



16 April 2019

## ASX ANNOUNCEMENT

### Commencement of Pre-Feasibility Study for Mt Mulgine Tungsten Project

Australian tungsten developer, Tungsten Mining NL ("TGN" or the "Company") is pleased to advise the commencement of work on a Pre-Feasibility Study (PFS) for large scale operations at the Mt Mulgine Project.

#### Highlights

- ✘ Strategic review and preliminary economic assessment (Scoping Study) of large scale mining and processing activities at Mt Mulgine strongly supports implementation of a PFS.
- ✘ PFS to assess options and recommend a single solution to take forward into the definitive feasibility study (DFS) stage, for the production of tungsten concentrate and by-products, including molybdenum, from Mulgine Hill and Trench deposits at Mt Mulgine.
- ✘ Scoping Study highlights Mt Mulgine's potential to establish large scale, long life mining and processing operations for the production of tungsten concentrate and valuable by-products.
- ✘ The PFS will utilise Tungsten Mining's in-house team supported by global specialists to ensure international best practice in delivering a study that will meet the requirements of potential strategic partners, offtake customers and financial institutions and the completion of a DFS ahead of construction.
- ✘ Tungsten Mining is fully funded to complete the PFS which is expected to take approximately 12 months.

Tungsten Mining's CEO Craig Ferrier commented, "*The commitment to the Pre-Feasibility Study for large scale operations at Mt Mulgine is a fantastic endorsement of the project and its potential to deliver substantial value to shareholders. We remain committed to the goal of becoming a major producer of tungsten concentrate and believe that the proposed increase in the scale of activities at Mt Mulgine will greatly assist us to achieve this.*"

Tungsten Mining has completed a substantial body of work at its Mt Mulgine Tungsten Project with an initial focus on the commencement of small scale activities from the Mulgine Hill deposit. Metallurgical test work, resource drilling, process design and engineering work completed in the second half of 2018 has been invaluable in understanding the requirements for successfully establishing operations at Mulgine Hill and, in turn, for larger scale activities incorporating the Mulgine Trench deposit.

Following the 2018 infill drilling program and update of the Mulgine Hill geological resource model, a strategic review was undertaken, as the recent infill and sterilisation drilling programs had highlighted the much greater extent of tungsten and molybdenum mineralisation at Mt Mulgine.



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A focus of this review was an assessment of the potential for, or earlier implementation of, large scale operations incorporating both the Mulgine Hill deposit (JORC – 2012 Mineral Resource estimate based on a 0.10% WO<sub>3</sub> cut-off of 7.3Mt at 0.22% WO<sub>3</sub> and 129ppm Mo comprising Indicated Resources of 5.6Mt at 0.23% WO<sub>3</sub> and 133ppm Mo and Inferred Resources of 1.7Mt at 0.19% WO<sub>3</sub> and 113ppm Mo) and the much larger Trench deposit (JORC – 2012 Mineral Resource estimate based on a 0.10% WO<sub>3</sub> cut-off of 63.7Mt at 0.17% WO<sub>3</sub> and 250ppm Mo comprising Indicated Resources of 0.4Mt at 0.14% WO<sub>3</sub> and 400ppm Mo and Inferred Resources of 63.4Mt at 0.17% WO<sub>3</sub> and 250ppm Mo) (refer Annexure 1).

Information from the studies completed by Tungsten Mining and previous project owners was utilised to complete pit optimisations and a preliminary economic assessment of alternative operating scenario's for the processing of material from both the Mulgine Hill and Trench deposits, the sequencing of mining, recovery of tungsten +/- molybdenum and at differing rates of throughput. The outcome of the review overwhelmingly supports the implementation of a PFS into large scale operations at Mt Mulgine. The preferred option to be assessed in the PFS will be the mining and processing of material from both deposits for the production of tungsten (scheelite) concentrate and a molybdenum rich sulphide concentrate.

The Scoping Study highlighted Mt Mulgine's potential to establish large scale, long life mining and processing operations for the production of tungsten concentrate and valuable by-products, including molybdenum.

The PFS will utilise Tungsten Mining's in-house team supported by global specialists to ensure international best practice in delivering a study that will meet the requirements of potential strategic partners, offtake customers and financial institutions and the completion of a DFS ahead of construction.

It is intended that one of the outputs of the PFS will be the declaration of a maiden ore reserve for the larger Mt Mulgine Project and accordingly resource definition will be a major component of the program. Planned activities include:

- A phased approach to resource definition and infill drilling to increase the mineral resource classification to Indicated status across the optimised pit shells. This will also entail updated Mineral Resource estimates for the Trench deposit over the course of the study period;
- Completion of extensional drilling of known mineralisation open areas and sterilisation drilling for planned infrastructure locations;
- Mine design and optimisation of the mining schedule, geotechnical studies and definition of maiden ore reserves;
- Metallurgical test work on the material from Trench, including x-ray ore sorting trials, gravity and flotation test work for the separation and recovery of tungsten and by-products, including molybdenum;
- Process design and engineering for the tungsten processing plant and associated non-process infrastructure including the tailings storage facility, power generation and site water;
- Assessment of existing and exploration for additional ground water resources; and
- Completion of any additional native flora, fauna, aboriginal heritage surveys and regulatory approval processes.

We are confident that the planned program of work, building on the substantial body of work completed to date, will provide Tungsten Mining the ability to unlock substantial value associated with the entire Mt Mulgine project. Work has commenced on a number of the work streams, including the recovery of metallurgical sample from diamond drilling completed at Trench in October 2018.

-ENDS-

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**Competent Person's Statement**

*The information in this report that relates to Exploration Results and Data Quality is based on, and fairly represents, information and supporting documentation prepared by Peter Bleakley, who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Bleakley is not a full-time employee of the company. Mr Bleakley is a consultant to the mining industry. Mr Bleakley has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Bleakley consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

*The information in this report that relates to the Mulgine Trench and Mulgine Hill Mineral Resources are extracted from the report titled 'June 2016 Mineral Resource Update and Core Sampling' released to the ASX on 23 June 2016, and the report titled 'Update on Activities at Mt Mulgine' released to ASX on 12 April 2019 respectively and available to view at [www.tungstenmining.com](http://www.tungstenmining.com). Tungsten Mining have drilled an additional 6 RC and five diamond holes into the Mulgine Trench Mineral Resource. Interpretation of all new data is proceeding and a revised estimate will be released later in 2019. Other than the aforementioned review, the Company confirms that it is not aware of any new information or data that materially affects the information included in the ASX announcement and that all material assumptions and technical parameters underpinning the estimates in original ASX announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original ASX announcements.*

## About Tungsten Mining

Australian tungsten developer, Tungsten Mining NL is an Australian based resources company listed on the Australian Securities Exchange. The Company's prime focus is the exploration and development of tungsten projects in Australia.

Tungsten (chemical symbol W), occurs naturally on Earth, not in its pure form but as a constituent of other minerals, only two of which support commercial extraction and processing - wolframite ((Fe, Mn) WO<sub>4</sub>) and scheelite (CaWO<sub>4</sub>).

Tungsten has the highest melting point of all elements except carbon – around 3400°C giving it excellent high temperature mechanical properties and the lowest expansion coefficient of all metals. Tungsten is a metal of considerable strategic importance, essential to modern industrial development (across aerospace and defence, electronics, automotive, extractive and construction sectors) with uses in cemented carbides, high-speed steels and super alloys, tungsten mill products and chemicals.

Through exploration and acquisition, the Company has established a globally significant tungsten resource inventory in its portfolio of advanced mineral projects across Australia. This provides the platform for the Company to become a major player within the global primary tungsten market through the development of low-cost tungsten concentrate production.

# Annexure 1

## Mt Mulgine – Resource Inventory at 0.10% WO<sub>3</sub> Cut-Off

Class	Tonnes	Grade WO <sub>3</sub> %	Metric Tonne Units	Mo (ppm)	Contained Mo Tonnes
<b>Mulgine Trench (October 2014) <sup>1</sup></b>					
Measured	-	-	-	-	-
Indicated	400,000	0.14	50,000	400	150
Inferred	63,400,000	0.17	10,930,000	250	15,600
<b>Total</b>	<b>63,700,000</b>	<b>0.17</b>	<b>10,980,000</b>	<b>250</b>	<b>15,700</b>
<b>Mulgine Hill (March 2019) <sup>2</sup></b>					
Measured	-	-	-	-	-
Indicated	5,600,000	0.23	1,290,000	133	700
Inferred	1,700,000	0.19	320,000	113	200
<b>Total</b>	<b>7,300,000</b>	<b>0.22</b>	<b>1,610,000</b>	<b>129</b>	<b>900</b>
<b>Mt Mulgine (Total)</b>					
Measured	-	-	-	-	-
Indicated	6,000,000	0.22	1,340,000	151	900
Inferred	65,100,000	0.17	11,100,000	246	16,000
<b>Total</b>	<b>71,000,000</b>	<b>0.18</b>	<b>12,440,000</b>	<b>238</b>	<b>16,900</b>

Note: Totals may differ from sum of individual numbers as numbers have been rounded in accordance with the Australian JORC code 2012 guidance on Mineral Resource reporting.

1. Refer ASX (HAZ) Announcement 5 November 2014, "Hazelwood continues to increase tungsten resource".
2. Refer ASX (Tungsten Mining) Announcement 12 April 2019, "Update on Activities at Mount Mulgine".