

## Metallurgical Testwork program to commence at Morille tungsten-tin project

ASX via e-lodgement:  
17 December 2013

Plymouth Minerals Limited (ASX: PLH) ("Plymouth", "the Company") is pleased to announce that it has commenced metallurgical testwork on a bulk sample of Run Of Mine (ROM) mineralisation from the Morille tungsten-tin Project (Morille) in Spain.

The Company has selected approximately 20 tonnes (t) of mineralised material mined at the Alegria mine, within the Morille project area, which will now be transport to Perth, Western Australia where it will undergo process testwork.

The material was selected from the 2,000t on-site stockpile (Figure 1) at the Alegria mine, which was the largest historical mine in the Morille project area. 18t was crushed using a secondary crusher prior to shipment and 2t was left uncrushed.

The test work will be conducted to confirm the optimum operating conditions for each stage of the process. This will include a comminution circuit to achieve the particle size required for downstream processing. This process will also investigate a range of traditional gravity concentration techniques including: Dense media separation, spiral classifiers, cyclones and circular jigs. Froth flotation cells, magnetic separation and dewatering testwork will be also completed to enable the design of the most efficient cost effective process available. This is advanced stage work given the recent acquisition of the project and shows the benefits of a brownfields project.

The majority of the bulk sample has been processed through a jaw crusher in Spain (Figure 2, 3) prior to shipment to Australia. A smaller amount was not crushed and transported whole for rock hardness testing. Testwork will begin in January 2014, and will be ongoing. Results are anticipated to be announced during Q1 2014.

Also, the Company plans to take additional samples for tin process testwork from upcoming Diamond drilling, scheduled for Q2 2014. Historic tin mines covering a strike of 400 metres and to a depth of 75 metres were exploited in the western portion of the Morille project area in the 1970's (although records are poor for production specifications) and the majority of ore mined to date was scheelite (tungsten) rich.

### Plymouth Minerals Limited

**ASX: PLH**

#### Capital Structure

(as at 30 September 2013)

32,150,000 shares  
6,000,000 options 30c

10,716,667 options 25c

Cash \$2.5m

#### Board of Directors

Charles Schaus  
Non Exec Chairman

Adrian Byass  
Managing Director

Steve Brockhurst  
Nicholas McMahon  
Non Exec Directors

Rob Orr  
Company Secretary

#### Contact:

[www.plymouthminerals.com](http://www.plymouthminerals.com)

Adrian Byass  
Managing Director  
Plymouth Minerals Ltd.  
E: [abyass@plymouthminerals.com](mailto:abyass@plymouthminerals.com)

James Moses  
Media & Investor Relations  
Mandate Corporate  
[james@mandatecorporate.com.au](mailto:james@mandatecorporate.com.au)  
M: +61 420 991 574

The Morille project is located in the Salamanca Province in northwest Spain. Plymouth acquired an initial 80% interest in the project (ASX announcement, 22 October 2013) and retains the right to earn up to 100% of the project from its partner, Aurum Mining PLC (AIM: AUR).



Figure 1: ROM material being taken from Alegria stockpile

This testwork is designed to confirm historical documented concentrate specifications, construct a Pre-feasibility level process flow sheet and also examine the possibility of creating a pre-concentrate that could be transported using the region's excellent infrastructure to other operations or proposed operations in the region.

Morille is a brownfields project and previous production occurred until the 1980's, at which time scheelite concentrate was being produced at two separate plants from several independent, privately owned mining operations within the current tenement area.

The larger of the two plants was located at the Alegria mine site and it produced up to 30,000 mtu of tungsten trioxide ( $WO_3$ ) concentrate per year prior to closure, at a grade in excess of 70% contained  $WO_3$ . ROM material in the last 2 years until 1985 was between 0.4-0.8%  $WO_3$ . Processing at the Alegria plant was conducted using gravitational methods and involved two jig tables, pre-concentrate and concentrate cells. Extracts from IGME reports in 1985 stated that, "the recovery was very high favoured by the coarse nature of the scheelite".

Tungsten production from the project area in the 1980's was predominantly for the domestic market, but was also exported to Japan, Sweden and Germany. Records and product specification requirements for the local consumers (Bonaster S.A. and Metalurgia y Ferroaleaciones Especiales)

---

is useful to establish minimum specification and maxima levels for detrimental elements. From these offtake requirements it can be confirmed Morille produced a very high grade and low impurity concentrate, from very low technology processing (Table 1).

**Table 1: Quality requirements for scheelite concentrate by the two national buyers being supplied by Morille concentrate in the 1980's.**

Element	Industrisa Bonastre S.A	Metalurgia y Ferroaleaciones Especiales S.A
Element grades in percent (%)		
<b>WO<sub>3</sub></b>	<b>76-78</b>	<b>70-75</b>
MnO	0.2-1.0	0.2-1.0
SiO <sub>2</sub>	0.4-0.5	1.0-2.0
Cu		0.02
As	0.02	0.02
Sn	0.02-0.2	0.1
FeO		0.5-2.0
SnO <sub>2</sub>		0.15-0.50

These specifications are high and typically, in the current market, concentrate is produced for sale at 65% contained WO<sub>3</sub> in the current market. Alegria concentrates would be viewed as a premium concentrate in the current market.



**Figure 2: ROM sample at crushing facility supervised by Plymouth staff**



Figure 3: ROM material crusher using secondary jaw crusher prior to bagging and shipment

Plymouth acquired the Morille tungsten-tin project in October 2013. Plymouth has recently commenced fieldwork at the Morille project and plans to continue into 2014 with percussion drilling activity proposed to start in Q1 2014 and diamond drilling in Q2 2014.

Morille is well situated with access to excellent infrastructure with power, water and roads in close proximity. Plymouth believes that these benefits are a great advantage to a junior company and cannot be underestimated.

**For further information contact;**

Adrian Byass  
Managing Director  
Plymouth Minerals Limited  
E: [abyass@plymouthminerals.com](mailto:abyass@plymouthminerals.com)

James Moses  
Media and Investor Relations  
Mandate Corporate  
M: +61 420 991 574  
E: [james@mandatecorporate.com.au](mailto:james@mandatecorporate.com.au)