

## AIM Announcement

16 April 2014

**TERTIARY MINERALS PLC**  
**[www.tertiaryminerals.com](http://www.tertiaryminerals.com)**  
("Tertiary" or "the Company")

### **Maiden JORC Compliant Mineral Resource Estimate: MB Project**

Tertiary Minerals plc, the AIM traded company building a strategic position in the fluorspar sector, is pleased to announce a substantial maiden, JORC compliant, Mineral Resource Estimate for its MB fluorspar project in Nevada, USA.

#### **Highlights:**

- **JORC compliant Indicated and Inferred Mineral Resource – 38.4 million tonnes grading 10.4% fluorspar (CaF<sub>2</sub>) at 8% CaF<sub>2</sub> cut-off**
- **JORC compliant Indicated Mineral Resource – 8.9 million tonnes grading 10.3% fluorspar (CaF<sub>2</sub>) at 8% CaF<sub>2</sub> cut-off**
- **JORC compliant Inferred Mineral Resource – 29.5 million tonnes grading 10.4% fluorspar (CaF<sub>2</sub>) at 8% CaF<sub>2</sub> cut-off**
- **Total JORC compliant Mineral Resources, aggregating the contained fluorspar (CaF<sub>2</sub>) across the Company's three fluorspar projects (Storuman, Lassedalen and MB Project), more than doubled to approximately 7.8 million tonnes**
- **The Directors believe that the MB fluorspar deposit remains open at depth and in all lateral directions**

**Commenting on today's announcement Managing Director Richard Clemmey** said: "We are delighted to announce this large maiden JORC compliant Mineral Resource Estimate which more than doubles the JORC compliant tonnage of contained fluorspar mineral under the Company's control. This supports our aim to become a reliable long-term and competitive supplier of fluorspar to world markets."

Early stage metallurgical testwork has already commenced on the drill samples with the aim of producing acid grade fluorspar. The Directors believe that further drilling will significantly increase the size of this initial Mineral Resource Estimate as well as upgrading most, if not all, of the Inferred Resource to the Indicated classification. Details of further drilling will be announced in due course.

❖ **CONTENTS FOLLOWING**

**ENQUIRIES:**

<b>Tertiary Minerals plc</b> Patrick Cheetham, Executive Chairman Richard Clemmey, Managing Director		<b>Tel: +44 (0)845 868 4580</b>
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**Detailed Information**

The MB fluorspar deposit is located 19km south-west of the town of Eureka in central Nevada, USA. Eureka is located on US Highway 50 and the main railroad is located 165 km to the north of the deposit providing bulk freight distribution to the east and west of the USA.

The Mineral Resource being reported today for the MB fluorspar project has been prepared by <sup>1</sup>Wardell Armstrong International Limited (WAI) following the guidelines of the <sup>2</sup>JORC Code (2012).

The MB deposit is a large fluorine rich skarn hosted by Ordovician age carbonate sedimentary rocks. The mineralised zone extends for more than a kilometre from the postulated position of an unexposed Cretaceous age granite.

A series of drilling campaigns between the 1960s and the 1980s were completed by various owners, and outlined the potential of the deposit. Assays and geological information from this historical drilling is available but there is limited information on assay procedure and the core has not been located. In 2013 the Company completed a two phase drilling programme comprising of 26 holes and totalling 3,223m across three areas of the deposit and this information forms the basis for the current Mineral Resource Estimate. A table of significant drilling results from the 2013 campaign was included in the announcement made by the company on 10<sup>th</sup> March 2014 and a map showing the location of the 2013 drill programme is available on the Company's website at:

<http://www.tertiaryminerals.com/projects/fluorspar-projects/mb-fluorspar-nevada-usa>

The Company adopted rigorous QAQC procedures including field, preparation and internal and external pulp duplicates, blank samples and series of standard samples in line with best international practice. Results were generally satisfactory.

The Mineral Resource estimate and classification has been prepared in accordance with the Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves JORC Code (2012). Sample data was imported and verified before mineralised zones were defined to a cut-off grade of 2.0% CaF<sub>2</sub>. Samples were composited and subsequently used to produce a Mineral Resource Estimate of the CaF<sub>2</sub> mineralisation at the MB project using inverse power distance as the principal estimation method.

The fundamental consideration to classify a Mineral Resource in accordance with guidelines of the JORC Code (2012) is that it has a "reasonable prospect for eventual economic extraction". Mineral Resources are classified, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.

An 'Inferred Mineral Resource' is that part of a Mineral Resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability.

WAI considers that the MB Project has been sufficiently explored to estimate Indicated and Inferred Mineral Resources as defined by JORC Code (2012).

WAI has classified the area of the southern part of the MB Project where the 2013 drilling has been completed roughly on an 80m x 80m grid and at least three north-south profile lines have been completed as Indicated Resources. WAI has classified the remainder of the deposit as Inferred Resources where estimated blocks are within 120m of a 2013 drillhole.

The Mineral Resource is restricted to all material falling within an optimised pit shell created in CAE Mining NPV Scheduler and above a cut-off grade of 8% CaF<sub>2</sub>. The base of the southern pit has a maximum depth of approximately 120m from current surface and the central area pit has a maximum depth of approximately 130m from current surface.

The Mineral Resource Estimate for the MB project is shown below.

<b>MB Deposit Mineral Resource Estimate</b>			
<b>Cut Off Grade 8% CaF<sub>2</sub></b>			
<b>(in accordance with the guidelines of the JORC Code (2012))</b>			
	<b>Density (t/m<sup>3</sup>)</b>	<b>Tonnes (Mt)</b>	<b>CaF<sub>2</sub> (%)</b>
<b>Measured</b>	-	-	-
<b>Indicated</b>	2.6	8.9	10.3
<b>Inferred</b>	2.6	29.5	10.4

### **Further Work**

Early stage metallurgical testwork has already commenced using the samples from the 2013 drilling campaign with the aim of producing acid grade fluorspar from the ore.

The deposit remains open at depth and in all lateral directions and the Company therefore believes that further drilling on the prospect is justified with the aim of:

- Increasing the size of the current Mineral Resource
- Upgrading the already defined Inferred resource into the Indicated category
- Targeting potential higher grade fluorspar closer to the source of mineralisation

Details of future planned drilling will be announced in due course.

### **Foot Notes**

<sup>1</sup>The information in this document that relates to the MB Mineral Resource is based on information compiled by Mr Alan Clarke, a Competent Person who is a Fellow and Chartered Geologist of the Geological Society of London. Alan Clarke is employed by Wardell Armstrong International and has no interest in, and is entirely independent of Tertiary Minerals. Alan Clarke has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in JORC 2012. Alan Clarke consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

<sup>2</sup>JORC is the Australian Code for the reporting of Exploration Results, Mineral Resources and Ore Reserves prepared by the Joint Ores Reserves Committee (JORC) of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and the Minerals Council of Australia.

### **JORC Mineral Resource Accompanying Statements:**

1. Mineral Resources are not reserves until they have demonstrated economic viability based on a Feasibility study or pre-feasibility study.
2. Mineral Resources are reported inclusive of any reserves.
3. The effective date of the Mineral Resource is 14<sup>th</sup> March 2014.
4. All figures are rounded to reflect the relative accuracy of the estimate.
5. Mineral resources are limited to an optimised open pit shell based on appropriate economic and mining parameters.
6. Mineral Resources for the MB project have been classified following the guidelines of the JORC Code (2012) by Alan Clarke, an independent Competent Person as defined by JORC.

7. The Mineral Resource estimate has not been affected by any known environmental, permitting, legal, title, taxation, socio-political, marketing or any other relevant issues.

The information in this release has been compiled and reviewed by Mr. Richard Clemmey (BSc, CEng, MIQ, MIMMM, ARSM) who is a qualified person for the purposes of the AIM Note for Mining and Oil & Gas Companies dated June 2009. Mr Clemmey is a Chartered Engineer and a Member of the Institute of Materials, Minerals & Mining.

*Cautionary Note: Traditional analytical methods measure fluorine content and fluorite (CaF<sub>2</sub> - fluorspar) contents are calculated on the assumption that all fluorine is present as fluorite. Metallurgical testwork reviewed by the Company suggests this is likely although small amounts of fluorine can occur in mica and other minerals commonly present in skarn mineralised systems.*

## Notes to Editors

Tertiary Minerals plc (ticker symbol 'TYM') is an AIM-quoted mineral exploration and development company building a significant strategic position in the fluorspar sector. Fluorspar is an essential raw material in the chemical, steel and aluminium industries. Tertiary controls two significant Scandinavian projects (Storuman in Sweden and Lassedalen in Norway) and a large deposit of strategic significance in Nevada USA (MB Project).

## JORC Code, 2012 Table 1 – Technical Summary

(As required for first time reporting of Mineral Resources under the JORC Code 2012)

### Section 1: Sampling Techniques and Data

Criteria	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Sampling was carried out using a mix of diamond and RC drillholes drilled under contract by Boart Longyear. In total 2 x diamond and 24 x RC holes were drilled.</li> <li>Holes were sampled and assayed at 5 foot intervals.</li> <li>Sample preparation was carried out at American Assay Labs, Reno, USA with the majority of sample analysis being carried out at PANalytical, UK. Both laboratories hold ISO/IEC 17025 accreditation.</li> <li>The vast majority of samples were analysed using Pressed Pellet X-Ray Fluorescence (PPXRF) spectrometry with a subset being subject to check analysis using Fused Bead X-Ray Fluorescence (FBXRF).</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>The 2 x diamond drillholes were drilled using a Boart Longyear LF70 track mounted rig, drilling at HQ diameter.</li> <li>The first two RC holes were drilled using a Foremost Explorer 1500 rig with a 5 ¾" hammer bit (146mm).</li> <li>The remaining RC drilling (22 holes) was carried out by Boart Longyear using a Foremost MPD 1500 tracked rig with a 5 ½ " centre return hammer</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>Drill core sample recovery was logged and recorded by field technicians and subsequently entered in to the drillhole database.</li> <li>Core recovery as generally good and improved with depth.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li>Core and RC chips were logged into an Excel spreadsheet logging system recording lithology, structure and alteration.</li> <li>Every metre of drilling at the MB project has been logged to the same criteria.</li> <li>Core and RC chips were photographed as standard during the logging procedure.</li> <li>Core is stored at American Assay Labs in Reno.</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>Core samples were sawn using a diamond core saw or split using a v-splitter with half core being sent for sample preparation.</li> <li>RC samples were drilled wet and collected from a rig mounted rotary splitter.</li> <li>Core and RC samples were crushed to 90% passing 10 mesh (2mm) before being passed through a Jones riffle splitter to provide a 250g subsample pulverized to 95% passing 150 mesh (105 micron) from which 20g was selected for assay.</li> <li>96 field duplicate samples were taken at a rate of 1:20 from a random point</li> </ul>

Criteria	Commentary
	<p>within a set of 20 during the standard field sampling procedure. Broad agreement was seen in the analysis of the field duplicate analysis results.</p>
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>• Samples were crushed and pulverized to produce a 250g subsample passing 105µm from which 20g was selected for assay.</li> <li>• For the majority of samples CaF<sub>2</sub> grade was determined using Pressed Pellet X-Ray Fluorescence (PPXRF).</li> <li>• Assay data quality was determined through submission of standards, blanks and duplicates.</li> <li>• For the first phase of drilling (2 x diamond and 2 x RC holes) QAQC protocol consisted of 3 blanks, 13 laboratory duplicates and 16 standards per 100 samples.</li> <li>• For the second phase of drilling (22 RC holes) QAQC protocol consisted of 2 x pulp duplicates, 2 x blanks, 6 x standards with 2 each of F=8.99% (AMIS250), F=3.00% (diluted AMIS250) and F=15.80% (diluted SARM15).</li> <li>• In addition field duplicates and preparation duplicates were also analysed as part of the QAQC procedures.</li> <li>• In addition 5% of samples were analysed using Fused Bead XRF.</li> <li>• Field duplicates performed well demonstrating consistent distribution of mineralisation across samples.</li> <li>• Preparation duplicates performed well demonstrating appropriateness of preparation procedure.</li> <li>• Pulp duplicates performed well demonstrating precision of the assaying method.</li> <li>• Analysis of between method duplicates indicated a bias towards PPXRF analysis returning higher grades when compared to FBXRF pointing to a potential inaccuracy in the assaying method.</li> <li>• Blank samples performed well indicating little contamination.</li> <li>• The between laboratory duplicates performed satisfactorily demonstrating no bias between laboratories.</li> <li>• The AMIS 250 standard performed well using PPXRF.</li> <li>• Diluted standards performed well using FBXRF but over reported using PPXRF this is likely due to particle size effects or mineralogical effects as a result of the dilution.</li> </ul>
<b>Verification of sampling and assaying</b>	
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>• 23 of 26 holes were surveyed downhole using a multi-shot Reflex MEMS Gyro tool at intervals of 50 feet.</li> <li>• Two holes were not surveyed downhole as they were plugged before the arrival of the survey technician. One hole was not surveyed downhole after rods had to be blasted free after sticking during drilling.</li> <li>• Downhole surveys were checked mathematically and visually for excessive deviation. No problems were identified.</li> <li>• Drillhole collars were surveyed in co-ordinate system NAD83 Zone 11 using a Differential Global Positioning System DGPS. One hole was not surveyed with DGPS due to heavy snow cover. This hole was one of the twinned pairs and the collar co-ordinates for the twinned DC hole were used for its location during Mineral Resource Estimation.</li> <li>• Topographic data was downloaded from the USGS National Map Website and forms part of the NED dataset (National Elevation Database). Data was provided in raster format and converted to XYZ ASCII by taking the midpoint of the cells. Accuracy of data is stated at 1/3 arc second.</li> </ul>



Criteria	Commentary
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>• Drilling of 16 holes in the south area of the MB project has been completed on a grid at 80-120m spacing with 3 roughly N-S profiles with 4-6 holes on each with one set of twin holes.</li> <li>• Drilling of six holes in the central area of the MB project has been completed on a spacing of 300-320m with one set of twin holes.</li> <li>• Drilling was roughly vertical with little downhole variation in inclination and samples were taken at 5ft intervals.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>• The majority of the drilling (that covering the southern part of the project) has been completed on a grid at approximately 80m centres.</li> <li>• Drilling was carried out roughly vertically from surface.</li> <li>• There is no expected bias due to the orientation of the drilling with respect to the orientation of the mineralisation.</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li>• Samples were transported directly from site to the preparation laboratory by the supervising geologist.</li> <li>• Samples are logged in to a laboratory information management system.</li> <li>• Whilst in storage samples were kept in a secure area.</li> <li>• Chain of custody between laboratories is managed by Tertiary.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>• Internal audits are conducted by all of the analytical laboratories used.</li> </ul>

### Section 3: Estimation and Reporting of Mineral Resources

Criteria	Commentary
<b>Database integrity</b>	<ul style="list-style-type: none"> <li>• The project database is held in Excel spreadsheets.</li> <li>• Data held includes; collar location, downhole surveys, assay information, duplicate sample, standards and blank sample results and geological logging.</li> <li>• Geological logging was initially completed on paper but a standard logging template was subsequently set up and used in excel format.</li> <li>• Validation of the database was carried out during import of the data in to CAE Mining Studio 3 for production of the Mineral Resource Estimate, no major issues were found.</li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>• The Competent Person visited site between 11<sup>th</sup> and 12<sup>th</sup> March 2014. The site visit included a general walkover of the project area, a field inspection of regional geology, inspecting drillhole markers and a visit to the sample preparation laboratory to view drill core and RC samples.</li> </ul>
<b>Geological interpretation</b>	<ul style="list-style-type: none"> <li>• The confidence in the geological formation is considered reasonable.</li> <li>• The geological setting is thought to be a skarn type deposit with fluorine mineralisation developed in a series of Ordovician marine sediments, primarily limestone of the Pogonip Group with some developed in the Copenhagen formation in the overlying Eureka Quartzite, a calcareous unit possibly formed as the result of the formation of dissolution cavities.</li> <li>• Garnet alteration has been logged in holes in the west of the central zone of drilling usually associated with higher temperature alteration and possibly indicating proximity to the source of the fluorspar mineralisation assumed to be a Cretaceous age granite.</li> <li>• Geological logging has been carried out from drill core and RC samples.</li> <li>• Geological logging was used to define sub-domains within the overall model.</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>• The Mineral Resource defined by the 2013 Tertiary drilling is split in to two areas. The southern area is approximately 430m east-west and 600m north to south. The central area is approximately 750m east-west and 550m north-south.</li> <li>• Mineralisation is currently defined to approximately 130-150m below current surface levels</li> </ul>

Criteria	Commentary
	<ul style="list-style-type: none"> <li>Mineralisation is open in all directions from the limit of the Mineral Resource model.</li> </ul>
<b>Estimation and modelling techniques</b>	<ul style="list-style-type: none"> <li>Inverse power distance was used for estimation of CaF<sub>2</sub>% using CAE Mining Studio 3 software.</li> <li>Domains: 2 domains were created, a southern zone and a central zone defined by separate areas of drilling.</li> <li>Grade capping: No grade capping was applied as no outlier values were found after assessment of the assay database.</li> <li>Composites: 5 foot composites were created using lithological wireframes as a control.</li> <li>Variography: No robust directional variograms were calculated for either zone. A relatively robust omni-directional variogram was calculated for the southern zone.</li> <li>Estimation: Estimation was carried out using inverse distance (squared) as the primary method. Ordinary Kriging and Nearest Neighbour estimates were carried out for validation purposes.</li> <li>Maximum extrapolation distance: Up to 120m from nearest 2013 drillhole based on knowledge of geological continuity from historical drilling.</li> <li>A block size of 40m (X) x 40m (Y) x 10m (Z) was used in this model. This compares to an average drillhole spacing of 80m x 80m in the southern part of the deposit and an assumed bench height of 10m. Estimation was carried out in to parent cells only.</li> <li>No previous mining has taken place at site and so no reconciliation study was possible.</li> <li>No assumptions were made regarding the recovery of by-products.</li> <li>The block model was verified by comparing drillhole assays with modelled values visually and statistically by zone. Grade profile plots were also constructed to compare modelled grades and input composite grades.</li> </ul>
<b>Moisture</b>	<ul style="list-style-type: none"> <li>Tonnage is estimated on a dry basis using a bulk in-situ density. No moisture content has been measured.</li> </ul>
<b>Cut-off parameters</b>	<ul style="list-style-type: none"> <li>The Mineral Resource is restricted to all material falling within an NPV Scheduler pit shell, as described below, and above 8% CaF<sub>2</sub>.</li> </ul>
<b>Mining factors or assumptions</b>	<ul style="list-style-type: none"> <li>The project is deemed to be appropriate to being mined by standard open pit operations.</li> <li>Reported Mineral Resources were limited by an optimised open pit shell created using appropriate technical and economic parameters. These economic parameters are not reported here due to their sensitive commercial nature.</li> </ul>
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li>No metallurgical test work is available from the recent drilling by Tertiary. Samples have been selected for this analysis but results are not yet available. During the creation of an optimized open pit shell for limiting the reporting of Mineral Resources a processing recovery figure of 80% was used based on publicly available reports from Fluorspar operations worldwide.</li> </ul>
<b>Environmental factors or assumptions</b>	<ul style="list-style-type: none"> <li>No environmental studies have been conducted to determine impact of mining operations.</li> <li>It is assumed that the area of the MB project will provide sufficient space for waste and process residue.</li> </ul>
<b>Bulk density</b>	<ul style="list-style-type: none"> <li>Tertiary submitted 27 samples from the 2 core drillholes for density measurement based on the standard Archimedes' principle.</li> <li>Samples were a mixture of Eureka Quartzite and Pogonip Formation.</li> <li>Density was assigned to the block model using average values for each major lithology. Density for overburden was assumed.</li> </ul>

Criteria	Commentary
<b>Classification</b>	<ul style="list-style-type: none"> <li>• Classification was based on sample density and confidence in the geological and grade continuity.</li> <li>• A portion of the southern area was classified as Indicated. The deposit was classified as Indicated where the sample spacing was approximately 80m x 80m and at least 3 complete north-south exploration profiles had been completed.</li> <li>• All of the central area was classified as Inferred.</li> <li>• The Mineral Resource estimate reflects the Competent Person's views of the MB Deposit.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>• WAI is not aware of any audits or reviews of this or any previous Mineral Resource estimates.</li> </ul>
<b>Discussion of relative accuracy/ confidence</b>	<ul style="list-style-type: none"> <li>• The relative accuracy and confidence in the Mineral Resource estimate is reflected in the reporting of the Mineral Resource as set out in the JORC Code (2012)</li> <li>• It is not deemed appropriate at this stage to conduct a geostatistical study to quantify the relative accuracy of the resource.</li> <li>• The statement relates to global estimates of tonnes and grade.</li> <li>• No production data is available for the MB project as it has not previously been mined and hence no comparison of production data is possible.</li> </ul>