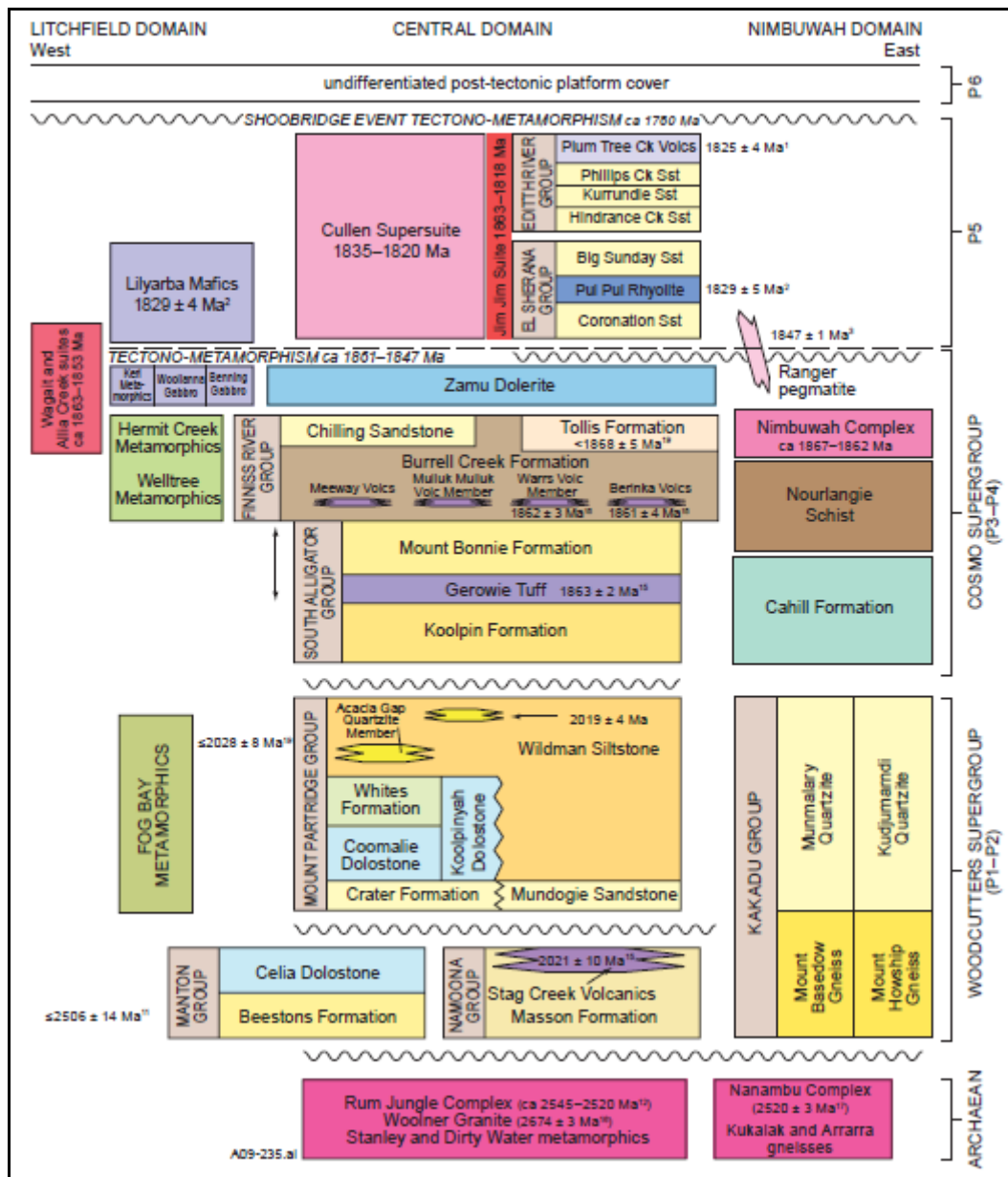
Numerous granotoid suites intrude the rocks of the Pine Creek Orogen. The Wingate Mountains (Figure 3) pegmatite district comprises pegmatites divided into two groups associated with different granites; the Fletchers Gully pegmatites with the Allia Creek granite and the Soldiers Creek field with the Soldiers Creek granite (Frater, 2005). Both granites are of similar age and belong to the Allia Creek Suite, most of which crops out in the western Litchfield Domain of the Pine Creek Orogen, but extends into the western part of the Central Domain (Figure 2).



**Figure 2: Generalised geology of the Pine Creek Orogen, Litchfield, Central and Nimbuwah Domains (Ahmad & Hollis, 2013). The Soldiers Creek Project Area is shown by the red square.**

The Soldiers Creek granite, a medium-grained porphyritic quartz monazite and granodiorite covers most of the western half of the tenement extending eastwards under the sub-basin. Numerous pegmatites associated with the Soldiers Creek granite intrude the Burrell Creek formation forming linear ridges within the licence area.

Mineralised pegmatites in two areas, the Fletchers Gully (off licence to the north) and Soldiers Creek pegmatite fields (Frater, 2005; Figure 4). The Muldiva, Buldiva and Collia tin mineralisation lie within the Soldiers Creek Project area.



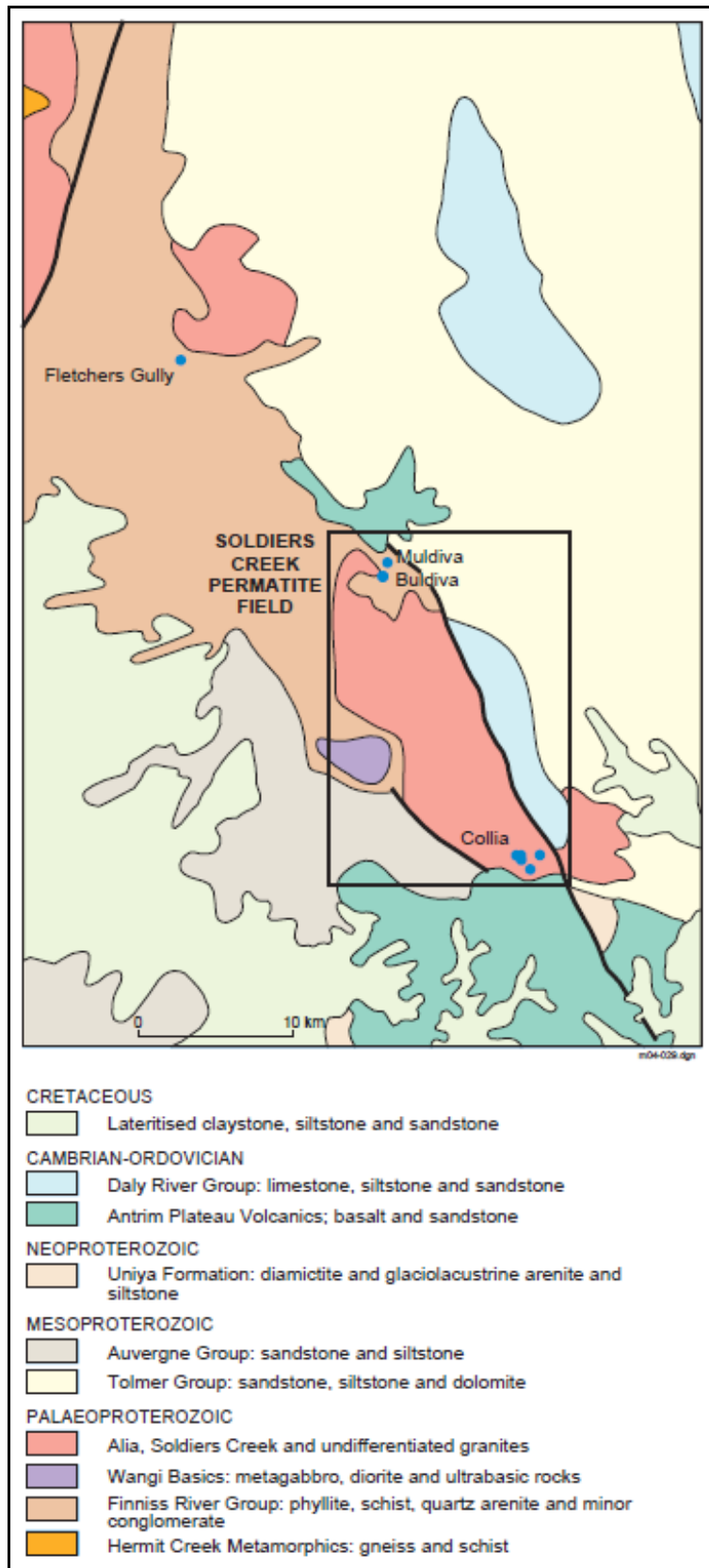
**Figure 3: Simplified stratigraphic column of the Pine Creek Orogen (Ahmad & Hollis, 2013).**

Much of the eastern third of the licence is covered by middle Proterozoic Tolmer Group sandstone – the Depot Creek and Stray Creek units. Minor outcrops of the Tolmer-equivalent Auvergne Group occur at the base of the escarpment in the western part of the licence.

Younger rocks include:

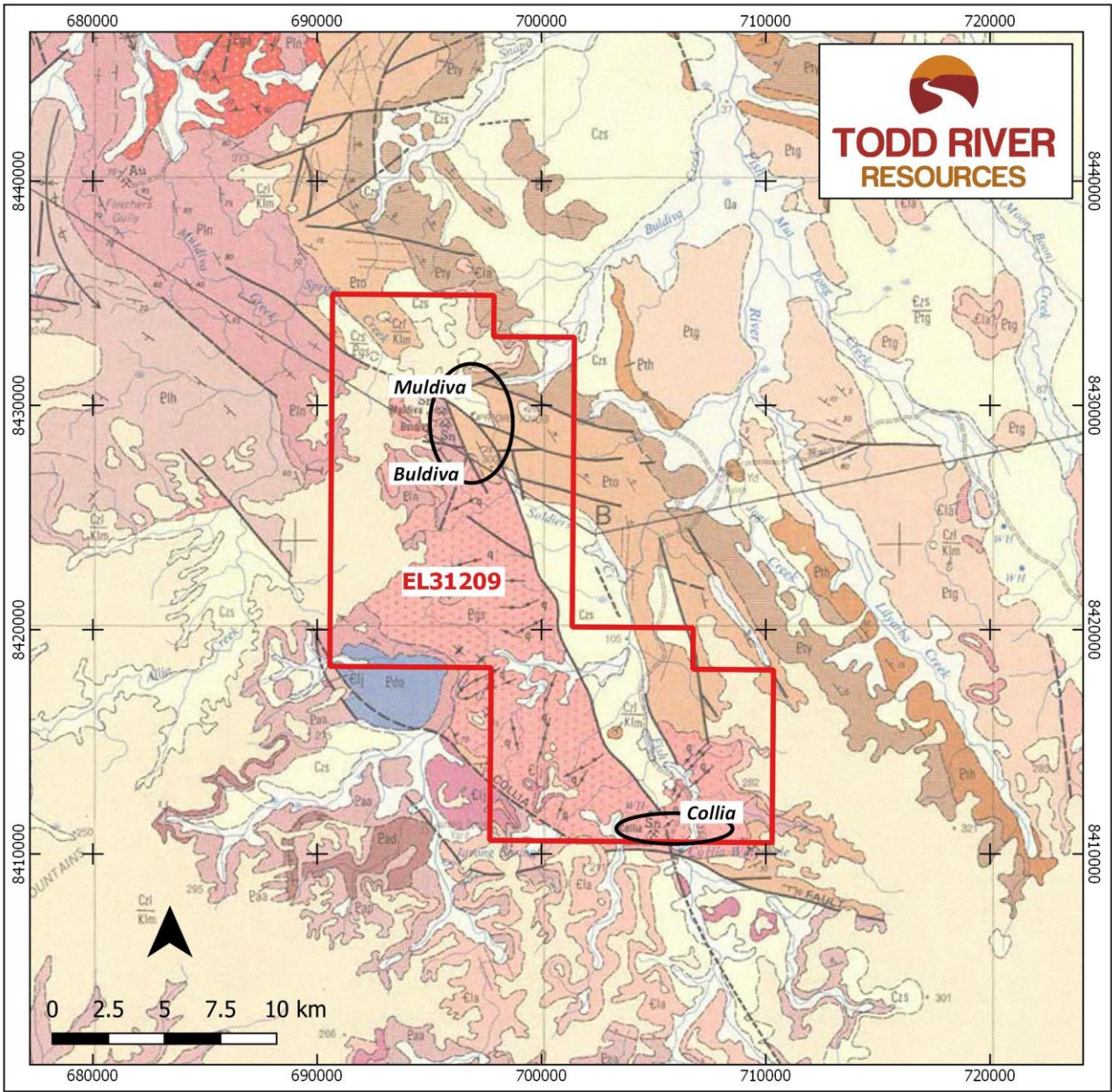
- isolated outliers of the glacial-derived Uniya Formation
- remnants of early Cambrian Antrim Plateau Volcanics (basalt and minor mudstone)
- a suite of Cambrian, mainly carbonate sediments that infill the sub-basin and overlie the volcanics
- flat lying Cretaceous rocks with a thick soil cover capping the higher country to the southwest.

Previous government mapping includes the BMR 1:250,000 scale Fergusson River sheet, (1969) and the more recent NTGS compiled Wingate Mountains 1:100,000 sheet (Edgoose *et al* 1989). Figure 5 illustrates the regional geology in the vicinity of the licence.



**Figure 4: Wingate Mountain pegmatite district, Pine Creek pegmatite province (Frater, 2005).**





**Figure 5: Geological setting of the Soldiers Creek Project Area (250K geology mapsheet) showing the Muldiva, Buldiva and Collia prospect areas.**

## **5. PREVIOUS EXPLORATION**

In 1905 gold was discovered at Fletchers Gully, 35km south of the Daly River township. Following this discovery 4.3t of tin was mined from pegmatite dykes in the vicinity (Crohn, 1968), and by 1944 total production from the area is reported to have been 7t of Sn concentrate (Frater, 2005).

Small alluvial and eluvial tin mining operations were soon established on the numerous pegmatites in the Burrell Creek Formation (contact aureole of the Soldiers Creek Granite) at Muldiva and Buldiva, and within the Soldiers Creek Granite itself at Collia (Frater, 2005).

The first recorded production was in 1923 when 26.7t of tin concentrate was produced by the Collia and Muldiva mines. Total production from Collia, Buldiva and Muldiva to 1967 was 45.7t and since 1967, Collia has produced a further 57.4t of tin concentrate, with the last production occurring in 1980 (Frater, 2005).

Since this time several companies carried out limited exploration work for a variety of commodities adjacent to and within the current licence. Ashton Mining Ltd and Stockdale Prospecting Ltd sampled the area for diamonds and Total Mining Australia Pty Ltd in joint venture with PNC Exploration (Australia) Ltd conducted a program of uranium exploration.

In the mid-1990s PNC Exploration undertook an extensive examination on and around an earlier discovery of minor secondary uranium mineralisation made by Planet Management and Research Pty Ltd in the late 1960s. This is associated with alteration zones in the Soldier's Creek Granite. PNC also completed a 200-metre spaced airborne magnetic and radiometric survey which covers part of the licence area.

Crossland Strategic Minerals Pty Ltd undertook comprehensive exploration for uranium over EL22738 (similar boundaries to EL 31209) from 2009 – 2013 (Buskas, 2014). This included regional and prospect mapping, rock chip, soil and stream sediment sampling, RAB, aircore and diamond drilling, radiometric traversing and an airborne magnetics/radiometrics survey.

Crossland were keen to secure a joint venture partner to continue exploration within the licence but were unable to do so. Further drilling to follow up vein-style, primary sulphide Pb-Zn-Cu Ag mineralisation intersected during drilling in 2011 was a priority.

### **5.1 Todd River Exploration**

A mapping and sampling programme was completed across the Muldiva, Buldiva and Collia prospect areas in September/October 2017. Rock chip and soil samples were sent for laboratory analysis and over 1000 soil pXRF readings were taken across both areas.

The results of the work at Muldiva – Buldiva shows that the pegmatites are geochemically classified as fertile and prospective for lithium mineralisation. The pegmatites contain tin mineralisation with 15 samples having greater than 1% cassiterite content. The alluvial sediments draining from the pegmatites at Buldiva are of high grade with an average of 2.75 kg SnO<sub>2</sub>/m<sup>3</sup>.

The work at Collia has identified fertile LCT pegmatites as classified using the pegmatite fractionation Cerney (1993) classification scheme. The mapped pegmatites are generally thin (average 0.4m) and shallow dipping. The location of the samples are within a granite pluton, and therefore the potential for economic mineralisation of lithium is limited, though more prospective pegmatites may lie further afield and outside of the current area of exploration.

## **6. EXPLORATION COMPLETED, 2019**

There was no on-ground exploration within EL31209 during the current reporting year due to the comprehensive drilling and exploration programme being undertaken at the companies Mount Hardy project.

Review of the project has been undertaken by several companies with the aim of securing a joint venture partner or sale agreement on the licence area. This work is currently ongoing.

## **7. PROPOSED EXPLORATION 2020**

Additional mapping and sampling is required across the licence area, within current prospect areas and also in order to identify additional prospect areas. Follow-up of Pb-Zn-Cu Ag mineralisation identified by Crossland will be completed through data review and on-ground mapping and sampling. Ground EM/IP surveys may be utilised to identify drill targets.

Recent corporate developments have resulted in the ASX listed company S2 Resources (S2R) acquiring a 19.99% shareholding in Todd River Resources Limited (parent company of Todd River Metals Pty Ltd). As such S2R, in conjunction with TRM will undertake a full review of the Soldiers Creek project to develop an ongoing exploration strategy prior to further on-ground work taking place.

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