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Mining Solutions

# Tenement Review and Exploration Strategy- EL007329 Kilmore

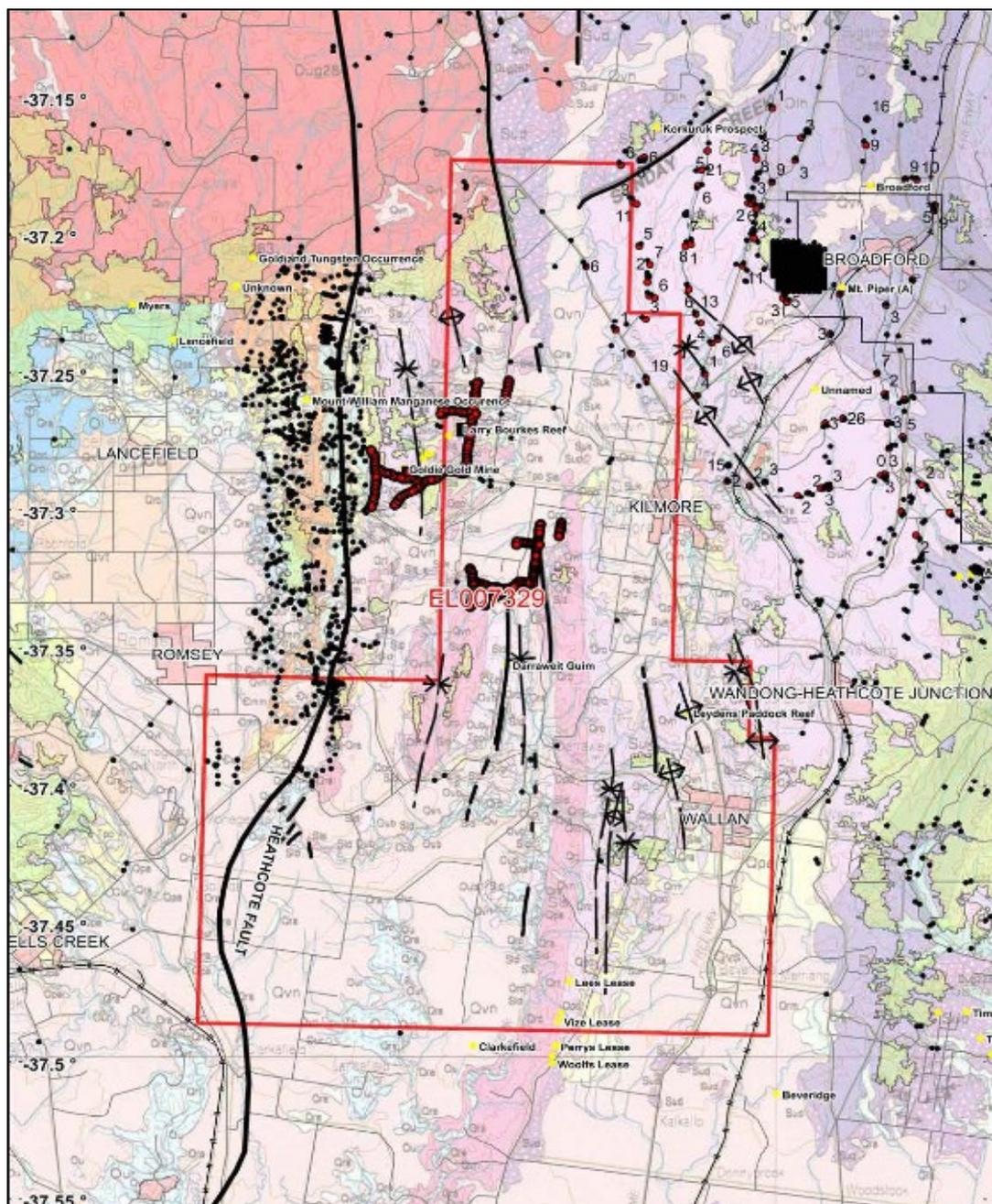
**Client: Red Rock Australasia**

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Revision:	0

## 1 Kilmore- EL007329

Tenement ID	Local ID	Size (km <sup>2</sup> )	Mapping Sheet (1:100,000)	Municipality	Current Status
EL007329	Kilmore	486	Woodend	Mitchell	Application

EL007329 is located to the west of Kilmore, extending south beyond Wallan and west towards Romsey (Figure 1).



**Figure 1. EL007329 location and geology.**

## 2 Regional Geology

The regional geology was described by Krijnen, 2015:

Located on the western edge of the Melbourne Zone of the Lachlan Fold Belt, rocks of the Lancemore Project tenement consist of marine siltstones and minor sandstones of Silurian to Early Devonian age.

Ductile deformation (Tabberabberan Orogeny) during the late Devonian within the Melbourne Zone created open folds within the Siluro-Devonian turbidites, with accompanying greenschist grade metamorphism. The regional scale folds demonstrate some degree of flexure which is related to NE-SW compression during the latter stages of the Tabberabberan Orogeny.

The Melbourne Zone is bounded to the west by the Mt William Fault, and to the east by the Governor Fault. These major faults contain fault bounded blocks of Cambrian greenstones indicative of underlying stratigraphy.

### 2.1 Local Geology

The principal rock types within the tenement are middle to upper Silurian sandstones and shales (Springfield and Chintin beds) and Tertiary basalt. The sediments have been regionally folded, with north-south axis and dips of 70-80° (Planet 1976).

Devonian intrusions of granite and granodiorite occur to the west of the tenement and sections are covered by Newer Volcanics.

The Mount William Fault intersects the tenement in the south-west corner, which is the boundary between the Bendigo-Ballarat and Melbourne structural zones.

Several smaller faults parallel to the Mount William fault have been mapped in the central area of the tenement.

### 2.2 Mineralisation

Goldie Gold Mine is located 10 km west of Kilmore, just off the western margin of the tenement. The country rock consists of Upper Silurian sandstones, quartzites and slates folded into a well defined anticline, the axis of which strikes at 004° and plunges 25° to the south. According to J.P.L. Kenny, who examined the mine in 1934, the reef consists of an east dipping formation in east dipping beds adjacent to the anticlinal axis. Kenny also states that the country rock is mineralised carrying arsenopyrites and fine mineralised quartz veins oxidised near the surface. Gold occurs in the quartz veins, in the slate bands, and an apparent association with arsenopyrite. The mine was worked by three shafts to a depth of 120 feet.

The second occurrence of gold mineralisation in the western portion of the tenement is Larry Bourkes Reef, shown on the Lancefield-Goldi geological parish plan as the Kilmore Diggings.

The mine was described by Dunn (1905) and Kenny (1934) with the below of summary of the observations from both authors:

The country rock consists of folded Silurian sandstones and mudstones striking north south. Both authors describe a fault striking east-west and dipping to the north. On the footwall of the fault is a breccia composed of large blocks of Silurian sediments cemented by a matrix of finer grained material. Quartz occurs as fine veins in fracture fillings and in the matrix as small bunches. This formation was worked from two open cuts, the as small bunches. This formation was worked from the main one oriented east-west with a length of 70 m and a width of 4-17 m. From the east end of this cut a smaller one extends south for 20 m. Three shafts were sunk on the north side of the main open cut, with the deepest being hunts shaft which was sunk to a depth of 25 m with a 12 m cross cut to the formation beneath the main opencut. 85 m SW of this shaft is Rue's shaft, which was sunk entirely in breccia. North from the shaft, stoping has been undertaken on the formation on the 9, 18 and 27 levels.

### **3 Mining History/Production**

Production data from the Larry Bourkes Reef between 1864 and 1868 is recorded as 1070 ounces from 5620 tonnes, with an average grade of 5.9 g/t. This figure is incomplete as the size of the open cuts indicates that considerably more tonnes were mined (Planet, 1976).

The Goldie Mine yielded 748 ounces of gold for an average of 9.6 g/t between 1886-1888 (Planet Resources, 1976).

The Kilmore Antimony occurrence is located on the tenement with unknown production figures.

#### **3.1 Nearby Mining Activity**

There are no operating gold mines near the tenement.

### **4 Exploration History**

Most other tenement holders have focused on other areas outside of EL007329 when holding ground covering this tenement. Exploration on the tenement has been limited to sampling within and surrounding the Larry Bourkes Reef and exploring for auriferous gravels associated with deep leads around the Willowmavin area.

#### **4.1 Planet Mining, 1976**

Trenching was completed across the breccia south of the open pits associated with the Larry Bourkes Reef as well as sampling of the shaft and adits.

230 m of trenching was completed with 77 30 kg samples taken along with 24 adit and stope samples from the Rues Shaft at the Larry Bourkes Mine. Results from the trenching were low, consistently below 0.2 g/t. Results from the adit and stope sampling were also low, falling within the 1.4-2.0 g/t range. (Planet Resources, 1976)

It has been proposed that a majority of the grade was adjacent to the fault bounding the breccia on the north side (Planet Resources, 1976).

#### **4.2 CRA Exploration Pty Ltd, 1981-1982**

In 1981, a drill program was designed to test for shallow buried auriferous gravels across the tenement, including the Willowmavin area where auriferous gravels were reported from a GSV bore. Three holes (W010, W011 and W012) were pre-collared through basalt. Hole W010 was been completed by cable tool. This hole intersected clayey wash with sub-angular quartz gravels; probably indicating a possible local source. Drilling of holes W010 - W012 located the channel but did not completely test the inferred full channel (Swennson, 1981). None of the holes have had grades reported in company reports and are assumed to be below cut-off values (<0.01 g/t).

Three more holes were drilled in 1982 to give a complete tested section of the channel defined by earlier drilling. The previous holes at this location, W010 - W012, were drilled to establish the existence of a tributary lead flowing to the east, and previously intersected in government bores.

Holes W025- W027 were drilled and showed the palaeochannel to be extremely narrow and very steep-sided on the northern side (Swennson 1982). Steep sided channels are difficult to define to the narrow nature of the gravels and a lack of accumulation of gravels on flat areas. As per the initial round of drilling, none of the holes have had grades reported in company reports and are assumed to be below cut-off values (<0.01 g/t).

#### **4.3 Nagambie 2014-2015**

In 2014, a Geochemical sampling program was conducted on roadsides verges on the south western portion of the tenement, proximal to historic mining areas. The highest gold value of 21 ppb was taken from Diggings Road reserve. Another two elevated results were taken along Diggings Road, including 3 ppb and 9 ppb. Elevated arsenic levels were associated with the 21 ppb and 9 ppb gold results but did not show elevated antimony. The 3 ppb gold result had high antimony and low arsenic. A further sample taken along the Old Kilmore-Lancefield Road returned 4 ppb which was not associated with elevated arsenic or antimony levels (Krijnen, 2015).

Elevated arsenic results were common in the soil program with a cluster of elevated results on the corner of Diggings and McHargs Road along with McGraths Lane. These samples roughly show the trends between the historic mines in the area. Three samples returned elevated antimony values with a sporadic distribution.

The soil geochemistry indicated a few areas showing anomalous gold, mostly along Diggings Road. This area corresponds to historical alluvial gold workings. Elevated arsenic values show a trend which matches the trend of the historical workings in the area.

Most other tenement holders have focused on other areas outside of EL007329 when holding ground covering this tenement.

## 5 Exploration Strategy

A flexure in the Mount William fault in the Heathcote area is a host for mineralisation and historical mining. A flexure in the Mount William fault also occurs in the south west portion of the tenement. The flexure is in the opposite direction to that at Heathcote but has not been explored according to historical record researches. The exploration strategy for this area would include;

- Review existing geophysical data to confirm position of the fault
- A first pass east-west geochemical sampling program across the strike of the Mount William fault focussing on the area of flexure. Estimate of 100 samples-\$25,000
- Follow up geochemical sampling program focussing on any anomalies identified.

The Costerfield Goldfield is located 35km from the tenement. Mandalays Costerfield Gold-Antimony mine is located to the east of the Mount William Fault on a parallel fault. A strategy for exploring this style of mineralisation would consist of:

- Identifying faults parallel to the Mount William Fault in a similar setting to Costerfield
- Review existing geochemical data to identify any possible gold/antimony anomalies
- Conduct geochemical sampling programs over any faults or anomalies identified as prospective. Contingency of 50 samples - \$15,000.

A cluster of north south trending folds have been interpreted in the eastern portion of the tenement. This is the structural setting for the Central Victorian style of mineralisation which remains untested on this tenement. The exploration strategy for this area of the tenement would include;

- Geochemical program around the Laydens Paddock Reef area. Estimate of 150 samples, \$35,000.
- Composite of existing mapping around the folded area to enhance geological knowledge.

## 6 References

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