# **European Metals Holdings Limited**

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#### **Directors**

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Keith Coughlan

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# **Company Secretary**

Ms Julia Beckett

# **Corporate Information**

ASX: EMH

AIM: EMH

Frankfurt: E861.F

CDIs on Issue: 129M



24 April 2017

# **RESEARCH REPORT**

European Metals Holdings Limited ("European Metals" or "the Company") advises that a research report on the Company has been published by Patersons Securities Limited.

To view a copy of the report, please visit the Company's website:

www.europeanmet.com

Julia Beckett

COMPANY SECRETARY

#### **BACKGROUND INFORMATION ON CINOVEC**

#### **PROJECT OVERVIEW**

#### **Cinovec Lithium/Tin Project**

European Metals owns 100% of the Cinovec lithium-tin deposit in the Czech Republic. Cinovec is an historic mine incorporating a significant undeveloped lithium-tin resource with by-product potential including tungsten, rubidium, scandium, niobium and tantalum and potash. Cinovec hosts a globally significant hard rock lithium deposit with a total Indicated Mineral Resource of 348Mt @ 0.45% Li<sub>2</sub>O and 0.04% Sn and an Inferred Mineral Resource of 309Mt @ 0.39% Li<sub>2</sub>O and 0.04% Sn containing a combined 7.0 million tonnes Lithium Carbonate Equivalent and 263kt of tin.

This makes Cinovec the largest lithium deposit in Europe, the fourth largest non-brine deposit in the world and a globally significant tin resource.

The deposit has previously had over 400,000 tonnes of ore mined as a trial sub-level open stope underground mining operation.

EMH has completed a Preliminary Feasibility Study, conducted by specialist independent consultants, which indicated a return post tax NPV of USD540m and an IRR of 21%. It confirmed the deposit is be amenable to bulk underground mining. Metallurgical test work has produced both battery grade lithium carbonate and high-grade tin concentrate at excellent recoveries. Cinovec is centrally located for European end-users and is well serviced by infrastructure, with a sealed road adjacent to the deposit, rail lines located 5 km north and 8 km south of the deposit and an active 22 kV transmission line running to the historic mine. As the deposit lies in an active mining region, it has strong community support.

The economic viability of Cinovec has been enhanced by the recent strong increase in demand for lithium globally, and within Europe specifically.



#### **CONTACT**

For further information on this update or the Company generally, please visit our website at www. http://europeanmet.com or contact:

Mr. Keith Coughlan Managing Director

#### **COMPETENT PERSON**

Information in this release that relates to exploration results is based on information compiled by European Metals Director Dr Pavel Reichl. Dr Reichl is a Certified Professional Geologist (certified by the American Institute of Professional Geologists), a member of the American Institute of Professional Geologists, a Fellow of the Society of Economic Geologists and is a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves and a Qualified Person for the purposes of the AIM Guidance Note on Mining and Oil & Gas Companies dated June 2009. Dr Reichl consents to the inclusion in the release of the matters based on his information in the form and context in which it appears. Dr Reichl holds CDIs in European Metals.

The information in this release that relates to Mineral Resources and Exploration Targets has been compiled by Mr Lynn Widenbar. Mr Widenbar, who is a Member of the Australasian Institute of Mining and Metallurgy, is a full time employee of Widenbar and Associates and produced the estimate based on data and geological information supplied by European Metals. Mr Widenbar has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012 Edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves. Mr Widenbar consents to the inclusion in this report of the matters based on his information in the form and context that the information appears.

# **CAUTION REGARDING FORWARD LOOKING STATEMENTS**

Information included in this release constitutes forward-looking statements. Often, but not always, forward looking statements can generally be identified by the use of forward looking words such as "may", "will", "expect", "intend", "plan", "estimate", "anticipate", "continue", and "guidance", or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the company's actual results, performance and achievements to differ materially from any future results, performance or achievements. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licences and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward looking statements are based on the company and its management's good faith assumptions relating to the financial, market, regulatory and other relevant environments that will exist and affect the company's business and operations in the future. The company does not give any assurance that the assumptions on which forward looking statements are based will prove to be correct, or that the company's business or operations will not be affected in any material manner by these or other factors not foreseen or foreseeable by the company or management or beyond the company's control.

Although the company attempts and has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be



other factors that could cause actual results, performance, achievements or events not to be as anticipated, estimated or intended, and many events are beyond the reasonable control of the company. Accordingly, readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in these materials speak only at the date of issue. Subject to any continuing obligations under applicable law or any relevant stock exchange listing rules, in providing this information the company does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in events, conditions or circumstances on which any such statement is based.

Statements regarding plans with respect to the Company's mineral properties may contain forward-looking statements in relation to future matters that can only be made where the Company has a reasonable basis for making those statements.

This announcement has been prepared in compliance with the JORC Code 2012 Edition and the current ASX Listing Rules.

The Company believes that it has a reasonable basis for making the forward-looking statements in this announcement, including with respect to any mining of mineralised material, modifying factors and production targets and financial forecasts. The following information is specifically provided in support of this belief:

The PFS was completed by independent specialist firms with oversight provided by the Company's Owner's Team under the direction of Andrew Smith (B.Eng., B.Com from University of Sydney).

As is normal for this type of study, the PFS has been prepared to an overall level of accuracy of approximately  $\pm 25\%$  for capital and operating costs.

- a) Production targets and financial forecasts disclosed in this announcement are based exclusively on Indicated Resource categories as defined under the JORC Code 2012.
- b) European Metals will both commence infill drilling and will re-access the old exploration drives as part of its next programme to convert Indicated Resources into the Measured category. Given the vast quantity of data associated with the previous mine combined with the size, continuity of mineralisation, geometry of the deposit, the Company and its Resource Consultants Widenbar and Associates are confident of achieving this further mineral resource classification conversion.
- c) The PFS metallurgical testwork programme was developed and supervised by industry leaders in Western Australia and Germany and was performed by specialist labs in the areas of expertise that included Anzaplan, Nagrom and ALS.
- d) Mr Harman (B.Sc Chem Eng, B.Com) is an independent consultant with in excess of 7 years of lithium chemicals experience. Mr Harman supervised and reviewed the metallurgical test work and the process design criteria and flow sheets in relation to the LCP.
- e) In conjunction with the independent consultants' EMH prepared the process design criteria and flowsheet based on metallurgical test work and typical industry design parameters.
- f) The mine planning and scheduling for the 1.7Mtpa Base Case were undertaken by independent mining firm Bara Consultants, consisting of Mr Andrew Pooley and Mr Clive Brown (both mining professionals with a combined 50 years of mine planning and operations experience and both fellows of the SAIMM) utilising the DeswikCAD suite of mining software for UG mine planning.
- g) Mining operating costs were based on estimates derived from equipment and mechanical quotes, first principle manpower buildups and an extensive industry database.



- h) Processing operating costs were estimated based on the mechanical equipment list developed for the PFS design, metallurgical testwork and the process design criteria, typical local labour rates, quoted energy costs and typical consumables supply costs. The information in this announcement that relates to Process Plant capital and operating cost estimates is based on reports compiled by the independent consultants' services and EMH inputs.
- i) Capital estimates are based on preliminary engineering designs produced by the independent consultants' services and EMH inputs. Each consultant provided a capital estimate for their respective scope of works. Based on process modelling and mass flow calculations, detailed mechanical equipment lists were compiled, with quotes for all items costing over \$100 k. The mechanical equipment list was then used as a base for factoring other project commodities. Material take-offs from the 3D modelling were then used as an integrity check.
- j) Mining related geotechnical engineering was undertaken by independent mining firm Bara Consulting and included extensive geotechnical logging and laboratory testing.
- k) The Project will potentially be the first large-scale hard rock mine to be developed in the Czech Republic in many decades. As such, stakeholder engagement with the Government of Czech, both locally and regionally and in particular with the Ministry of Industry has been very positive. We therefore anticipate that given the potential size, scale and significance of the Project to Czech and the potential downstream use of the lithium product and assuming any development complies with all relevant mining and environmental legislation, all necessary approval processes will be able to be secured for the Project.
- The Company has engaged a specialist environmental consulting firm in Czech, GET s.r.o Ltd, to advise it on all aspects of the ESIA process. This includes all environmental baseline studies.
- m) The Company believes that the amount and detail of work and studies carried out for this Study in many areas exceeds what would normally be expected at a PFS level.
- n) The Company's Board and management have had a very successful track record of developing and financing mineral resource development globally. The Company is confident there is a good possibility that it will continue to increase the mineral resources at the Project through exploration. The Company is confident that this exploration combined with the use of only 5% of the Resource base in the PFS, will extend the mine life greatly from that which is currently modelled.
- o) The Project's positive technical and economic fundamentals provide a platform for the Company to advance discussions with traditional debt and equity financiers and forward sales arrangements. The size and location of the deposit in the middle of large end users associated with European electric vehicles that is driving lithium demand will make the project a strategic asset as evidenced by the large interest shown in the Project by end users and large lithium specialist companies to-date. An improvement in market conditions during 2015 and 2016 and a perceived high growth outlook for the global lithium market enhance the Company's view of the fundability of the Project.

Based on the above, the Board is confident the Company will be able to finance the Project through a combination of debt and equity, or forward sales. In addition, the Company's aim will be to avoid dilution to existing shareholders, to the greatest extent possible.

The Company has been well supported by its largest shareholder, Cadence Minerals Plc which is listed on AIM in London. Cadence has a total of GBP38m in cash and investments. It has expressed interest in providing funding to maintain its existing shareholding. This based with



the large interest being shown out of large institutional broking houses in London provides further comfort to the Board that funding for the development of the Project will be secured.

Initial discussions with potential lenders for development finance have commenced with positive responses to date. In addition, various confidentiality agreements have been executed with potential strategic investors and discussions are on-going.

- p) The Study is based on the assumption that all metal produced will be sold via long term contracts to end users. It is assumed the lithium carbonate will be sold electric vehicle end users in both Czech and surrounding countries and that tin and tungsten concentrates will be sold to Asian smelters for further processing.
- q) Board and Management has been responsible for the study, financing and/or development of several large and diverse mining and exploration projects globally. These include the development of the Ngezi Platinum Mine, Zimbabwe (Zimplats); Cominco Phosphate (Republic of Congo), Leeuwkop Project, South Africa (Afplats), Ncondezi Coal (Mozambique) and Talga Resources projects in Sweden. Based on this experience the board believes that a traditional debt: equity ratio of 70:30 is potentially achievable for the Project based on the PFS results. This would result in a capital and working capital contribution of approximately A\$175m which is in-line with the Company's current market capitalisation.
- r) For the reasons outlined above, the Board believes that there is a "reasonable basis" to assume that future funding will be available and securable.
- s) All material assumptions on which the forecast financial information is based have been included in the announcement.

# **Key Risks**

Key risks identified during the Study include:

- Adverse movements in lithium pricing;
- Adverse movements in key operating cost inputs;
- Timely project approvals by the authorities;
- Conversion of existing Resources to Reserves;
- Results of future feasibility studies are uncertain; and
- Project funding.

## LITHIUM CLASSIFICATION AND CONVERSION FACTORS

Lithium grades are normally presented in percentages or parts per million (ppm). Grades of deposits are also expressed as lithium compounds in percentages, for example as a percent lithium oxide (Li<sub>2</sub>O) content or percent lithium carbonate (Li<sub>2</sub>CO<sub>3</sub>) content.

Lithium carbonate equivalent ("LCE") is the industry standard terminology for, and is equivalent to, Li<sub>2</sub>CO<sub>3</sub>. Use of LCE is to provide data comparable with industry reports and is the total equivalent amount of lithium carbonate, assuming the lithium content in the deposit is converted to lithium carbonate, using the conversion rates in the table included below to get an equivalent Li<sub>2</sub>CO<sub>3</sub> value in percent. Use of LCE assumes 100% recovery and no process losses in the extraction of Li<sub>2</sub>CO<sub>3</sub> from the deposit.

Lithium resources and reserves are usually presented in tonnes of LCE or Li.



The standard conversion factors are set out in the table below:

**Table: Conversion Factors for Lithium Compounds and Minerals** 

Convert from		Convert to Li	Convert to Li <sub>2</sub> O	Convert to Li <sub>2</sub> CO <sub>3</sub>
Lithium	Li	1.000	2.153	5.324
Lithium Oxide	Li <sub>2</sub> O	0.464	1.000	2.473
Lithium Carbonate	Li <sub>2</sub> CO3	0.188	0.404	1.000

#### WEBSITE

A copy of this announcement is available from the Company's website at <a href="www.europeanmet.com">www.europeanmet.com</a>.

# **TECHNICAL GLOSSARY**

"lithium carbonate"

The following is a summary of technical terms:

"beneficiation" or "benefication"	in extractive metallurgy, is any process that improves (benefits) the economic value of the ore by removing the gangue minerals, which results in a higher grade product (concentrate) and a waste stream (tailings)
"carbonate"	refers to a carbonate mineral such as calcite, CaCO₃
"cut-off grade"	lowest grade of mineralised material considered economic, used in the calculation of Mineral Resources
"deposit"	coherent geological body such as a mineralised body
"exploration"	method by which ore deposits are evaluated
"g/t"	gram per metric tonne
"grade"	relative quantity or the percentage of ore mineral or metal content in an ore body
"Indicated" or "Indicated Mineral Resource"	as defined in the JORC and SAMREC Codes, is that part of a Mineral Resource which has been sampled by drill holes, underground openings or other sampling procedures at locations that are too widely spaced to ensure continuity but close enough to give a reasonable indication of continuity and where geoscientific data are known with a reasonable degree of reliability. An Indicated Mineral Resource will be based on more data and therefore will be more reliable than an Inferred Mineral Resource estimate
"Inferred" or "Inferred	as defined in the JORC and SAMREC Codes, is that part of a Mineral
Mineral Resource"	Resource for which the tonnage and grade and mineral content can be estimated with a low level of confidence. It is inferred from the geological evidence and has assumed but not verified geological and/or grade continuity. It is based on information gathered through the appropriate techniques from locations such as outcrops, trenches, pits, working and drill holes which may be limited or of uncertain quality and reliability
"JORC Code"	Joint Ore Reserve Committee Code; the Committee is convened under the auspices of the Australasian Institute of Mining and Metallurgy
"kt"	thousand tonnes
"LCE"	the total equivalent amount of lithium carbonate (see explanation above entitled Explanation of Lithium Classification and Conversion Factors)
"lithium"	a soft, silvery-white metallic element of the alkali group, the lightest of all metals
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the lithium salt of carbonate with the formula Li<sub>2</sub>CO<sub>3</sub>



"Measured" or Measured Mineral Resources"

Measured: a mineral resource intersected and tested by drill holes, underground openings or other sampling procedures at locations which are spaced closely enough to confirm continuity and where geoscientific data are reliably known; a measured mineral resource estimate will be based on a substantial amount of reliable data, interpretation and evaluation which allows a clear determination to be made of shapes, sizes, densities and grades. Indicated: a mineral resource sampled by drill holes, underground openings or other sampling procedures at locations too widely spaced to ensure continuity but close enough to give a reasonable indication of continuity and where geoscientific data are known with a reasonable degree of reliability; an indicated resource will be based on more data, and therefore will be more reliable than an inferred resource estimate. Inferred: a mineral resource inferred from geoscientific evidence, underground openings or other sampling procedures where the lack of data is such that continuity cannot be predicted with confidence and where geoscientific data may not be known with a reasonable level of reliability describing the science concerned with the production, purification and

"metallurgical"

describing the science concerned with the production, purification and

properties of metals and their applications

"micrometer"

(symbol µm) is an SI unit of length equal to one millionth of a metre

"Mineral Resource"

a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such a form that there are reasonable prospects for the eventual economic extraction; the location, quantity, grade geological characteristics and continuity of a mineral resource are known, estimated or interpreted from specific geological evidence and knowledge; mineral resources are sub-divided into Inferred, Indicated and Measured categories

"mineralisation"

process of formation and concentration of elements and their chemical

compounds within a mass or body of rock

"Mt" million tonnes

**"P80"** the mill circuit product size in micrometers

"ppm" parts per million

"PSD" particle size distribution

"recovery" proportion of valuable material obtained in the processing of an ore, stated

as a percentage of the material recovered compared with the total material

present

"run-of-mine"

mined ore of a size that can be processed without further crushing

"semi-autogenous grinding" or "SAG"

a method of grinding rock into fine powder whereby the grinding media

consist of larger chunks of rocks and steel balls

"stope"

"tungsten"

underground excavation within the orebody where the main production

takes place

"t" a metric tonne

"tin" A tetragonal mineral, rare; soft; malleable: bluish white, found chiefly in

cassiterite, SnO<sub>2</sub>

"treatment" Physical or chemical treatment to extract the valuable metals/minerals

hard, brittle, white or grey metallic element. Chemical symbol, W; also

known as wolfram

"W" chemical symbol for tungsten

### **ADDITIONAL GEOLOGICAL TERMS**

"apical" relating to, or denoting an apex

"cassiterite" a mineral, tin dioxide, SnO2. Ore of tin with specific gravity 7
"cupola" a dome-shaped projection at the top of an igneous intrusion

"dip" the true dip of a plane is the angle it makes with the horizontal plane



"glaserite" A colourless or white crystalline compound, K<sub>2</sub>SO<sub>4</sub>, used in glassmaking and

fertilisers and as a reagent in analytical chemistry

"granite" coarse-grained intrusive igneous rock dominated by light-coloured

minerals, consisting of about 50% orthoclase, 25% quartz and balance of

plagioclase feldspars and ferromagnesian silicates

"greisen" a pneumatolitically altered granitic rock composed largely of quartz, mica,

and topaz. The mica is usually muscovite or lepidolite. Tourmaline, fluorite,

rutile, cassiterite, and wolframite are common accessory minerals

"igneous" said of a rock or mineral that solidified from molten or partly molten

material, i.e., from a magma

"muscovite" also known as potash mica; formula: KAl<sub>2</sub>(AlSi<sub>3</sub>O<sub>10</sub>)(F,OH)<sub>2</sub>.

"quartz" a mineral composed of silicon dioxide, SiO2

"rhyolite" an igneous, volcanic rock of felsic (silica rich) composition. Typically >69%

 $SiO_2$ 

"vein" a tabular deposit of minerals occupying a fracture, in which particles may

grow away from the walls towards the middle

"wolframite" a mineral, (Fe,Mn)WO<sub>4</sub>; within the huebnerite-ferberite series

"zinnwaldite" a mineral, KLiFeAl(AlSi<sub>3</sub>)O<sub>10</sub> (F,OH)<sub>2</sub>; mica group; basal cleavage; pale violet,

yellowish or greyish brown; in granites, pegmatites, and greisens

#### **ENQUIRIES:**

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The information contained within this announcement is considered to be inside information, for the purposes of Article 7 of EU Regulation 596/2014, prior to its release.