

MINERAL HOLDINGS AUSTRALIA PTY LTD

RETENTION LICENCE RL9/1997 REDPA

ANNUAL REPORT ON EXPLORATION APRIL 2016 to APRIL 2017

**Compiled by
T W Dickson
5 Crouch Court
Doncaster VIC 3108**

**For
Mineral Holdings Australia Pty Ltd
11 Kent Court
Toorak VIC 3142**

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ABSTRACT

RL9/1997 was granted to Mineral Holdings Australia Pty. Ltd. (MHA) on 8 May 1998 over an area of 3 square kilometres, located 2 kilometres south of Redpa and 6 kilometres south-east of Marrawah, in Northwest Tasmania. The Licence is a flow on title from EL31/1990 and covers exploration for Category 3 construction materials and Category 5 industrial minerals and semi-precious stones.

The Licence has been extensively explored for Tertiary Limestone, Precambrian magnesian limestone and Precambrian dolomite.

Evaluation work has included:

- 23 hand samples,
- 26 hammer drill holes for 257 metres (mostly in limestone),
- 7 shallow diamond drill holes (mostly testing dolomite),
- 10 shallow hammer holes (to test the magnesian limestone),
- Several 250 tonne bulk samples for furnace testing, and
- 9 backhoe pits to sample magnesian limestone in basement.

Some 6 million tonnes of high quality limestone are available within and around RL9/1997 and the Licence is currently being marketed under MHA's 'Pilbara of Carbonates Project' in Northwest Tasmania.

Discussions and field visits have been arranged with companies interested in joint venture or outright purchase of the retention licence. Grange Resources are currently researching the inclusion of lime in their magnetite pellet mix.

1.0 INTRODUCTION

RL9/1997 was granted to Mineral Holdings Australia Pty. Ltd. (MHA) on 8 May 1998 over an area of 3 square kilometres in Northwest Tasmania. The Licence is a flow on title from EL31/1990 and covers exploration for Category 3 construction materials and Category 5 industrial minerals and semi-precious stones.

The Licence covers a series of remnant hills of Tertiary limestone which extends under thin basalt cover to the north and west, towards the coast at Marrawah. Although Tertiary in age, the limestone is hard and compact and eminently suitable for use in vertical lime kilns.

The Licence is located in gently rolling pasture land, adjacent to the Bass Highway, about 30 kilometres due west of Smithton. Access is by all-weather roads, Fairview Road and Kings Road, from the Bass Highway and by 4WD track joining Kings Road to the Bass Highway, near the eastern boundary of the Licence

2.0 PREVIOUS EXPLORATION

Threader (1997) outlines previous exploration at Redpa in an information sheet accompanying the application for retention licence RL9/1997.

Exploration in 1991 and 1992 included rock chip sampling, hammer drilling and diamond drilling of the Tertiary limestone and the underlying Smithton dolomite. Boreholes 2 to 22 and DDH 2 to 7 were drilled in Tertiary limestone, while the remaining boreholes were drilled to test the continuity of the limestone between outcrops. Of those boreholes, DD1 and BH 1, 23, 24 and 26 were drilled into dolomite and BH 23 and 25 in magnesian limestone.

In 1994/95, two half-tonne samples of dolomite were taken from outcrops in King's and Edward's properties. Half the material was shipped overseas for evaluation testing in the production of magnesium metal by a plasma process. The process was apparently unsuccessful and the tests were never carried out.

In 1995/96, 10 shallow percussion holes were developed to test the dolomite bedrock in King's property. The evidence from mapping and drilling indicates that the dolomite is of the order of 100 metres thick and occurs in the trough of a south-easterly plunging fold. It is, as far as is known, restricted to the north-eastern part of the licence.

In 1996/97, 40 kilogram rock chip samples of dolomite and limestone were sent overseas for assessment as a slagging agent in steel making. Nippon Steel reported very favourably on the tests. David Mitchell also conducted furnace tests on the Tertiary limestone, reporting that in tests at 1,150 and 1,350°C the material remained hard, with no tendency to crumble or powder, and that it would maintain integrity in a shaft kiln.

A further 6 percussion drill holes were developed in the dolomite and dolomitic limestone basement rocks.

The drilling record to date is:	1991/92	257 m	percussion	(26 holes)
		70 m	diamond	(7 holes)
	1995/96	110 m	percussion	(10 holes)
	1996/97	91 m	percussion	(6 holes)

In 2011, MHA developed 9 backhoe pits to sample magnesia-enriched limestone along the upper contact of the Precambrian dolomite.

3.0 GEOLOGY

The Tertiary limestone was originally a wide spread sheet over the relatively flat Precambrian basement of dolomite and magnesian limestone. It now occurs as a series of low remnant hills around the edge of an extensive sheet of Tertiary basalt and extends under shallow basalt cover to the coast at Marrawah.

The limestone is white to pinkish in colour and is generally dense and compact in texture. There are occasional cavities and the limestone can be sugary immediately adjacent to the cavity. Thickness, from drilling, ranges from 1 to 18 metres and averages around 10 metres.

The limestone averages 54.02% CaO, 0.9% MgO, 0.66% SiO₂, 0.17% TiO₂, 0.28% Al₂O₃, 0.61% Fe₂O₃, 0.03% MnO₂, less than 0.01% alkalis, 0.096% P₂O₅, 0.595% SO₃, and 45.11% LOI.

Some 6 million tonnes of high-quality limestone is available in and around Redpa and more would be available under the thin basalt cover. Mineral Resources Tasmania queried the JORC level of the resource at the last renewal. The resource was recalculated and a note to that effect is attached as Appendix A. The limestone resource is outcropping and has been extensively sampled and drilled. The resource would be classed as Inferred under the JORC Code.

The magnesian limestone and dolomite occur as subcrop through the Redpa retention licence. Both are hard and marbleised and very fine grained, dense and massive in appearance. They are usually light grey in colour but some of the magnesian limestones tend to be of lighter colour and this difference is believed to increase with depth. From the limited amount of shallow drilling, it appears the dolomite predominates at Redpa but the true distribution is not yet clear.

The structure in the basement rocks appears to be a broad shallow syncline and at least 1,000 metres of section is present. Any resource of dolomite or magnesian limestone would therefore be quite large.

The dolomite ranges from 31 to 32% CaO and 18.8 to 19.5% MgO. Silica is generally below 0.2%, although occasional spikes to 10% do occur. As a result the majority of the dolomite would be outside the required specification for the steel industry.

The magnesian limestone contains 36 to 50% CaO, 5 to 16% MgO, 0.2 to 1.4% SiO₂, with all other oxides very low and loss on ignition of 43.5 to 46.5%. The distribution appears very patchy and we can find no potential customers for the material.

4.0 CURRENT AND FUTURE PROGRAM

During 2014, Alcoa requested calcined samples from the Redpa basement carbonate rocks (i.e. the Tertiary limestone and the magnesian limestone with 5 to 10% MgO). Commercial calcining of samples of this size was not readily available in Australia and Maerz/Polysius in Germany were willing to carry out the work for A\$8,200 per sample plus freight.

Alcoa's tests on the samples confirmed that the Tertiary limestone met their required specification and Alcoa may be prepared to purchase lime or limestone from the site. At this stage their process is not designed to use magnesia-enriched limestone.

Apart from interest from Alcoa, MHA have made considerable efforts to interest major Australian and overseas groups in its carbonate holdings in Northwest Tasmania and RL9/1997 is an integral part of the 'Pilbara of Carbonates' program. A major part of program is to interest those companies in the benefits of mining high-purity materials that are cryptocrystalline in nature and therefore suitable for use in vertical kilns, where it is possible to trap the CO₂ off-gas. There would appear to be large commercial advantages once a CO₂ penalty or tax is introduced.

Discussions and field visits have continued with a number of Australian and overseas firms. Grange Resources are presently researching the inclusion of lime in their magnetite pellet mix and this may be the most likely use of the material.

5.0 ENVIRONMENT

There are no outstanding environmental issues.

6.0 REFERENCES

Dickson, T.W. 2009. RL9/1997 Redpa, Report on Exploration May 2008 to May 2009 Mineral Holdings Australia Pty. Ltd.

Dickson, T.W. 2010. RL9/1997 Redpa, Report on Exploration May 2009 to May 2010 Mineral Holdings Australia Pty. Ltd.

Dickson, T.W. 2012. RL9/1997 Redpa, Report on Exploration May 2010 to March 2012 Mineral Holdings Australia Pty. Ltd.

Dickson, T.W. 2013. RL9/1997 Redpa, Report on Exploration March 2012 to March 2013 Mineral Holdings Australia Pty. Ltd.

Dickson, T.W. 2014. RL9/1997 Redpa, Report on Exploration April 2013 to April 2014 Mineral Holdings Australia Pty. Ltd.

Dickson, T.W. 2015. RL9/1997 Redpa, Report on Exploration April 2014 to April 2015 Mineral Holdings Australia Pty. Ltd.

Dickson, T.W. 2016. RL9/1997 Redpa, Report on Exploration April 2015 to April 2016 Mineral Holdings Australia Pty. Ltd.

Threader, V.M. 1992. Annual Report. EL31/90 REDPA, Mineral Holdings Australia Pty Ltd. TCR 92-3349

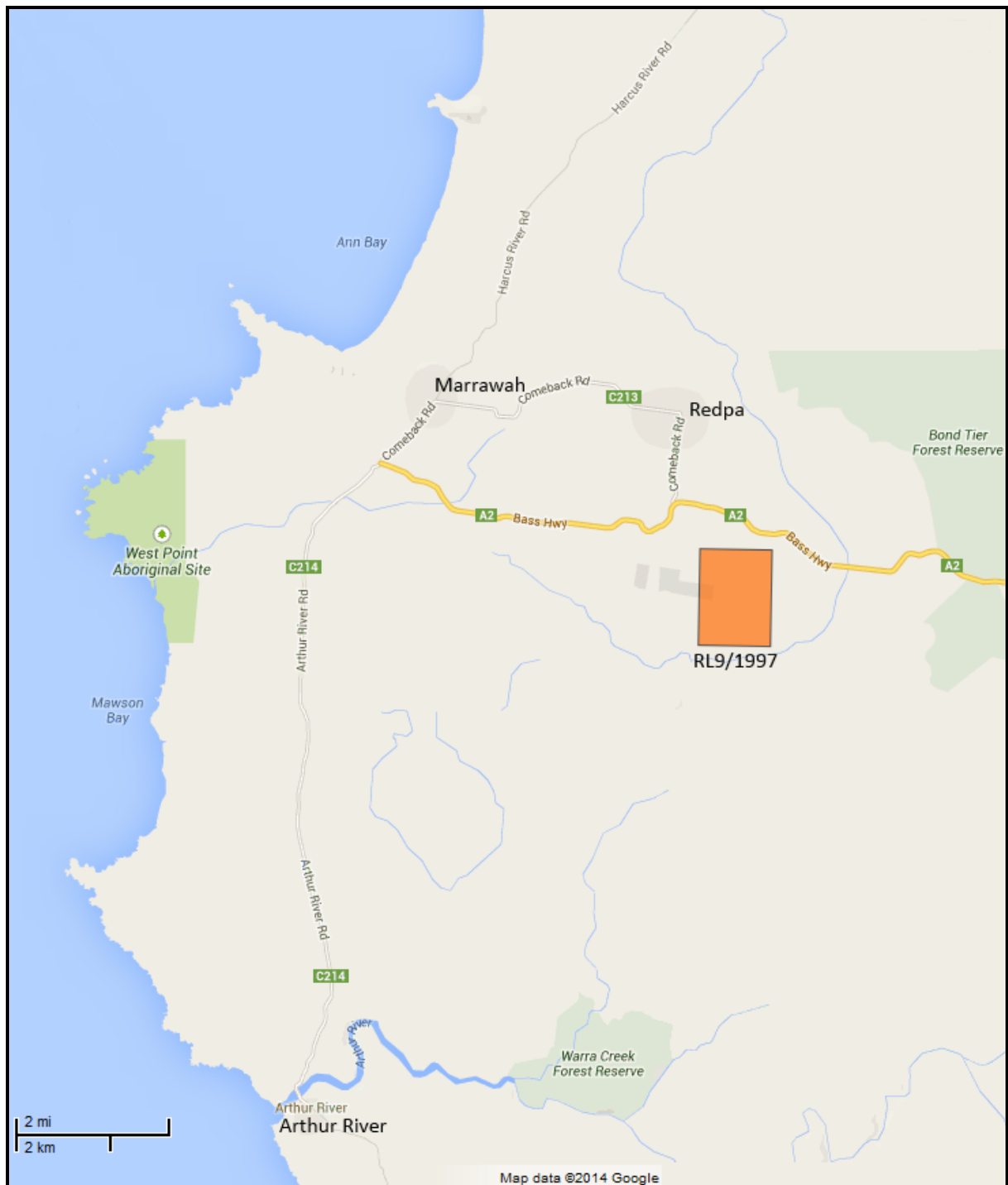
Threader, V.M. 1995. Annual Report EL31/90 redpa, 32/90 Montague Plains and 33/90 Brittons Swamp. Mineral Holdings Australia Pty Ltd. TCR 95-3735.

Threader, V.M. 1996. Annual Report EL31/90 Redpa and EL33/90 Togari. Mineral Holdings Australia Pty Ltd. TCR 96-3895

Threader, V.M. 1997. Annual Report EL31/90 Redpa and EL33/90 Togari Mineral Holdings Australia Pty Ltd. TCR 97-4052

7.0 KEYWORDS

Redpa, Marrawah, Limestone, Dolomite, Magnesian Limestone, Tertiary, Precambrian



PLAN 1: Location Diagram - RL9/1997 Redpa

APPENDIX A

REDPA LIMESTONE ORE RESERVE CALCULATIONS

1. DRILL HOLE METHOD

Sixteen RAB holes have been drilled into the limestone. Hole depths range from 4.5 to 15 metres. They total 154.2 metres and average 9.63 metres. Cavities were encountered in almost every hole especially on the contact with the underlying dolomite. They range from 1 to 7 metres and total 44.5 metres with an average of 28.9% of the total thickness of the limestone.

The area of the main Coffeys Hill to Michaels Hill outcrops covers an area of 43.55 hectares which, with an average thickness from the drill holes of 9.63 metres, gives 4,193,865 cubic metres. With a limestone density of 2.55 tonnes per cubic metre, this equates to 10.7 million tonnes.

There are seven other small outliers of limestone, totalling 659,000 tonnes. The great majority of that occurs on Edwards Hill but that is where the landholder's home is located and it is very unlikely any of the outliers will ever be mined so they have not been included them in any of the resource calculations.

The limestone outcrops show typical fluted weathering with numerous sink holes and dry gullies. At least 10% should be deducted from the total resource to cover this in addition to the 28.9% cavities. To round things off, a total of 40% has been deducted, leaving ***a total of 6.4 million tonnes of limestone.***

2. MEASURING CONTOURS METHOD

Contour intervals on the 1 to 25,000 maps are at 10 metre intervals and the geology outlines can be superimposed on them in the government's online Land Information System Tasmania map service (LISTmap) to provide a volume estimate.

Using this method the initial resource is 10.2 million tonnes which, with a 40% discount, suggests ***a resource of 6.1 million tonnes of limestone.***

3. SECTION METHOD

A series of section lines were drawn at 100 metre intervals across the Coffeys Hill and Michaels Hill resource. The area of limestone on each section was calculated and projected half way between adjacent sections to get a volume and tonnage. Using this method, and again deducting 40%, ***the resource is 5.9 million tonnes of limestone.***

CONCLUSION

The figures obtained from the three calculation methods are remarkably close. The 6.4 million tonne figure from drill data is probably a little high as the drill holes were sited higher up the hill than necessary to provide a true average depth. The contour and section results are very close and if we simply average them we obtain:

A RESOURCE OF 6.0 MILLION TONNES OF LIMESTONE.

Because of the amount of drilling and the completely outcropping nature of the resource ***it could be classed as an Indicated resource under the JORC Code.***

T W Dickson 12/08/2015