

EL 09/2015  
HOUSE RIVER, TASMANIA

SECOND ANNUAL & FINAL REPORT  
FOR THE YEAR ENDED  
7<sup>th</sup> SEPTEMBER 2017

LICENSEE:  
KINGFISHER EXPLORATION PTY LTD  
A.C.N 169 842 728

Prepared by:  
S. Westbrook & K. Wighton  
September 2017

**KINGFISHER**  
EXPLORATION PTY LTD

## EXECUTIVE SUMMARY

This report is the second Annual Report for EL09/2015 located approximately 100km northwest of Hobart, centred around and to the east of the township of Ouse in the upper Derwent Valley, Tasmania. Kingfisher Exploration Pty Ltd (Kingfisher) was granted the EL on 8<sup>th</sup> September 2015. This report also constitutes a final relinquishment report for EL09/2015 as the entire 248 square kilometre tenement is being relinquished.

EL09/2015 was applied for by Kingfisher to facilitate an exploration program to assess the area for potential discovery of economically viable deposits of bauxite.

Exploration activity undertaken during the second year of tenure of EL09/2015 included:

- Review of exploration results from the 2016 field program.

The reconnaissance mapping and sampling within the tenement area showed no indication for the presence of significant sized deposits of bauxite or other minerals that, in Kingfisher's opinion, could result in the identification and delineation of an economic sized deposit within the tenement. The tenement is therefore being fully relinquished.

# TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION</b> .....	<b>3</b>
1.1	LOCATION, ACCESS & TENURE .....	3
1.2	PREVIOUS EXPLORATION .....	5
1.3	EXPLORATION RATIONALE .....	5
<b>2</b>	<b>GEOLOGICAL SETTING &amp; MINERALISATION</b> .....	<b>7</b>
2.1	TASMANIAN BAUXITE .....	7
2.2	DERWENT VALLEY (OUSE) BAUXITE .....	7
<b>3</b>	<b>EXPLORATION COMPLETED</b> .....	<b>10</b>
<b>4</b>	<b>DISCUSSION OF RESULTS</b> .....	<b>10</b>
<b>5</b>	<b>CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE WORK</b> .....	<b>10</b>
<b>6</b>	<b>ENVIRONMENT</b> .....	<b>11</b>
<b>7</b>	<b>EXPENDITURE</b> .....	<b>11</b>
<b>8</b>	<b>REFERENCES</b> .....	<b>12</b>

## LIST OF FIGURES

Figure 1. Location plan showing EL09/2015 area.....	4
Figure 2. Map showing location of historical bauxite deposits .....	6
Figure 3. Regional (1:250,000 scale) geology of the EL09/2015 tenement area.....	9

## LIST OF TABLES

Table 1. Summary of resource estimates from historical exploration.....	8
Table 6. Exploration expenditure on EL09/2015 during the reporting period.....	11

# 1 INTRODUCTION

This report is the second Annual Report for EL09/2015 located approximately 100km northwest of Hobart, centred around and to the east of the township of Ouse in the upper Derwent Valley, Tasmania. Kingfisher Exploration Pty Ltd (Kingfisher) was granted the EL on 8<sup>th</sup> September 2015. EL09/2015 covers 248 square kilometres of ground that is considered prospective for bauxite.

This report documents exploration activities carried out between the dates 8th September 2016 and 7<sup>th</sup> September 2017 (the Reporting Period).

Following final review, it has been decided to surrender the EL in full.

All maps and location coordinates contained within this report are presented in GDA94 datum format unless otherwise noted.

## 1.1 LOCATION, ACCESS & TENURE

EL09/2015 covers 248 square kilometres of ground between the townships of Ouse, Hamilton and Bothwell in the Derwent Valley Municipality of southern Tasmania, approximately 80km NE of Hobart city (Figure 1).

Mineral Resources Tasmania granted EL09/2015 to Kingfisher Exploration Pty Ltd on 8th September 2015. The tenement is valid for a five-year period expiring 7th September 2020. However, following final review of initial exploration results, it has been decided that the entire tenement area will be surrendered.

EL09/2015 is well accessed by numerous sealed and non-sealed, all-weather public and private roads. The area is mainly comprised of cleared agricultural land used for grazing of sheep and cattle and growing of crops, hops and grapes. Land tenure is >95% privately held land.

The Derwent Valley climate is relatively dry for Tasmania, with the area receiving an average annual rainfall of 500-700 mm with no significant seasonal cycle (around 30-40 mm rainfall each month) except for slightly wetter periods from June to October (40-70 mm monthly). Mean maximum temperature varies from 12 degrees during winter months to 22-25 degrees in summertime.

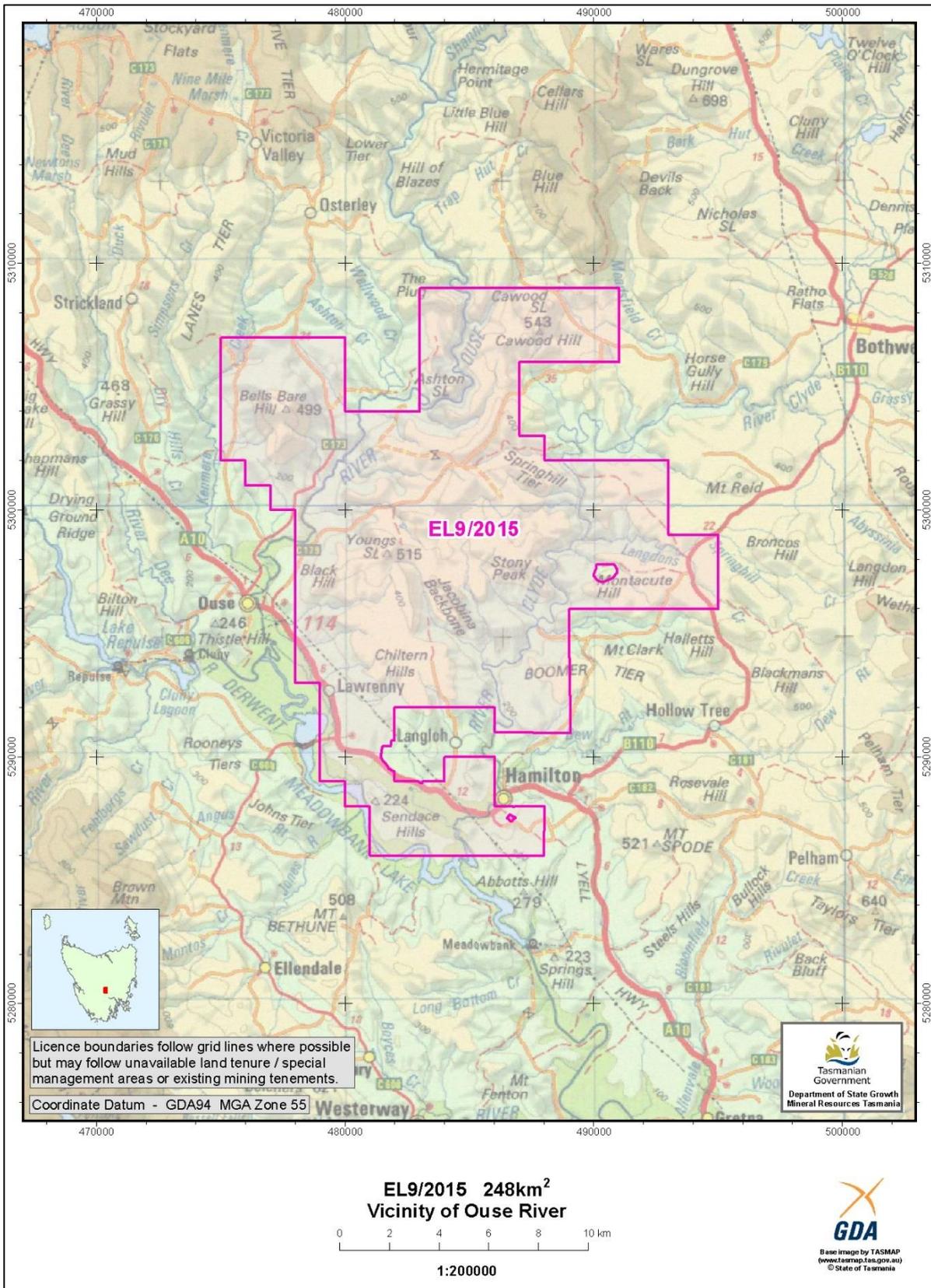


Figure 1. Location plan showing EL09/2015 area.

## 1.2 PREVIOUS EXPLORATION

No previous exploration for bauxite is recorded within the Tenement area. However, historical bauxite exploration and resource assessment activities in areas adjacent to the tenement are known (the “Ouse bauxite deposits”).

Bauxite in Tasmania was first reported in 1925 although it was not until 1941 that interest was revived by discoveries of outcropping bauxite occurrences near Ouse in the Derwent Valley, and then near Campbell Town (Midlands), St. Leonards and Fordon (Launceston), Beaconsfield, Swansea (East Coast) and in the North West near Myalla as well as numerous other spot locations.

The Tasmanian Mines Department commenced testing of the deposits near Ouse during 1941 through 1942, which comprised of sinking shafts and sampling which resulted in the discovery of several deposits of near surface, lenticular accumulations of Bauxite and it was considered that given the sufficiently widespread occurrences the “aggregate potentialities were not less than 2,000,000 tonnes” of bauxite. A systematic rectangular grid of shafts at 200ft (60m) spacing was developed over the largest outcrop (“Area 2” on Locks Hill) as well as sporadic shaft testing over other selected occurrences at Ouse and also in the Campbell Town area. This was followed up in 1945 by a campaign of percussion drilling and some additional pitting - firstly at Ouse and then St. Leonards, Swansea and Campbell Town.

Testing of the Campbell Town bauxite deposits was reported to have returned generally unfavorable results and the deposit held “no economic value”, mainly due to insufficient size of the deposits and/or excessive iron and silica contents with generally subdued alumina values. This contrasts with recent exploration and resource delineation work carried out by Australian Bauxite Ltd which has proved up over 9 Mt of bauxite resources to date.

Most of the investigated bauxite deposits at Ouse are located within the ex-EL08/2015, previously held by SRG Partners Pty Ltd (Figure 2).

## 1.3 EXPLORATION RATIONALE

EL09/2015 was applied for by Kingfisher to facilitate an exploration program to assess the area for potential discovery of economically viable deposits of bauxite. It was proposed that given the limited exploration carried out by historical workers, there remains excellent potential to discover further bauxite resources in the Derwent Valley area.

The recent exploration success of Australian Bauxite was considered an example showing that modern exploration techniques can be applied to successfully delineate significant bauxite resources in Tasmania. Albeit, these resources seemed to have failed for some unreported reason.

A systematic exploration approach was employed for RL09/2015 to enable step-wise review and evaluation of results. A Phase 1 exploration program was planned and carried out in the first year of tenure (2016), with the main objective to quickly establish bauxite prospective areas for the discovery of economically viable bauxite deposits.

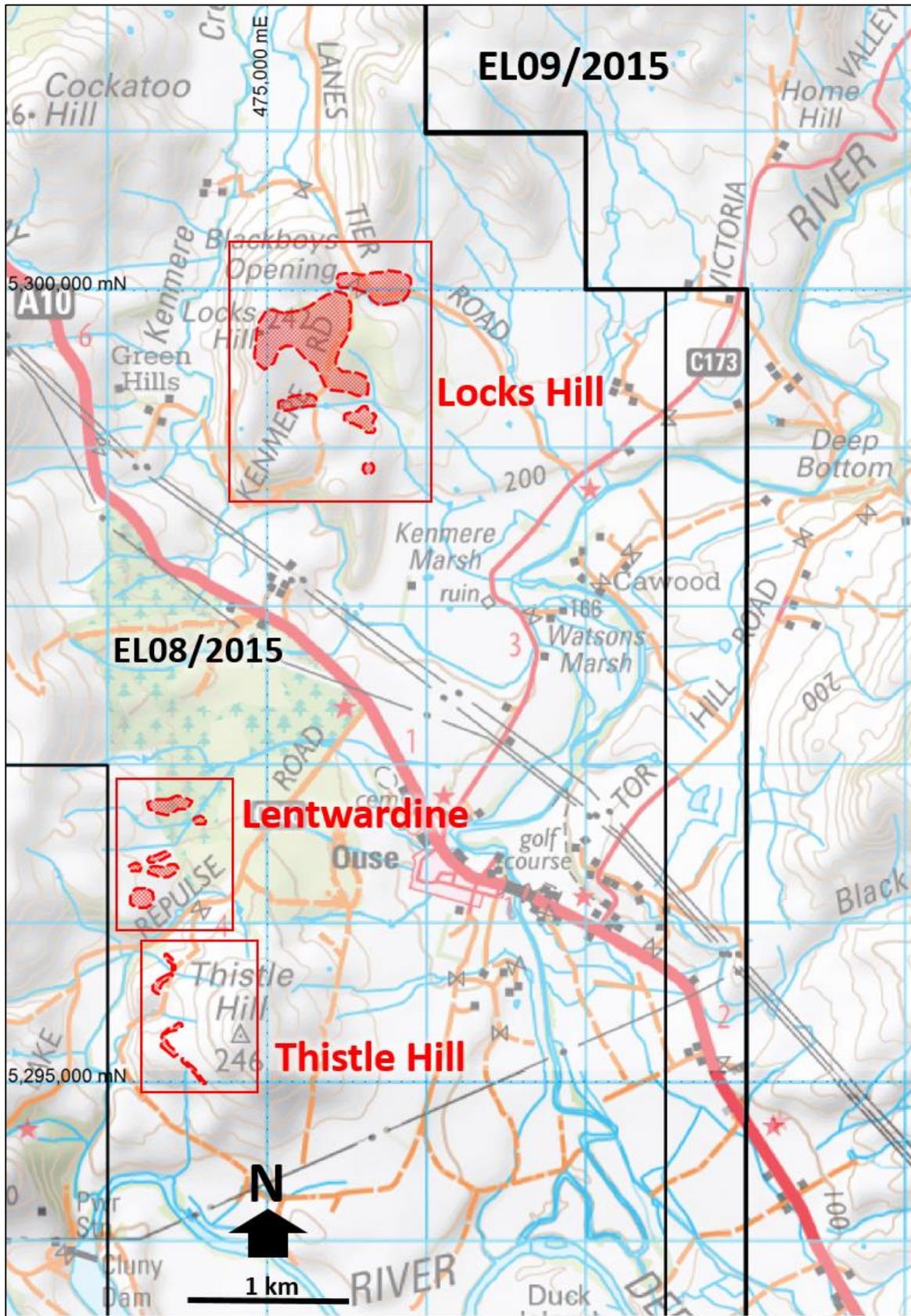


Figure 2. Map showing location of historical bauxite deposits located with EL08/2015 adjacent to Kingfishers EL09/2015.

## **2 GEOLOGICAL SETTING & MINERALISATION**

The geology of the tenement area is dominated by Jurassic Dolerite, sediments of the Triassic Upper Parmeener Group and lesser Tertiary basalt. Dolerite outcrops throughout the area and commonly forms the topographic highs, creating steep sided hills and undulating, flat topped elevated plateaus. The Upper Parmeener Group of sediments consists of fine to medium grained, feldspathic, lithic sandstones, mudstones and minor coal seams. Both these sediments and dolerite can be overlain by Tertiary Basalt flows. Figure 3 shows the regional geology of the tenement area.

### **2.1 TASMANIAN BAUXITE**

Bauxite in Tasmania occurs mainly as residual laterite deposits developed on either Jurassic dolerite or Tertiary basalt bedrock. Owen (1950) noted distinctions in the mode of formation of Tasmanian bauxites, with some deposits forming a group which are remnant of former continuous and widespread sheet bauxite (e.g. Ouse, Campbell Town bauxites), while other lenticular or pod-like bodies were formed in depressions with restricted horizontal extent (e.g. Cataract Gorge, Basin Road). Secondary, re-cemented bauxite is reported to occur near Beaconsfield.

### **2.2 DERWENT VALLEY (OUSE) BAUXITE**

Bauxite in the Derwent Valley district is mainly derived from the weathering of Jurassic dolerite which is a dominate rock type in the area. Historically the main occurrences have been noted in the vicinity of Ouse (Figure 2) but also occurring to the northwest at Father of Marshes and to the southeast near the present Meadowbank Lake. Little or no exploration was reported outside these known occurrences by the previous explorers.

The main set of historically explored bauxite occurrences occur just west of the Ouse township, forming a series of 12 dissected outcrops along a 5-km northerly trend from Thistle Hill in the south to Locks Hill in the North, the largest of which occurs at Locks Hill (historically called Gladfield Area 2). Figure 2 shows a location map of these occurrences, all of which are situated inside EL08/2015 (adjacent to EL09/2015).

The deposits are interpreted to occur on the eroded surface of a wedge-shaped mass of dolerite which thins to the east, exposing the underlying Triassic sandstone. The base of the dolerite is said to be concordant with bedding in the Triassic sandstone, dipping at angles of 8-12 degrees to the southeast (Owen, 1950). Tertiary basalt and lacustrine sediments may locally overlay the dolerite.

Owen (1950) suggested that the disposition of the Thistle Hill - Locks Hill bauxite bodies and their relatively constant dip to the east can be interpreted to infer that these occurrences are remnants of an originally continuous sheet of bauxite that has subsequently been eroded and/or covered.

The bauxite/saprolite horizon developed on the dolerite is described to a characteristic vertical zonation:

- a) An upper zone from the surface consisting of red-brown hard, coarse nodular to pisolitic bauxite;

- b) A middle zone light brown, earthy, massive bauxite (main high-grade bauxite zone);
- c) A lower zone of increasing iron-rich clay with intercalated bauxite;
- d) Basal kaolinised dolerite.

The upper hard nodular to pisolitic bauxite horizon is noted to contain a higher iron / lower alumina content than the underlying earthy bauxite. Nodules may be cemented in a dark brown limonitic material but also occur in a relatively soft matrix of light brown earthy bauxite. The pisolites and nodules are described as irregular/angular to ovoid or spherical in shape, ranging in size from 2 mm up to 5 cm in diameter, with occasional larger fragments or blocks up to 10 cm. Larger pisolites and nodules typically have a core of porous “granular” bauxite after dolerite, earthy bauxite or limonite enclosed by several concentric shells of aluminous laterite.

The middle zone is reported to comprise massive (uniform), earthy bauxite comprises irregular coloured light brown to pink-brown cryptocrystalline gibbsite with disseminations of fine brown-yellow specks of ferric hydroxide. It may carry nodules showing the concentric precipitation of iron outwards from a more or less leached core. The bulk of commercial grade bauxite occurs within this zone.

Based on the surface distribution and shaft testing of the Ouse bauxite occurrences, probable tonnages of the deposits were estimated by Dickinson (1943) and are summarised in Table 1.

<b>Area</b>	<b>Estimated Tonnage</b>	<b>Average Grades</b>	<b>Comments</b>
Locks Hill Area (Historically “Gladfield”)	775,000	41.2% available Al <sub>2</sub> O <sub>3</sub> , 3.2% free SiO <sub>2</sub> . Higher grade zones up to 47.2% Al <sub>2</sub> O <sub>3</sub> .	Main Area 2 zone of 500,000 tonnes with additional tonnage added from assumed extensions and surrounding smaller deposits. Overburden generally <1m, up to 2m thick.
Thistle Hill (Historically “Lachlan Vale”)	250,000	35-42% available Al <sub>2</sub> O <sub>3</sub> , 2-4% free SiO <sub>2</sub> . Limited sampling.	Ore horizon dips east under Thistle Hill. Avg. thickness of 3 m, up to 4.3 m. Higher iron content noted. Eastern side of Thistle Hill not explored for down-dip extension.
Lentwardine	300,000	44.3% Al <sub>2</sub> O <sub>3</sub> , 2.6% SiO <sub>2</sub> from grab sample.	Interpreted as similar in type and formation to Locks Hill bauxite. Shallow easterly dip with light overburden. Assumed avg. thickness of 3 ft (2.7 m).
<b>Total</b>	<b>1,325,000</b>		

Table 1. Summary of resource estimates from historical exploration (1940’s) on outcropping bauxite deposits near Ouse.

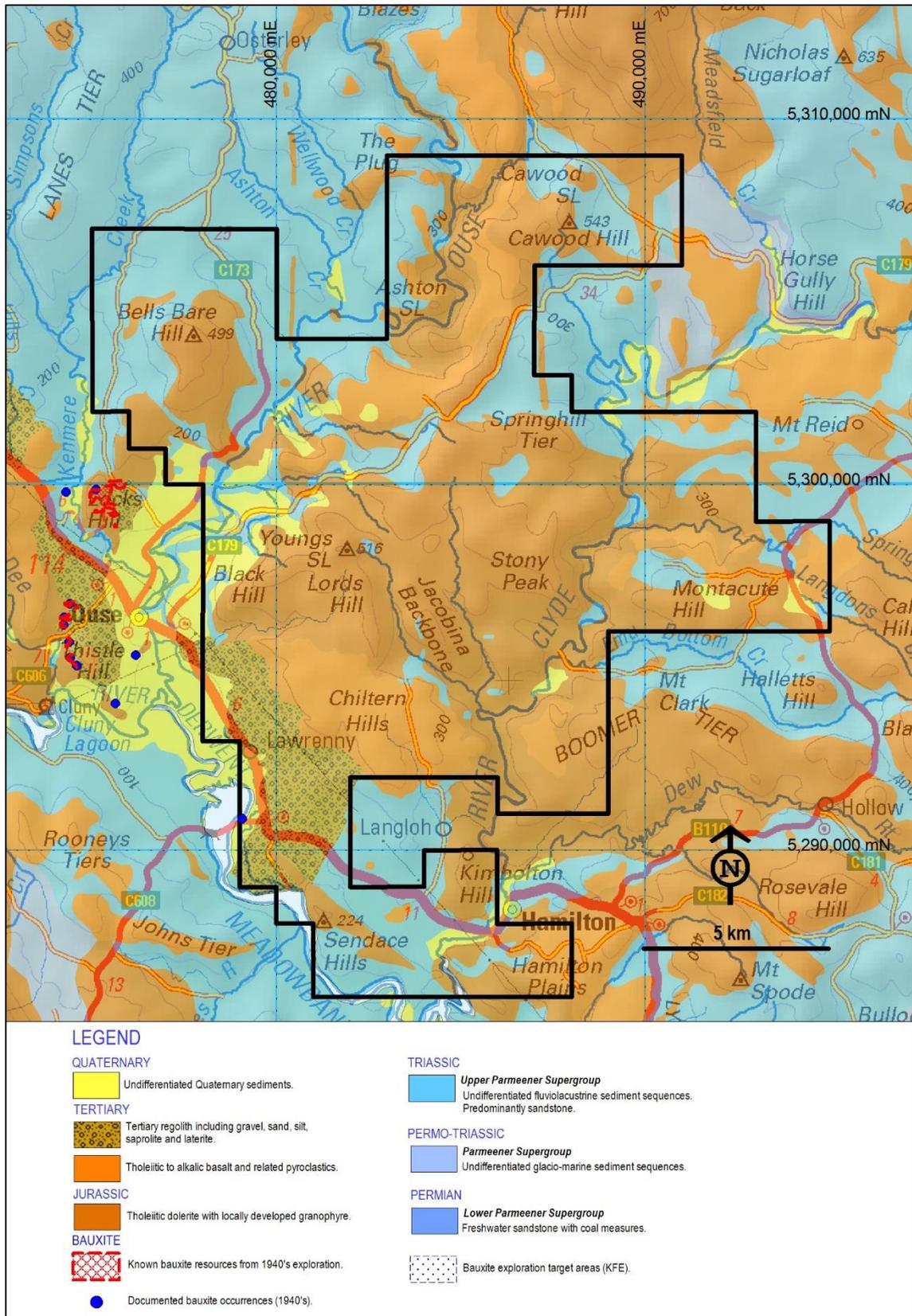


Figure 3. Regional (1:250,000 scale) geology of the EL09/2015 tenement area.

### **3 EXPLORATION COMPLETED**

Exploration activity undertaken during the second year of tenure of EL09/2015 included:

- Final review of data and results from the Phase 1 reconnaissance mapping and sampling program carried out during 2016 (as reported in the first annual report).

### **4 DISCUSSION OF RESULTS**

The results of the reconnaissance exploration program carried out in the first year of tenure of EL09/2015 were generally disappointing with no indication for the presence of significant sized bauxite resources being identified. A brief sampling program over an historical gold occurrence also returned no encouraging results.

Rock and soil Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub> and LOI values are generally indicative of the dominance of kaolinitic clays and not gibbsite in the tenement area. A single anomalous sample (49.9% Al<sub>2</sub>O<sub>3</sub>) from an area of generally lateritic ironstone float on the Vermont property in the Hillside target area was unable to be repeated and it is considered this area contains limited potential for an economic sized bauxite deposit. There have been no new results generated within the 2017 annual reporting period. All geochemistry results and sample data map points appear in the 2016 Annual Report (Westbrook, S & Wighton, K, 2016).

### **5 CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE WORK**

The reconnaissance mapping and sampling program completed by Kingfisher Exploration within EL09/2015 returned generally disappointing results with no indication for the presence of significant sized deposits of bauxite or other minerals. The tenement is therefore being surrendered in full.

## 6 ENVIRONMENT

There was no environmental disturbance from exploration activity during the reporting period or the entire period of holding the EL.

## 7 EXPENDITURE

Exploration expenditure over the reporting period for EL06/2015 is summarized in Table 2.

	<b>ITEM</b>	<b>EXPENDITURE (AUD)</b>
1.	<b>GEOSCIENTIFIC COSTS</b>	
	Geology	\$ 12,676
	Geochemistry	\$ 0
	Geophysics	\$ 0
	Remote Sensing	\$ 0
2.	<b>DRILLING AND GRIDDING COSTS</b>	
	Gridding	\$ 0
	Drilling	\$ 0
3.	<b>LAND ACCESS COSTS</b>	\$ 0
4.	<b>REHABILITATION COSTS</b>	\$ 0
5.	<b>FEASIBILITY STUDY COSTS</b>	\$ 0
6.	<b>OTHER COSTS</b>	
	Tenement Fees	\$ 6259
	Accommodation	\$ 0
	Sampling equipment and supplies	\$ 0
7.	<b>ADMINISTRATION COSTS</b>	
	Legal	\$ 0
	Administration	\$ 686
	<b>Total Expenditure</b>	<b>\$ 19,621</b>

Table 2. Exploration expenditure on EL09/2015 during the reporting period.

## 8 REFERENCES

Dickinson. R. D. 1941. Bauxite at Ouse. MRT Report UR1891\_1969\_153\_167

Dickinson. R. D. 1942. Bauxite at Ouse and Campbell Town. MRT Report UR1891\_1969\_180\_192.

Dickinson. R. D. 1943. Bauxite in Tasmania. MRT Report URMISCB\_110\_141

Nye P.B. 1922, The Underground Water Resources of the Jericho-Richmond-Bridgewater Area. Tasmania Department of Mines. MRT Report UGWSP2.

Owen, H.B. 1950. The Bauxite Resources of Tasmania. Bureau of Mineral Resources Geology and Geophysics, Department of Supply and Development, Commonwealth of Australia.

Westbrook, S. and Wighton, K. 2016 EL06/2015 First Annual Report.

Williams, W. H. 1942. Bauxite in Tasmania. MRT Report URMISCA\_038-42.