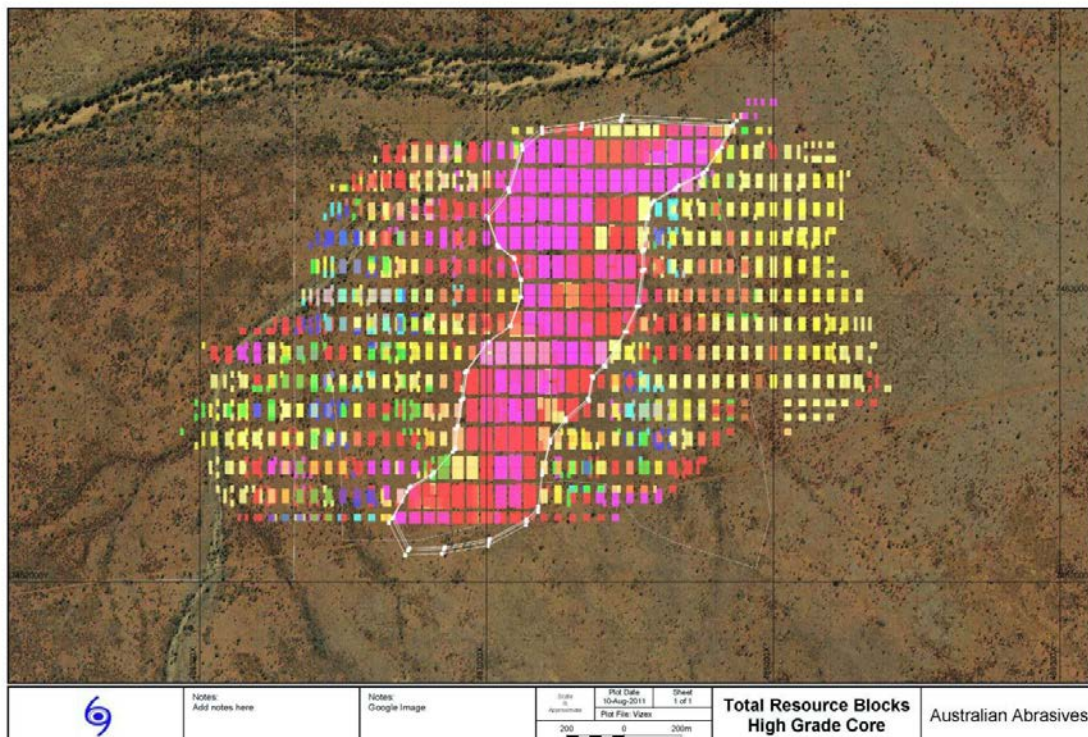


## **AustralianAbrasiveMinerals Pty Ltd**

### **Harts Range Spinifex Bore Garnet Project Annual Technical Report For the period 29<sup>th</sup> November, 2013 to 28<sup>th</sup> November, 2014 ML28614**



Resource Blocks showing high grade core

TARGET COMMODITY: GARNET

Map Sheet: Alice Springs, Alcoota,  
Riddoch,

1:250,000  
1:100,000

PROJECT OPERATOR: **AustralianAbrasiveMinerals Pty Ltd**

Author: John Baxter

8<sup>th</sup> February, 2015

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## EXECUTIVE SUMMARY/ABSTRACT

The Harts Range Spinifex Bore Project tenements EL24360, EL24378, EL28696 and EL30318 are located along the valley of the Plenty River and cover approximately 512km<sup>2</sup> or 136 blocks. ML28614 is the centre piece of the tenement block as it contains a garnet resource estimated to contain 23.1Mt of sand containing 1.2Mt of garnet in the measured category and 44.5Mt of sand containing 2.65Mt garnet in the Inferred category. ML28614 also contains a bore field which can supply process water at a rate of 1,210 m<sup>3</sup>/day (14 l/s). The garnet resource and the identified water source are the key factors underlying the future success of the project. Mining is scheduled to begin in 2015.

During the 2013-2014 exploration period Australian Abrasive Minerals Pty Ltd (AAM) have:

- Undertaken further water exploration and analysis of the stratigraphy
- Processed bulk samples previously collected to refine the flow chart for the plant
- Undertaken detailed metallurgy directed at bi-products from processing
- Completed a Mine Management Plan for the project development
- Successfully negotiated financing of the project to ensure production will begin in 2015

This report outlines the work that has been undertaken.

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## INTRODUCTION

The Harts Range Spinifex Bore Project is located along the valley of the Plenty River and includes approximately 433km<sup>2</sup> or 111 blocks of tenements surrounding ML28614. To date more than \$2M has been spent on the tenements. A garnet resource has been identified and estimated to contain 23.1Mt of sand containing 1.2Mt of garnet in the measured category and 44.5Mt of sand containing 2.65Mt garnet in the inferred category (Coxhell, 2014). The Mining Lease contains a bore field which can supply process water at a rate of 1,210 m<sup>3</sup>/day (14 l/s) (Rockwater,2007).

In 2013-2014 the majority of the funds were directed toward completion of funding to develop the mine at Spinifex Bore by completion of a feasibility study and satisfying requirements for independent funding. In 2013-2014 plant an equipment has been purchased.

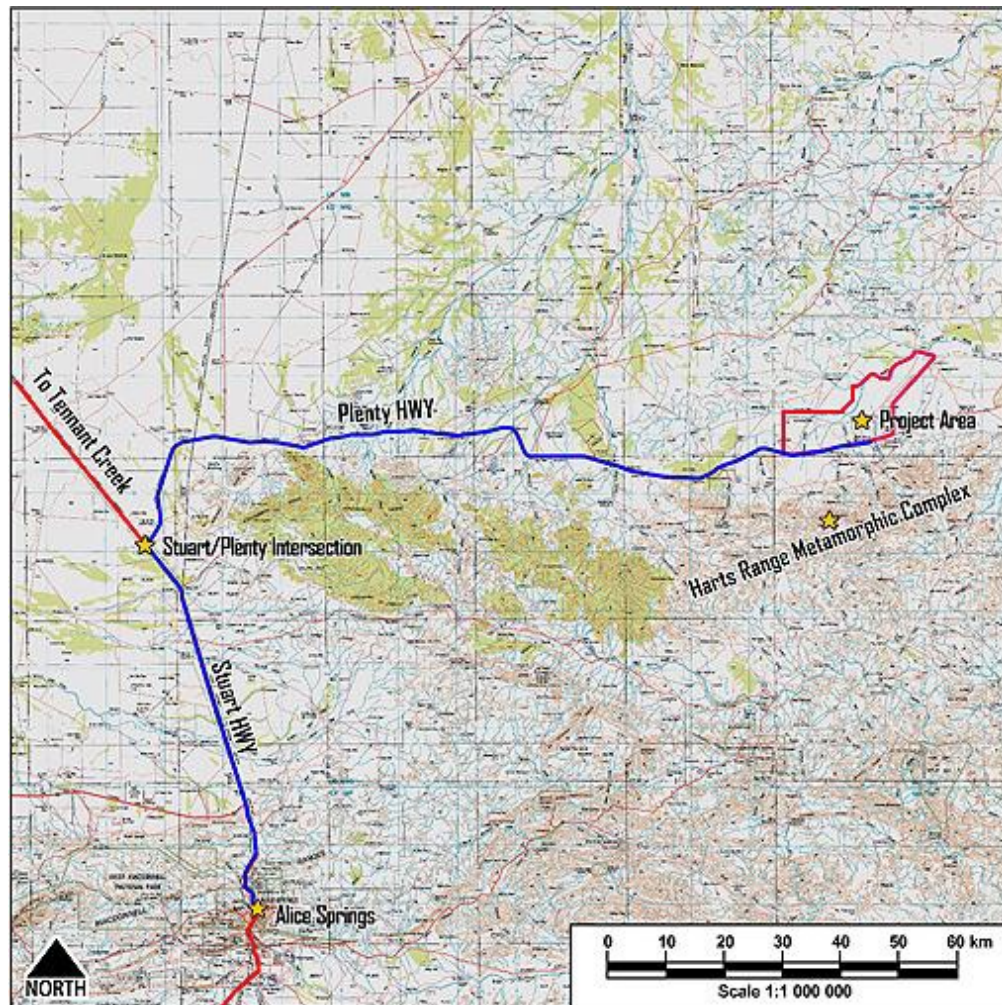
In this reporting period 29<sup>th</sup> November, 2013 to 28<sup>th</sup> November 2014 the main focus has been establishing final approvals for the project, completing a feasibility study, finalising funding of the project. A short drilling program was undertaken in 2014 as approved in the Mine Management Plan on ML28614 to follow-up drilling in 2013 on EL24360. The location of the drill holes and results are reported her in Appendix 1.

## Location

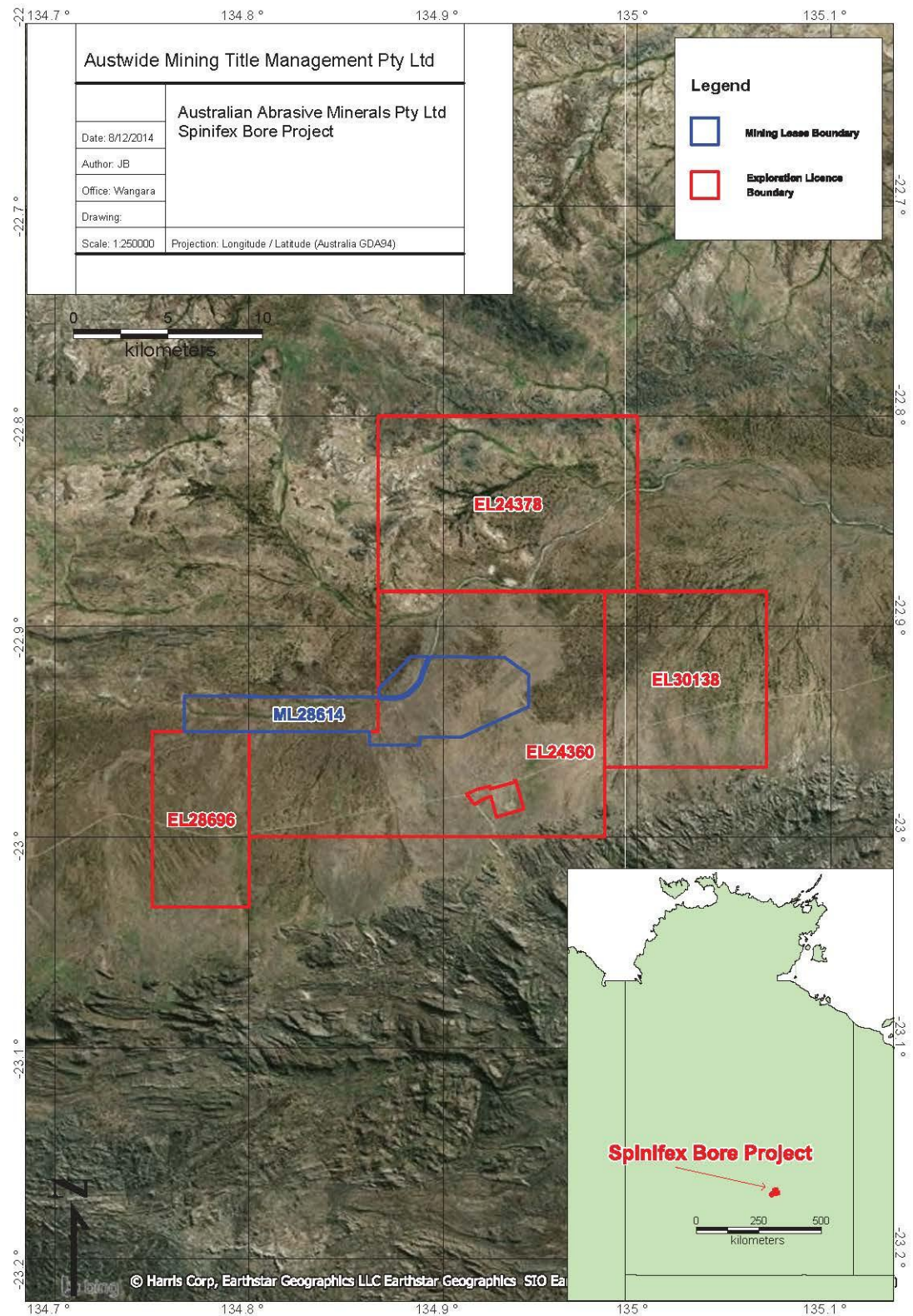
The Harts Range Spinifex Bore Garnet Project, located within the Northern Territory, is approximately 134km northeast of Alice Springs (Figure 1). The project is accessed via travelling north along the Stuart Highway for 68km then east along the Plenty Highway for a further 143km. The first 84km along the Plenty Highway is sealed after which the remainder of the access is unsealed; with loose gravels and corrugations regularly encountered. A turn off onto a pastoral track heading north from the Harts Range police station leads into the project area.

The Plenty Highway provides excellent access to the Mining Lease. The Mining Lease is part of the Harts Range Spinifex Bore Garnet Project and all tenements are shown in Figure 2.





**Figure 1 Location Plan for Harts Range Spinifex Bore Project 2014**



**Figure 2 Locations of Australian Abrasive Minerals Pty Ltd Tenements, 2014**



## Previous Work and Acquisition

Australian Abrasive Minerals Pty Ltd ('AAM') acquired the Harts Range Spinifex Bore Garnet Project from Matilda Zircon Ltd in 2009. Matilda (previously Olympia Resources Ltd) had previously conducted extensive work on the Aturga Project about 15 km to the west of the Harts Range Spinifex Bore Garnet Project identifying a deposit with 27.5Mt of sand containing 2.4Mt of garnet in Measured and Indicated categories. Matilda had also conducted reconnaissance drilling in the vicinity of the Harts Range Spinifex Bore Garnet Project and reported 51.7Mt of sand containing 3.8Mt of garnet in the Inferred category (Baxter and Stewart, 2009).

## Australian Abrasive Minerals Activities

In 2010 Australian Abrasive Minerals undertook a comprehensive resource drilling programme over a portion of the Inferred resource area identified by Matilda and identified 23.1Mt of sand containing 1.2Mt of garnet in the Measured category and 30.6Mt of sand containing 1.6Mt garnet in the Inferred category (Coxhell, 2010).

In 2012 Australian Abrasive Minerals completed a feasibility study on the identified resource in an endeavour to secure finance for development of the deposit. In 2013 AAM undertook a short exploration drilling program with a view to extend the resource and to further understand the stratigraphy in the district. Heavy mineral analysis of this program was completed in 2014.

Subsequently the data was reviewed and an update of the resource estimate by Coxhell (2010) was made. This concluded that the Inferred resources have been increased to 44.5Mt of sand containing 2.65Mt of garnet (Coxhell, 2014).

The breakdown of expenditure in 2013-2014 is shown in

**Table 1 Expenditure on ML28614 2013-2014**

	ML28614
Geological	\$24,925
Geochemical Activities	
Geophysics	
Drilling	\$32,118
Bulk Sampling	\$3,745
Rehabilitation	\$3,500
Pre-Feasibility	\$22,158
Office Studies	\$19,132
Overheads	\$6,000
<b>Total</b>	<b>\$111,578</b>

It is essential for the Harts Range Spinifex Bore Garnet Project that there is a supply of water for the life of the project. In 2013-2014 a detailed review of all data relating to stratigraphy in the district was completed with a proposal for further drilling. In 2013-2014 four bores were drilled to test the potential of the calcrete and shallow aquifers.

## **GEOLOGICAL SETTING –EXPLORATION RATIONALE**

### **Physiography**

The Harts Range Spinifex Bore Garnet Project covers the floodplain of the Plenty River predominantly over the Kanandra Land System. It includes alluvial plains of Stones, Eblana, Ulgama, Watson and Brett Creeks.

The Kanandra System is characterized by sparsely timbered, red sandy plains on the north side of the Harts Range. The system can contain low dunes that particularly occur at the gradation to the Simpson land system which is characterized by large dunes.

The vegetation of the Kanandra system within the project area is dominated by scattered Ironwood trees (*Acacia estrophiolata*), tall shrubs of Witchetty Bush (*Acacia kempeana*), Cassia (*Senna artemisioides* subsp. *filifolia*), low shrubs such as Saltbushes (*Rhagodia* species) and grasses (*Aristida* species and *Eragrostis* species).

### **Geology and Mineralisation**

Garnet bearing sands in paleochannels have been identified along the Plenty River floodplain from Aturga Creek (west of the Project) to Entire Creek (east of the Project). Australian Abrasive Minerals focussed their exploration in the vicinity of the bore field identified around Spinifex Bore concentrating on the floodplains of the Plenty River and Stones, Ulgama and Watson Creeks.

The stratigraphy of the region is now well known based on drilling and pitting, that has been conducted on the tenements over the past 10 years.

Previous drilling for water on EL24360 has identified that to the south of the project the sand is underlain by Tertiary sediments of the Waite Formation and Ambalindum Sandstone. It is in the Ambalindum Sandstone that the aquifer that will eventually supply the treatment plant for the Harts Range Spinifex Bore Garnet Project. However the potential of improving our understanding of the local stratigraphy and to test the potential of the calcrete layer some drilling was conducted in 2013.

### **Exploration Index Map**

In 2013-2014 two holes were drilled within the boundaries of ML28614 to examine the stratigraphy and potential for shallow aquifers in the project area. Two extra holes were drilled to the north in EL24360. The locations are shown on Figure 3.



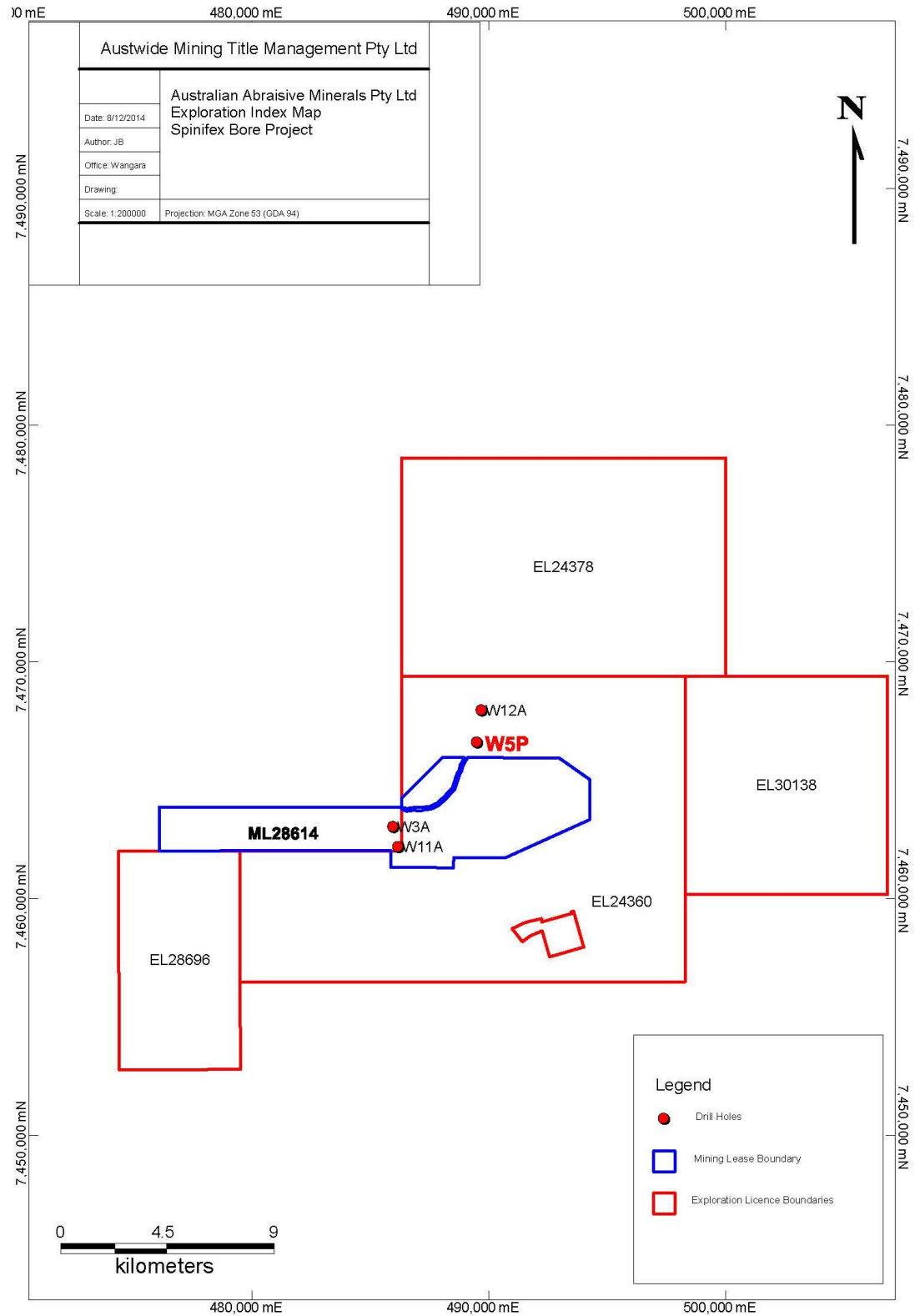


Figure 3 Exploration Index Map

## Geological Studies

In July, 2014 AAM engaged John Barnett and John Baxter to undertake a full review of all previous work on stratigraphy and water potential in the district.

This resulted in a staged exploration and development programme being proposed. Phase 1 drilling was completed and the results led to a recommendation that the program should move to Phase 2B (Appendix 1) as follows:

Phase 1: Drilling and testing of two sites, HR137(W3) and HR148(W5) where previously drilled shallow exploration holes had encountered groundwater. Any bore with potential significant yield to be cased and tested by pumping.

Redevelopment by airlifting of five existing bores in the Spinifex Borefield: OLY1, OLY4, OLY7, OLY8 and OLY9.

Phase 2A: If either or both sites drilled in Phase 1 proved successful, drilling of up to six additional sites on magnetic or structural lineaments in the same area.

Phase 2B: If Phase 1/Phase 2A unsuccessful, drilling of up to six sites aimed at identifying potential eastward and western extensions to the Spinifex Borefield.

Phases 1 and 2A were carried out by Tomlin Drilling under the supervision of Hydrogeologist John Barnett. The location of the bores is shown on Figure 4.

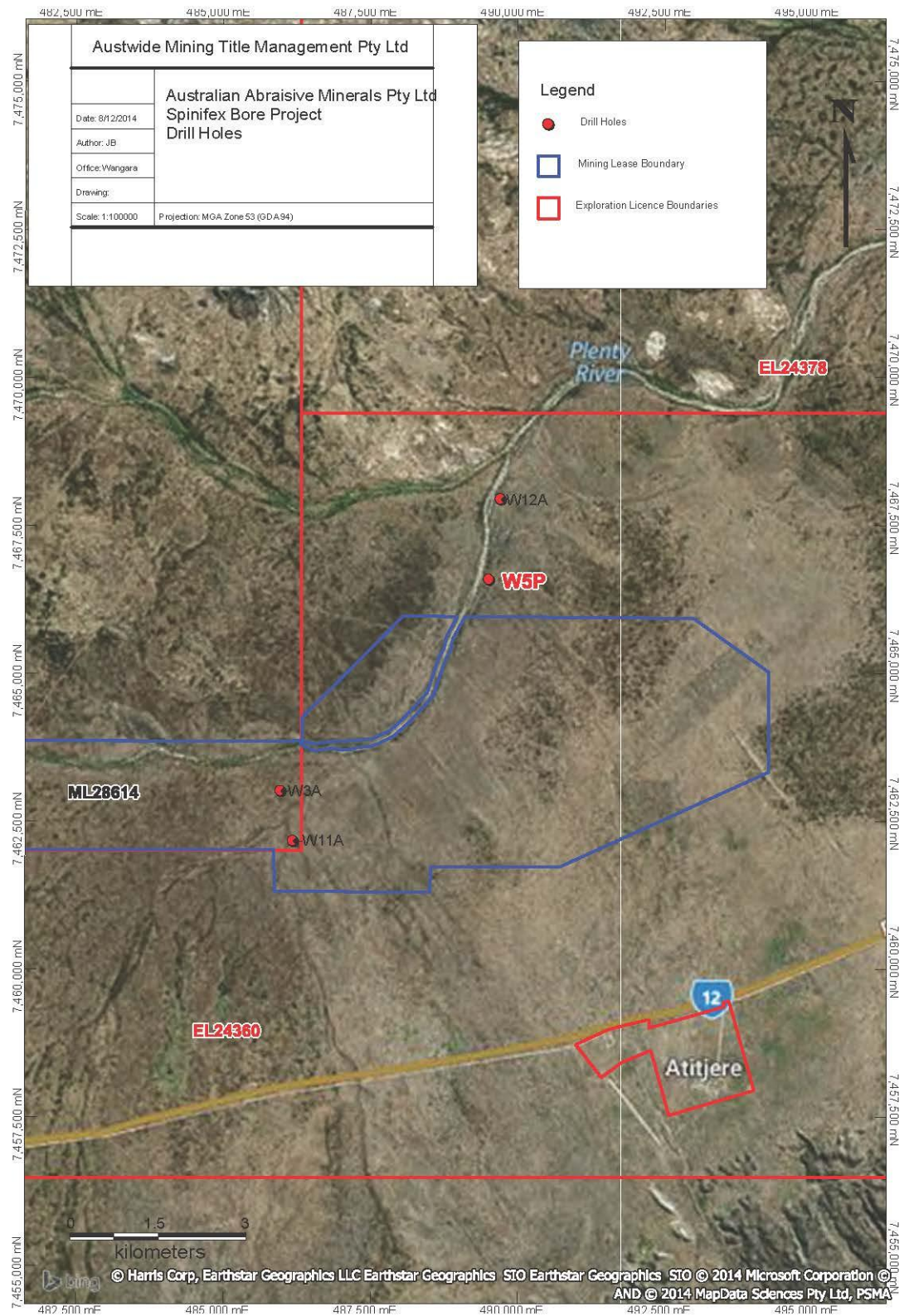


Figure 4 Exploration Bores 2014

The drilling program led to the conclusion that the calcrete was not a particularly strong aquifer and that the potential for shallow aquifers was not good. In particular:

1. Bore W3A drilled to 42m returned a yield of about 0.1l/s insufficient to consider as a supply bore.
2. Bore W11A drilled to 36m had a very slight seepage from above 26m.

## **Mineralogy and Metallurgy**

IMO reviewed the suite of economic minerals within the Harts Range Spinifex Bore Garnet Project and concluded that:

- The potential to recover “D” grade product has been proven
- By manipulating the hydrosizers operating line more “C” grade garnet can be produced than previously expected particularly around the 250µm limit
- Fine magnetite, coarse magnetite, fine ilmenite, coarse ilmenite and “D” grade garnet can be effectively produced

The complete report is in Appendix 2.

## **Remote Sensing and Geophysics**

No remote sensing or geophysics was done during 2013-2014.

## **Surface Geochemistry**

No soil or grab samples were taken during 2013-2014.

## **Drilling**

As described above two exploratory holes were drilled during 2013 – 2014 on ML28614. The programme was of not successful.

## **Geotechnical Studies**

No geotechnical studies were completed in 2013-2014

## **Resource estimation**

No further resource estimations were undertaken in 2013-2014.

## **Mine Development**

Financing was completed and plant acquired during the period e.g. Appendix 3



## BIBLIOGRAPHY

Barnett, J.C., 2014, Report on Groundwater exploration at Spinifex Bore (August-September 2014 for Australian Abrasive Minerals

Baxter, J.L., 2006. *Resource and Exploration Drilling Programme 2006. Aturga Minesite, Marshall River, Jinka & Spinifex Bore North*. Olympia Resources Ltd internal report OLY06/093.

Baxter, J.L. and Doepel, J.J.G., 2004. *Riddoch Garnet-AMH project. Resource and Reserves report (updated May, 2004, Olympia Resources Ltd*. CRM Report WA04/020.

Baxter, J.L. and Stewart, S, 2009, Revision Of Resources At Aturga Abrasives Project Including Detailed Mineralogy January 2009: Olympia Report OLY09/001

Baxter, J.L., 2012, Jinka/Mt Riddock Regions, Annual Technical Group Report For the period 16<sup>th</sup> October, 2011 to 15<sup>th</sup> October, 2012, EL24360, EL24378, EL24641, and EL25098 , GR078/09

Bunter, J., Goodall, N. and Gazzard, P., 2008, Preliminary Report On Metallurgical Test Work Program: Olympia Report OLY09/011

Chuck, R.G., 1980, Annual Report on Exploration in EL1861, Mount Riddoch, NT for the period 22<sup>nd</sup> May 1979 to 21<sup>st</sup> May 1980: Alcoa Report

Coxhell, S., 2010, Resource Estimation Report for Australian Abrasive Minerals Pty Ltd: Coxrocks Report August, 2010

Coxhell, S., 2010, Australian Abrasives, Harts Range and West Kimberley Package. Unpublished Report, Nov., 2010

Coxhell, S., 2014, AAM Spinifex Bore Garnet Deposit: Additional Inferred Resources: Memo January, 2014

Doepel, J.J.G., 2003. *Harts Range Project 2002 Drilling Report, Exploration Licences 10150 & 9190, Operator: Olympia Resources NL*. CRM Report WA03/001.

Lennartz, R., 2007. *Aturga Minesite, Spinifex Bore and Exploratory Water Bore Drilling Report*. CM&ES Report OLY07/009.

McQuire, T., 2007, Drilling Report, Harts Range Project, Western Australia, Report OLY07-001

Roberts, V.T., 2007, Reconnaissance Inspection of Uranium Anomalies, Harts Range Project (of Olympia Resources Ltd): Unpublished Report No: 071113

Rockwater, 2007, Harts Range Project. Borefield Drilling Programme and Evaluation of groundwater supply of 1210m<sup>3</sup>/d (14l/s). Unpublished Report No. 321.1/07/06

Stewart, S. and Baxter, J.L., 2008, *Update of Resources at Aturga Abrasives Project, June, 2008* Olympia Resources Report OLY08/003

Stewart, S., 2008, Mineralogy Report 2008 Harts Range Garnet Project Northern Territory Olympia Report OLY08/033