

MINERAL HOLDINGS AUSTRALIA PTY LTD

EXPLORATION LICENCE 12/2008 REDPA

ANNUAL REPORT ON EXPLORATION FEBRUARY 2013 to FEBRUARY 2014

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29 January 2014

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ABSTRACT

EL12/2008 was applied for on 17 January 2008 and granted to Mineral Holdings Australia Pty Ltd on 23 February 2009 for a period of 5 years, over an area of 200km² in north-west Tasmania. The Licence covers Category 5 Industrial Minerals and Semi-Precious Gemstones.

The Licence, along with EL13/2008 and EL14/2008, was applied to cover potential resources of dolomite, dolomitic limestone and especially limestone in the Smithton Dolomite and the underlying Black River Dolomite within the Smithton Basin of north-western Tasmania. Of particular interest was the possibility of high-grade limestone lenses occurring near the top of the dolomite sequence.

Although the potential extent of the dolomite/limestone horizon is very extensive the carbonate rocks are generally eroded down to the water table and only occur in large, flat areas with a thin, black soil cover. Detailed mapping and traversing failed to locate any new outcrop areas and thorough evaluation would involve extensive RAB drill hole traversing. The potential for high-grade limestone near the top of the sequence was also downgraded after detailed drilling and costeaning of the limestone horizon at Montagu (EL15/2005) showed the limestone was finely interbedded with shale bands.

As a result, 167km² of the Licence area was relinquished at the last renewal in February 2013 and a small area of 33km², covering possible extensions of the tertiary limestone within RL9/1997, was retained to allow further evaluation of that resource.

Mapping around the basalt margin failed to locate any outcrops of limestone extending out from under the basalt, as in RL9/1997, but detailed sections from previous drilling indicate a large area of limestone under the northern edge of the basalt. Four drill holes are planned to see whether the limestone does extend below the alluvial cover and to test the southern extent of the limestone under the basalt and to determine if the basalt is sufficiently competent to allow mining beneath it.

1.0 INTRODUCTION

EL12/2008 was applied for on 17 January 2008 and granted to Mineral Holdings Australia Pty Ltd (MHA) on 23 February 2009 for a period of 5 years, over an area of 200km² in north-west Tasmania. The Licence covers Category 5 Industrial Minerals and Semi-Precious Gemstones.

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2.0 GEOLOGY

The geological sequence within the retained 33km² of the Licence consists of a basement of Proterozoic orthoquartzites of the Rocky Cape Group in the south, overlain unconformably by dolomite and dolomitic limestone of the Smithton dolomite in the area of RL9/1997, and by turbidite rocks and siltstones dipping at about 30 degrees to the north.

A hard, dense Tertiary limestone occurs as an essentially flat sheet from 10 to 30 metres thick, lying unconformably on the basement rocks and immediately below an extensive area of Tertiary aged basalt. The heat from the basalt has case hardened the limestone, converting it from a lime sand to a hard dense marble.

Sections of the limestone within EL12/2008 are shown in figures 1, 2 & 3 and a plan of the possible extent of the limestone is shown in figure 4.

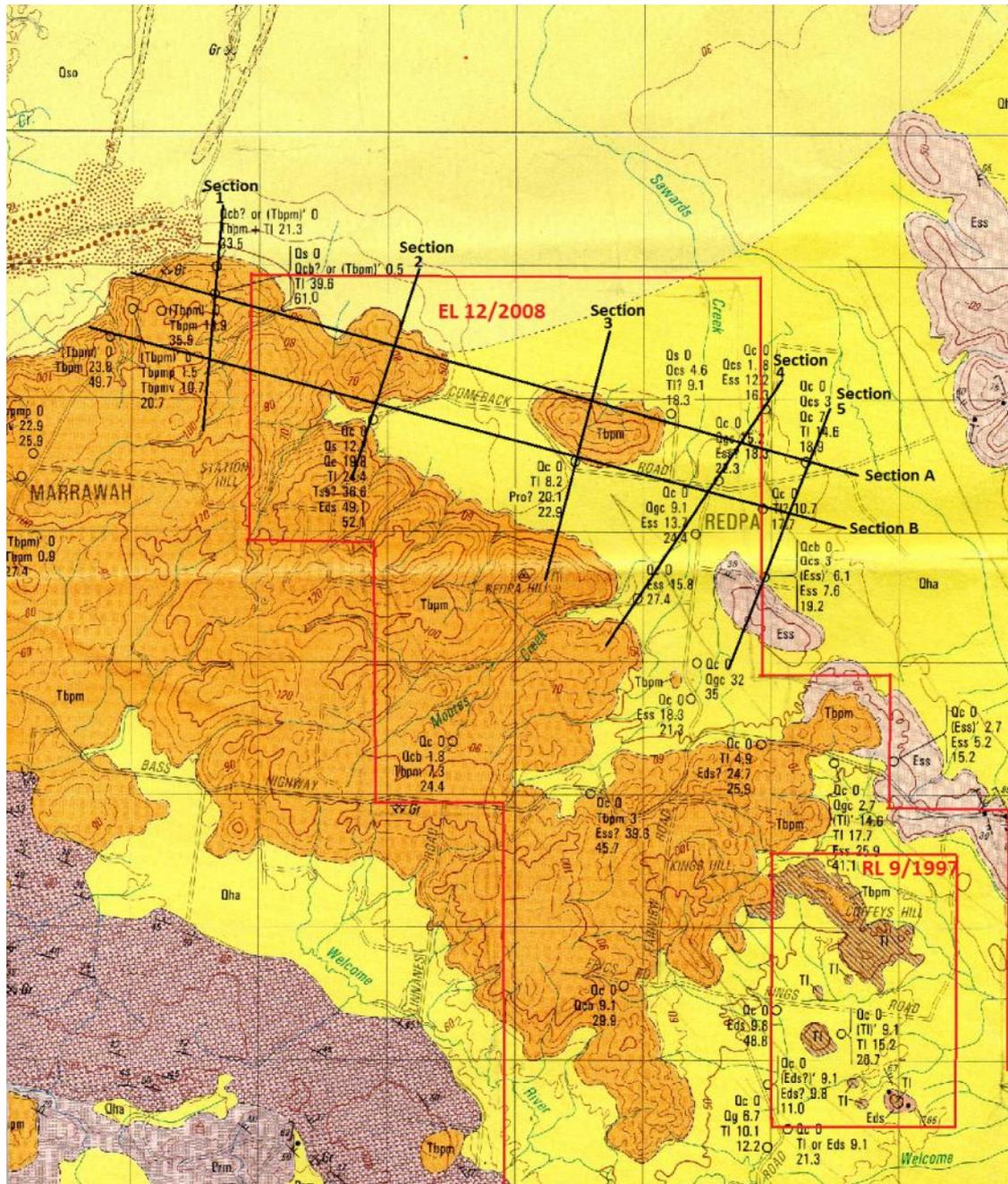


Figure 1: Location of cross sections in the northern section of EL12/2008

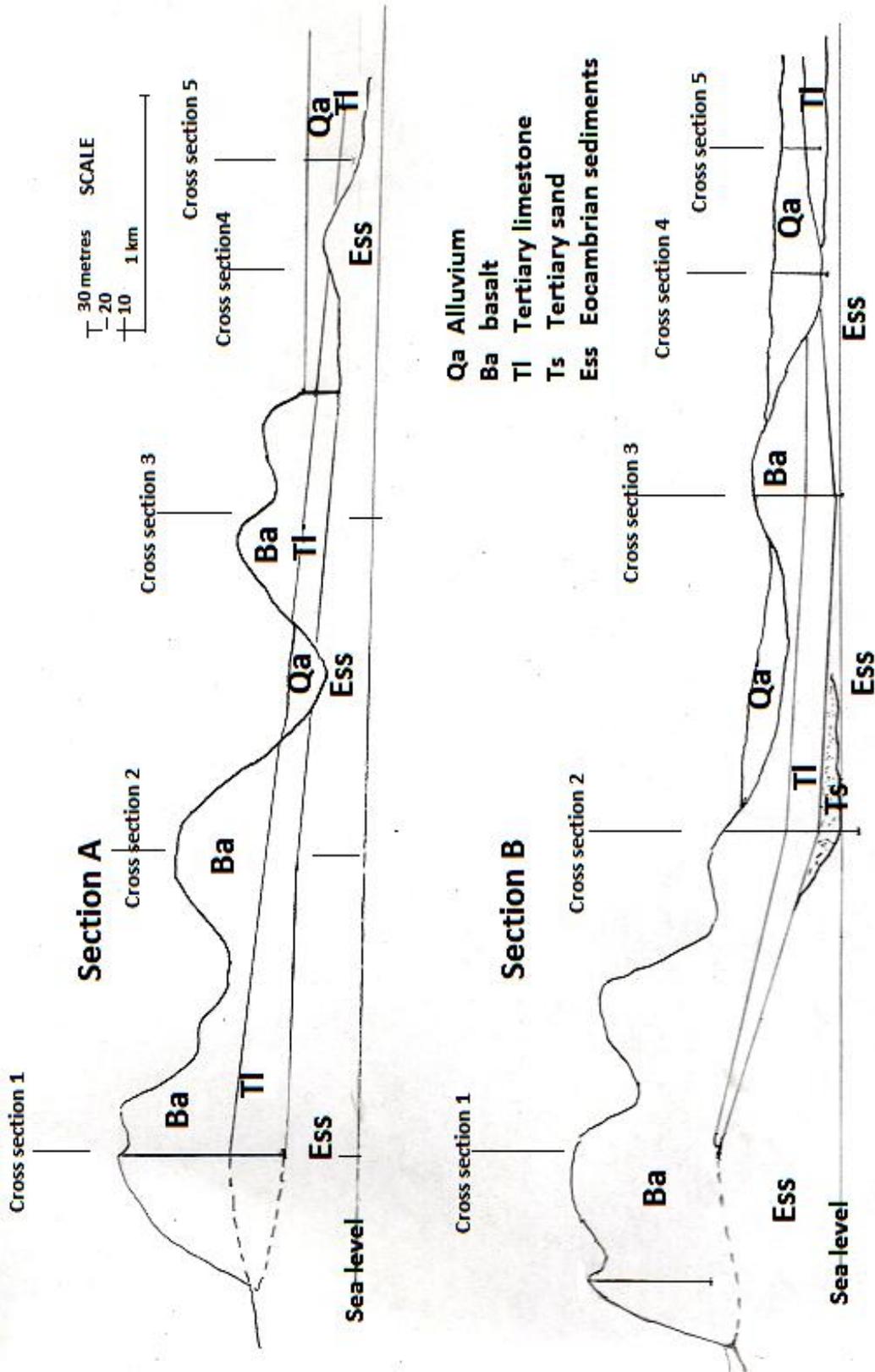


Figure 2: East-west cross sections limestone in northern section of EL12/2008

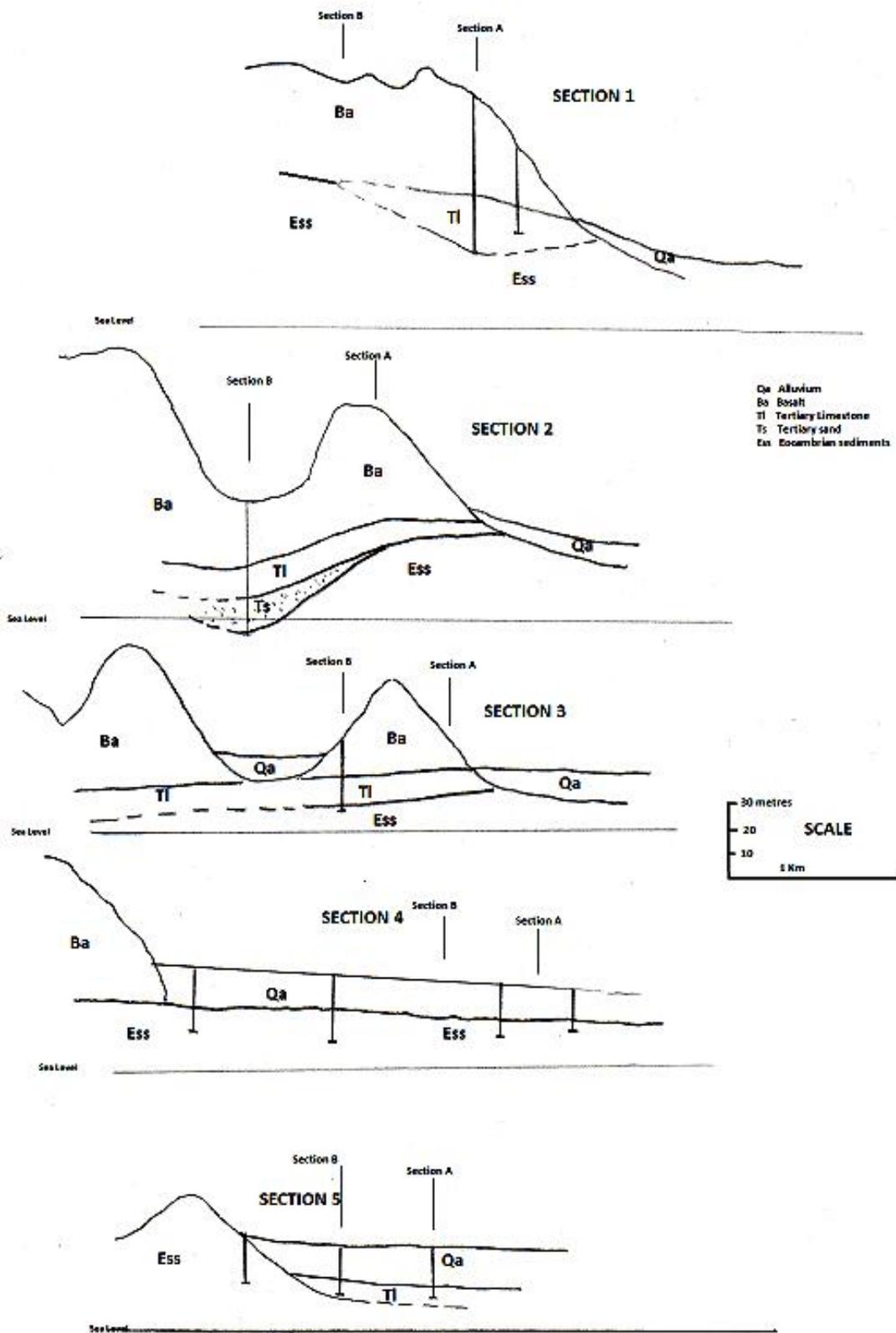


Figure 3: North-south cross sections of EL12/2008

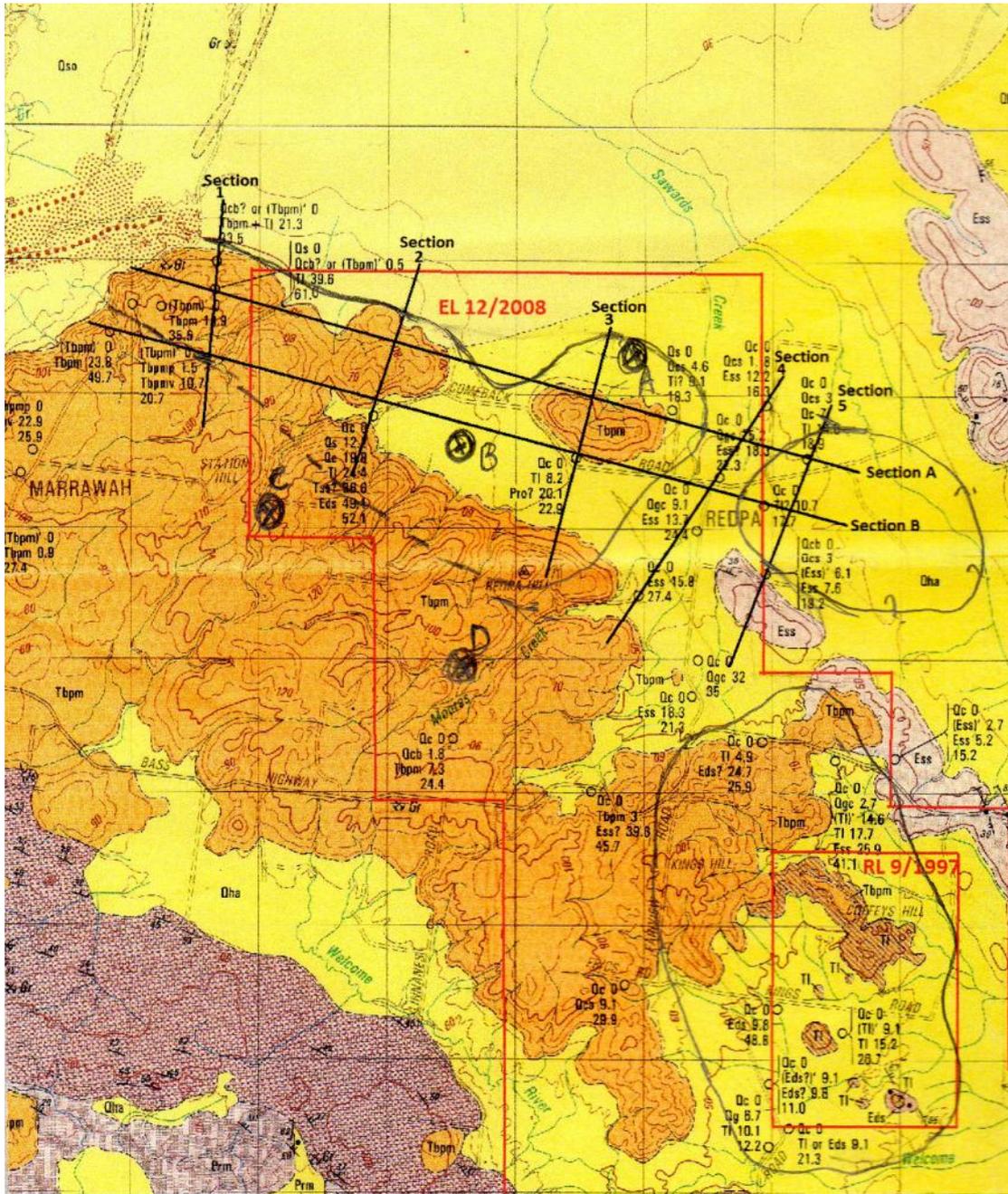


Figure 4: Possible extent of Tertiary limestone under the basalt EL12/2008

The location of the proposed drill holes are indicated by A, B, C & D.

The two holes in the alluvial area will determine the extent under the alluvial cover, while the two holes in the basalt area will test the extent to the south and will also determine the competence of the basalt to allow mining beneath it.

3.0 EXPLORATION AND EVALUATION

MHA's original aim was to search for potential limestone horizons in the stratigraphic upper part of the Smithton Dolomite, similar to the three horizons located within EL15/2005 at Montagu. However, detailed costeaming and drilling of these horizons at Montagu was disappointing as the limestone was shown to be interbedded with 50 to 60% thin shale interbeds and completely unsalable.

The Pre-Cambrian/Cambrian limestone is therefore no longer a valid target and 167km² of the Licence area was relinquished in February 2013. However, high quality Tertiary limestone within RL9/1997 does extend into the Licence area, below soil and basalt cover, and an area of 33km² was retained to allow further exploration and evaluation of that target.

Limestone is one of the most widely used industrial materials. The raw material is used in everything from dimension stone, crushed aggregate, agricultural stone and a wide variety of fillers. In most cases, it is the 'look', the colour and the toughness of the stone, rather than its chemical purity, that is the most important feature.

On the other hand, huge quantities of limestone are calcined to lime for a wide variety of industrial uses. During the calcination process, the application of heat breaks down the carbonate to a mineral oxide and CO₂. Roughly half the weight of the raw material is driven off as CO₂, so any impurities in the rock essentially double in the burnt product and purity of the raw material is much more critical in the production of calcined products.

Lime is an essential industrial chemical, with a formidable list of uses. It is used as a flux in steel making, in alkalis, soda ash and other chemical products, in glass making in agriculture and as a neutralizing agent in many chemical and metallurgical processes.

It is also suggested that the advent of carbon trading will have a major effect on the composition and physical characteristics of the limestone used to produce calcined products in the future. Very hard and compact material will be in high demand, principally because;

- CO₂ released in the decomposition of the carbonate can be trapped and sequestered from a vertical kiln whereas it cannot be trapped from a horizontal kiln.
- A vertical kiln uses less heat (fuel) and has a lesser retention time (and therefore produces much less CO₂, from fuel burning, during the heating process) than does a horizontal kiln.
- The less efficient horizontal kilns are the main suppliers of lime at present, simply because coarsely crystalline and shell type carbonates are the most easily accessible source of carbonate. Coarsely crystalline

limestones, marbles and shell carbonates break up and powderise (or decrepitate) during calcination. They don't burn correctly, tend to clump together, and severely disrupt the air flow in the heating chamber. These types of carbonates require a much longer retention time in the furnace and can only be successfully burnt in a rotary kiln.

- The coarsely crystalline limestones, marbles and shell carbonates remain cheap source of lime while CO₂ is not taken into account but will become costly with carbon trading due to the extra heating time and especially if the released CO₂ cannot be trapped.
- Only very fine grained or cryptocrystalline carbonates can be used in vertical kilns as the heat is uniformly transferred through the rock more efficiently and this type of material is ideal to take advantage of the shorter heating time and potential to trap released CO₂ in the vertical kiln.
- It is suggested that as carbon credits are introduced the economics will change drastically so that vertical kilns which are more heat efficient and allow trapping of the released CO₂ will become the norm.
- If that is the case then cryptocrystalline carbonates like MHA's limestone will be required in preference to normal crystalline limestones which will cost much more both in heat and CO₂ credits to process.
- MHA's limestone contains very little in the way of impurities, which will use less waste heat in processing and produce a better product.
- **MHA's Redpa limestone has the potential to become a premium product.** The use of vertical kilns will provide major processing cost savings (less fuel and less CO₂ produced in the burning of that fuel) through lower cost of heating, less retention time in the kiln as well as the ability to trap the released CO₂ from the calcination process.

4.0 ENVIRONMENT

All work has consisted of foot and vehicle traversing and no environmental disturbance has been caused.

5.0 FUTURE WORK PROGRAM

Future work will concentrate on the north-western extension of the Tertiary limestone under soil and basalt cover. Four holes are planned as an initial test within EL12/2008. The two holes in the alluvial area will determine the extent under the alluvial cover, while the two holes in the basalt area will test the extent to the south and will also determine the competence of the basalt to allow mining beneath it.

6.0 REFERENCES

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7.0 KEYWORDS

Smithton Dolomite, Black River Dolomite, Redpa, Dolomite resources.

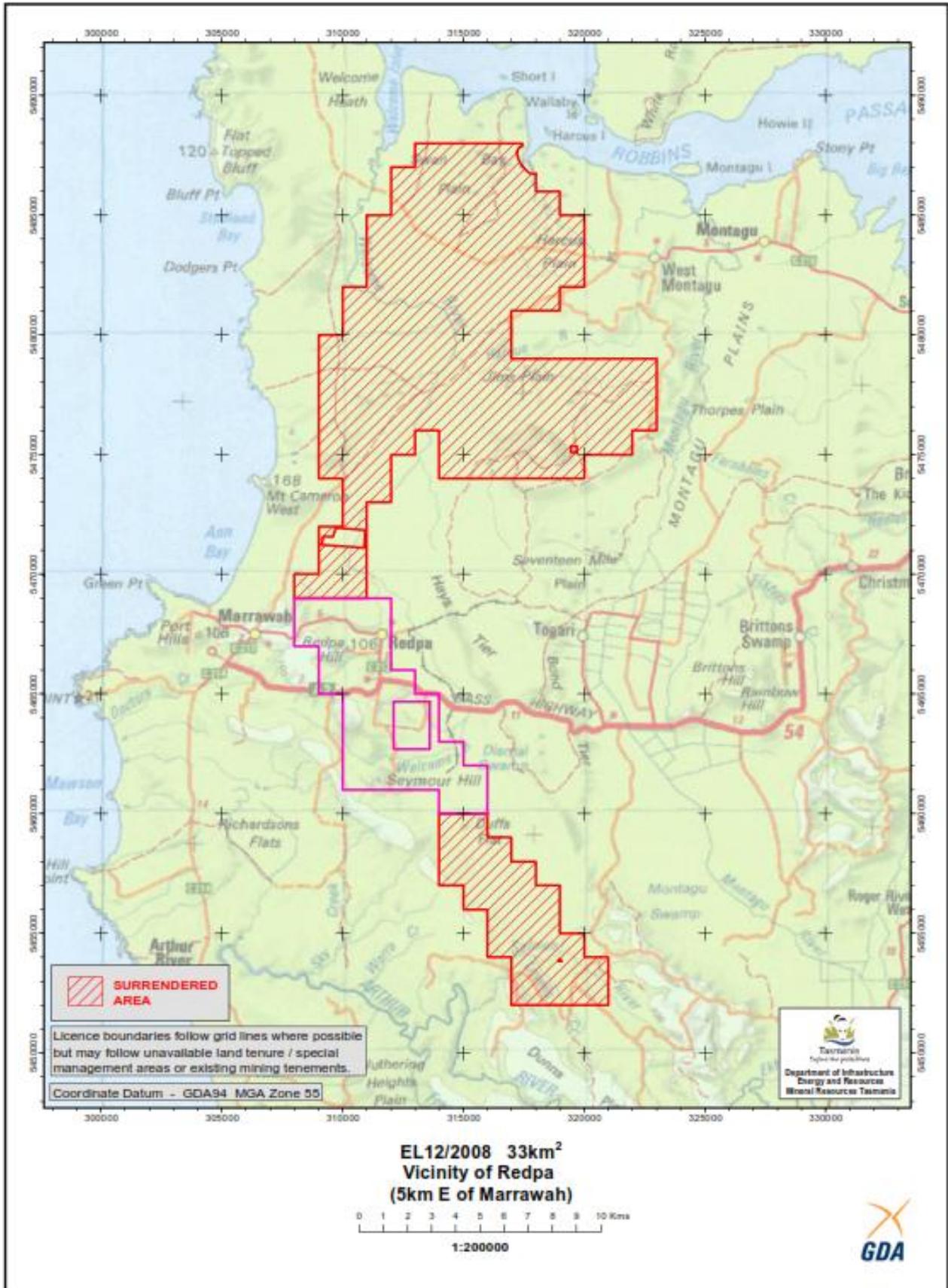


Figure 5: EL12/2008 Redpa Location Diagram