

# EUROPEAN METALS HOLDINGS LIMITED

Research Note



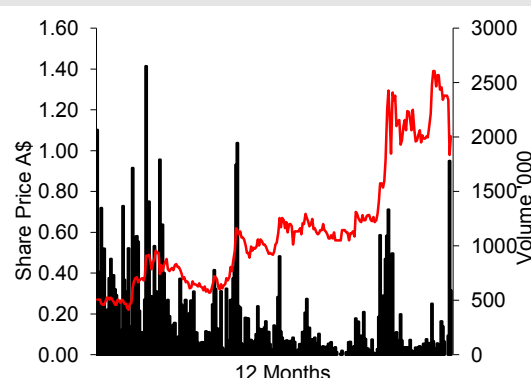
## THE LARGEST LITHIUM HARD ROCK PROJECT IN EUROPE

- European Metals Holdings Limited (EMH) is an ASX- and AIM-listed mineral exploration and development company advancing the Cinovec Lithium / Tin Project in the Czech Republic.** Cinovec is a historic underground mine that hosts a significant undeveloped lithium-tin resource with by-product potential including tungsten, rubidium, scandium, niobium, tantalum and potash. The Project has Indicated Mineral Resources of 348Mt at 0.45% Li<sub>2</sub>O and 0.04% Tin and an Inferred Mineral Resources of 309Mt at 0.39% Li<sub>2</sub>O and 0.04% Tin containing 7.0Mt of Lithium Carbonate Equivalent (LCE) and 263kt of Tin. By our calculations, this makes Cinovec the largest lithium deposit in Europe, and a globally significant tin resource. Recently, EMH released a Preliminary Feasibility Study (PFS) which highlighted that the Project has the potential to become a long life, low cost (Tier 1) lithium operation. We initiate coverage on EMH with a Speculative Buy and a valuation of A\$1.68/share.
- Positive Preliminary Feasibility Study (PFS) results:** EMH released results from the PFS on the Cinovec Project on 19 April 2017. Specialised independent consultants including Bara, Ausenco, and Hatch undertook the PFS studies co-ordinated by EMH. The PFS concluded that Cinovec could produce 20.8kt of LCE for 21 years with the lowest cost for a hard-rock lithium project globally (US\$3,483/t LCE, including all credits). Cinovec's NPV was calculated as US\$540m, after investing of US\$393m in Capex, with an IRR of 21%.
- Successful manufacture of lithium carbonate at >99.5% LCE:** EMH has proven at the laboratory the manufacturing of high-grade LCE using standard roasting technology. Hence, attracting a potential premium per tonne if producing lithium carbonate beyond >99.5% purity.
- Cinovec is close to infrastructure:** The Project 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. EMH claims that the deposit lies in an active mining region, with strong community support.
- Rising of new battery plants in Europe:** Cinovec could experience high interest from the new battery plants being constructed (Samsung and LG) or planned to be developed in the new future, as the car industry experiences increased demand for electric vehicles. Tesla has indicated that it could build its second Giga-factory in the Czech Republic.
- Substantial Exploration Upside:** Cinovec has an exploration target with the potential to add resources of 350-450Mt with a grade of 0.39-0.45%Li, containing 3.2-5.2Mt LCE. As a result, the exploration target implies potential to increase Mineral Resources by 48-75%.
- Valuation:** We estimate the value of EMH using the key parameters from the PFS as a base, a debt to equity split of 70%/30% to fund Capex of US\$393m, risking 10% of the total Project value, cash flows discounted at a rate of 10% pa, exploration upside of Cinovec of A\$30m and the current cash position of A\$3.4m. As a result, we value EMH at A\$542m or **A\$1.68/share**. We have also valued an upside case with 5% and 10% premium over the long term LCE price with a value of **\$1.94/share** and **\$2.20/share** derived, respectively.
- Catalysts:** short to mid-term, we envisage catalysts for value accretion to include signing of LCE off-take agreements, confirmation of project financing for Cinovec, and progress on Environmental and Mining Permits. The commissioning of the project will be a long-term catalyst.

24 April 2017		
12mth Rating	Speculative Buy	
Price	A\$	0.995
RIC: <b>EMH.AX</b>	BBG: <b>EMH.AU</b>	
Shares o/s	m	129.4
Free Float	%	82.4
Market Cap.	A\$m	139
Net Debt (Cash)	A\$m	(3.4)
Net Debt/Equity	%	n/a
3m Av. D. T'over	A\$m	0.18
52wk High/Low	A\$	0.14-1.30
Analyst: Juan Pablo Vargas de la Vega		
Phone: +61 8 9225 2818		
Email: jpvargas@psl.com.au		

*An investment in this company should be considered speculative and note assumptions employed are contingent on broader market conditions remaining supportive. These can change at short notice. Recommendations are current at the time of publication.*

### 12 Month Share Price Performance



## OVERVIEW

European Metals Holdings Limited (EMH) is an ASX- and AIM-listed mineral exploration and development company advancing the Cinovec (100% owned) Lithium / Tin Project in the Czech Republic. Cinovec is a historic underground tin mine (400kt of ore mined) that hosts a significant undeveloped lithium-tin resource with potential by-products including tungsten and potash. The Project has an Indicated Mineral Resource of 348Mt @ 0.45% Li<sub>2</sub>O and 0.04% tin and an Inferred Mineral Resource of 309Mt @ 0.39% Li<sub>2</sub>O and 0.04% Tin containing 7.0Mt Lithium Carbonate Equivalent and 263kt of tin. By our calculations this places Cinovec as the largest lithium deposit in Europe and greater than Rio Tinto's Jadar Lithium Project with 6.4Mt LCE, Serbia.

The Project 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. EMH claims that the deposit lies in an active mining region with strong community support.

On 19 April 2017, the Company released its Pre Feasibility Study (PFS). Highlights of the study show that the Project can potentially produce:

- 21ktpa of lithium carbonate equivalent (LCE) per year at battery grade (>99.5%) at an average operating cost of \$3,483/t (after tin, tungsten and potash credits)
- NPV of US\$520m and IRR of 21% (post tax) after initial capital expenditure of US\$393m.

We highlight that the project is already a large resource and its expected exploration upside of 48-75% is substantial. Mineralisation to the north in Germany remains open and untested, potentially extending the Project's footprint adding further value to EMH.

Figure 1: Map of the Cinovec in Europe (Czech Republic) - Proposed Battery Plants in Europe



Source: European Metals Holding Limited

The Cinovec mine development is planned as a bulk underground mine. In principle, tin, tungsten and potash are the by-products that make the project viable and, potentially, one of the lowest cost hard rock lithium projects moving to development. Our cost estimate is c.US\$3,700/t LCE including by-products. The Cinovec Project location in Europe is an enabler to possible interested parties to secure a long term battery grade LCE as illustrated in Figure 1. We note that Cinovec is comparable in cost to brines operations which end users potentially can pay a premium for Cinovec's lithium product. Given the current production delays in lithium brine newcomer in South America, the hard rock lithium projects could find an advantage in the time to reach a steady output level compared with lithium brine projects. Hence, Cinovec has the potential to attract high market interest, secure off-takers and generate a quick path to development.

## PRELIMINARY FEASIBILITY STUDY (PFS)

### PROJECT BACKGROUND

The Cinovec project is planned to be developed as an underground mine with a surface concentrator plant producing on average 360ktpa of lithium concentrate and a lithium carbonate plant producing lithium carbonate at battery grade, with potash byproduct. The project will also produce a tin and tungsten concentrate for sale to smelters. The project is known to be mined since 1,300AD; In the 1940s a large underground mining operation was established primarily to produce tungsten for the war effort. Mining and processing activities continued under the Czechoslovakian Government with the mine continuing to expand and produce tin in addition to tungsten. Due to the fall of communism and lower tin prices, the mine was closed in 1993. In 2011, the old processing plant was removed and the site rehabilitated. Overall, it is estimated that 400kt of mining has been extracted from the project. This is a small quantity when comparing the estimated 34.45Mt of mining extraction for the next 22 years for the new proposed development.

In 2014, EMH acquired the Cinovec project. Since then, the Company has drilled the Project significantly to validate the comprehensive data generated by the earlier exploration activities and provided metallurgical test work samples. EMH has been successful at demonstrating the Resource potential of Cinovec. EMH has significantly increased Resources in November 2016 and again in February 2017. These results have converted the Cinovec deposit into one of the largest hard-rock lithium projects globally, containing 7.0Mt of lithium carbonate equivalent. As a comparison, Rio Tinto's Jadar hard rock lithium project (in Serbia) has a JORC Resource containing 6.24Mt of LCE.

In 2015, EMH completed a Scoping Study for re-development of the Cinovec Project with positive results which was then followed by a Trade-Off Study completed in November 2016. The Trade-off Study concluded that conventional roasting technology would deliver high lithium recoveries with a lower operating cost, lower technical risk, require less impurity removal, and be less dependent on potassium by-product credits. EMH has chosen this path as the preferred method of lithium extraction for the current PFS.

### RESULTS

On 19 April 2017, EMH released its PFS on the Cinovec Project. The Study was optimised using the JORC 2012 resource base of 656Mt at 0.2%Li as shown below in Figure 2. More than 50% of the Resources are in the Indicated category giving robustness to the Study. Only c.10% of the total Resources were included in the Study.

Figure 2: Cinovec's JORC Mineral Resources Estimate as 19 Feb 2017

JORC CATEGORY	Cut-off	Tonnes	Li	Li <sub>2</sub> O	LCE	W	Sn	Sn
	%	(Millions)	%	%	Mt	%	%	t
INDICATED	0.1 % Li	347.7	0.2	0.5	4.0	0.015	0.04	139,080
INFERRED	0.1 % Li	308.8	0.2	0.4	3.0	0.014	0.04	123,520
TOTAL	0.1 % Li	656.5	0.2	0.4	7.0	0.014	0.04	262,600

Source: European Metals Holding Limited

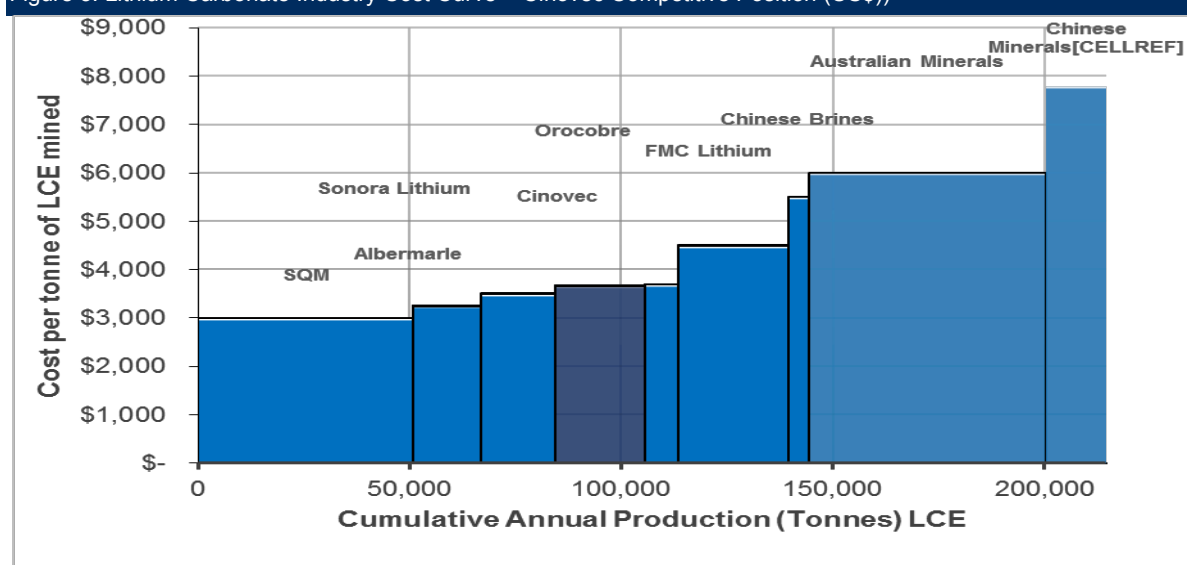
The results show that the Project can potentially produce on average 20.8ktpa of LCE with a grade of >99.5 LCE, with operating costs averaging \$3,483/t of LCE and a life-of-mine of 21 years. At the same time, the Project can produce tin, tungsten and potash as by-products. The Project's by-products are the key to potentially make the Cinovec a competitive project even when compared to lithium brine producers, as illustrated in Figure 3 and Figure 6 (Page 7). Figure 3 highlights that Cinovec has a significantly lower operating cost when compared to the next lithium hard rock competitor (Australian Minerals) producing at c.\$6,000/t LCE.

The PFS was developed by EMH using four specialist companies to perform independently specific studies on the project. Widenbaar and Associates completed the Geology study; the underground mining Study was developed by Bara Consultants (Johannesburg, South Africa). Ausenco Ltd designed the front-end comminution and beneficiation ("FECAB") plant, and Hatch Engineers designed the Lithium Carbonate Plant ("LCP").

The Study underlines that the Project can be benefited from low-cost access from existing infrastructure, cheap grid power and a local workforce that is highly skilled with a low cost of employment. EMH has mentioned that Cinovec has strong support from the local community for job creation in areas that have both historical and current operations.

EMH believes that Cinovec is in a strategic position as the deposit lies in a stable European jurisdiction that is located centrally to the rapidly expanding electric vehicle industry (with a strong focus on Germany) which is forecast to be the primary driver behind increasing lithium consumption.

Figure 3: Lithium Carbonate Industry Cost Curve – Cinovec Competitive Position (US\$)



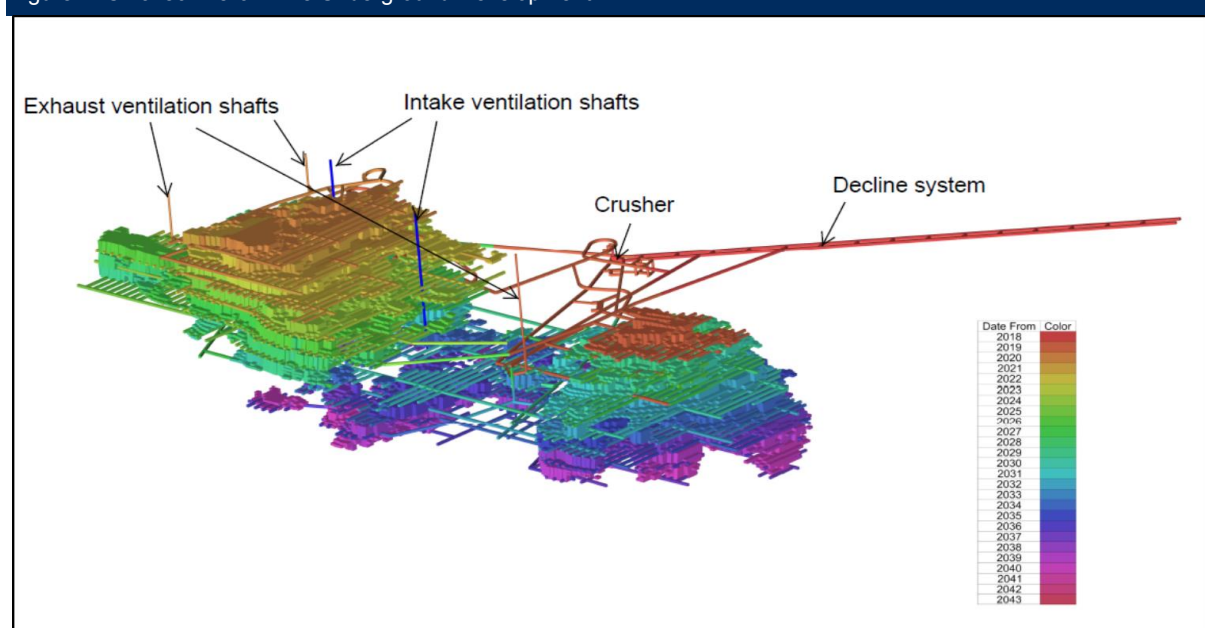
Source: European Metals Holding Limited

Figure 5 (Page 6) illustrates the entire process flowsheet at the Cinovec Project from mine extraction to producing lithium carbonate, potash and tin/tungsten concentrate products. Giving the shallow or flat dip of the ore body, the Cinovec Study plans to mine the Resources underground using a long-hole open stope mining method (without backfilling) with a twin decline, one for a conveyor and one for general service and as ventilation intake. The ore mined is sent to a primary crusher underground with an average rate of 1.7 Mtpa. The crushed ore is then conveyed 1,800m to surface to the mine portal and then stacked on the Comminution Plant stockpile (30kt live capacity), providing a buffer and surge capacity between the underground activities and the processing plants.

The project has been designed to have minimal environmental and community impact. The overall processing plant layout is simple with space saving and designed to add further equipment if required. The underground primary crusher and enclosed surface mill are both designed to minimise noise and reduce visual impact.

The mining inventory was restricted assuming an unplanned dilution and unplanned ore loss of 3% for each factor and excluded zones above 70m in general, except for when extracting ore from underneath the mining village which assumed an exclusion zone of 150m. A view of the mine design and infrastructure for the life-of-mine of the Cinovec Project is illustrated in Figure 4 below.

Figure 4: Cinovec Life-of-Mine Underground Development



Source: European Metals Holding Limited

Ore stacked at the Comminution Plant is reclaimed from the stockpile to be delivered to the start of the Front-End Comminution and Beneficiation (FECAB) circuit that comprises two sections of the plant that are geographically separated and connected by a slurry pipeline. The Comminution Plant features a single stage 4MW SAG mill, which is located near the mining portal and delivers milled ore ( $P_{80} < 212 \mu\text{m}$ ) as a slurry via a 7km pipeline to the Beneficiation Plant, which is located adjacent to the LCP.

The Beneficiation Plant uses Wet High-Intensity Magnetic Separation (WHIMS) to separate out the lithium bearing micas (zinnwaldite) to produce a magnetic mica concentrate. EMH indicates that the ability to use wet magnetic separation is unique to zinnwaldite ore due to the contained iron. Magnetic separation offers cost and recovery advantages over benefaction through froth floatation, as previously tested.

The LCP (Lithium Carbonate Plant) receives magnetic mica concentrate from the Beneficiation plant from which it extracts the lithium through roasting, leaching and then purification to produce battery quality lithium carbonate. The plant also produces a potassium sulphate by-product as an additional revenue source.

All the tailings generated by both processing plants are filtered to produce a filter cake which is dry stacked in a nearby Tailings Storage Facility (TSF). Although higher cost than alternative methods, dry stacking significantly reduces environmental impact for the Project. We believe that EMH has the right attitude by taking extra care by considering all factors that could delay Environmental or Mining permits that could affect the project's timeline to execution.

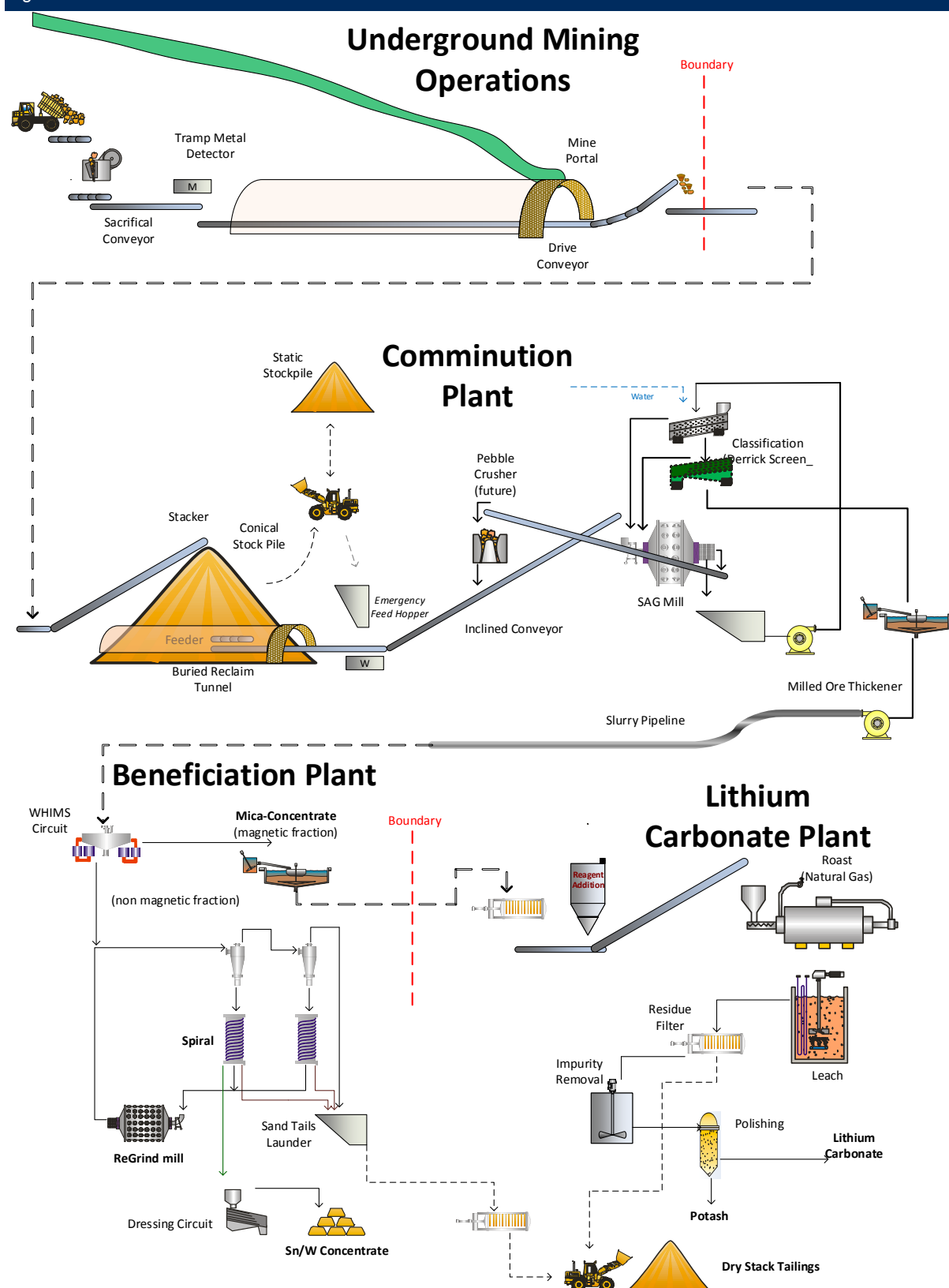
EMH has mentioned that the quality of the tested lithium carbonate has been confirmed through the ongoing test work programs conducted in both Anzaplan (Germany) and Nagrom (Perth).

Energy wise, the project uses natural gas which is delivered right to the project premises. Hence, the access and supply of low-cost energy for roasting the mica concentrate and heating the underground mining operations is available. It is estimated that Cinovec would require 22MW of installed power, and EMH mentions that electrical energy can be obtained from the existing local grid by constructing 1.0km of overhead line to the nearby switchyard in Teplice. The availability of gas and nearby power connectivity reduces the capital requirements significantly, as Cinovec is a relatively energy intensive project.

In regards to the use of industrial water for processing make-up needs, the Company specifies that water can be purchased cheaply from the local municipality. Given that part of the old mine is filled with water, the Project expects to receive the bulk of the water required from the mine dewatering. Water for human consumption (potable) is available and can be purchased from the local municipality.



Figure 5: Cinovec's Flow-Chart - Mine to Product



Source: European Metals Holding Limited

We believe that the Cinovec Project has several strengths that make it competitive in the lithium market. The operating cost has potential to be the lowest cost hard rock operation globally due to producing three by-product credits (tin, tungsten and potash) and comparable to brine operations. Operationally, the Project's ore is amenable to single stage crushing and coarse SAG milling, reducing capital and operating costs, whilst reducing processing complexity. The zinnwaldite ore has a relatively high iron content, which allows for low-cost wet magnetic processing to produce a lithium concentrate for further processing at high recoveries. The lithium concentrate can be then processed using a low temperature for roasting and reagent recycling.

EMH has indicated that the overhead corporate office costs are excluded (we have included them in our valuation), the maintenance costs used in the operating cost modelling includes requirements for sustaining Capex, and the cost of tailings impoundment are included as operating cost.

The Study shows that the fixed/variable percentage operating cost component is estimated at 42/58. We believe that this ratio can potentially provide significant flexibility to production rates at Cinovec if market conditions change and the project needs to be down or up-scaled.

Figure 6: Cinovec's Average Project Operating Cost (US\$)

Average Operating Cost (yr. 3-20)	\$ pa	\$ / ROM	\$ / LCE	% Op Cost
Mining	40.7	24.3	1,960	38%
FECAB	19.4	11.6	935	18%
LCP	47.3	28.2	2,274	44%
Overall Project Admin	0.9	0.5	42	1%
<b>Total Operating Cost</b>	<b>108.3</b>	<b>64.6</b>	<b>5,211</b>	
By-product Revenue Credits	\$ pa	\$ / ROM	\$ / LCE	
Sn/W (yr3-20)	29.2	17.4	1,404	
Potash	6.7	4.0	324	
<i>Excluding Sn/W Royalties &amp; Transportation Cost</i>				
<b>Total Opex (Net of By-product Credits)</b>	<b>72.4</b>	<b>43.2</b>	<b>3,483</b>	

Source: European Metals Holding Limited

EMH has estimated a capital cost for the Cinovec Project at US\$393m based on Q1 CY2017 pricing. The accuracy of the estimate is considered +/-25%. The Capex forecast breakdown is summarised in Figure 7 below. The capital includes all costs for design and construction of the plant and infrastructure on the site for the mine, FECB and LCP. The Study included allowances for connection to off-site services such as gas, electricity and water, construction of a tailings storage facility, project contingency and owner's costs (including project management team, project approvals, the establishment of the operating team and commissioning). We have included an extra US\$21m for our valuation included as a contingency (increased to 20%) to cover the unknowns for FECB and LPC.

EMH compiled the capital estimate from Bara, Ausenco and Hatch based on the full scope of engineering works from the designs produced. The estimate was based on process modelling and mass flow calculations. A list of all mechanical equipment was used as a base for factoring other project commodities as a benchmark. Lastly, 3D modelling was performed as an integrity check for the entire optimisation process.

Financially, the Study indicates that, after investing a total capital expenditure of US\$393m, the Cinovec Project has an NPV of US\$520m (discounted at 8%, tax) yielding an internal rate of return of 21% (after tax). We agree on the general assumptions and parameters used. However, we believe that the Study was performed using a conservative price for its LCE product. We will discuss this topic further in the valuation section.

After the positive results, EMH is planning to take the Cinovec Project into a Feasibility Study and currently undergoing an Environmental Impact Assessment and an International Assessment (due to the project location with the German border). EMH estimates that the Project could obtain permits promptly with a possible start and ramp up to production in calendar year 2020.

Figure 7: Cinovec's Project Development Capital (US\$)

	TOTAL US\$ M
<b>Underground Mining Development</b>	
Mining Directs	67.3
Mining In directs	3.0
<b>Total Mining Cost</b>	<b>70.3</b>
<b>Front End Comminution &amp; Beneficiation Plant (FECAB)</b>	
Comminution - Direct	25.2
Beneficiation - Direct	40.5
Infrastructure -Direct	20.8
FECAB In directs	18.4
<b>Total FECAB</b>	<b>104.9</b>
<b>Lithium Carbonate Plant (LCP)</b>	
LCP Directs	141.9
LCP In directs	38.0
<b>Total LCP Capital</b>	<b>179.9</b>
<b>Total Tailings</b>	<b>2.6</b>
<b>Overall Project Contingency @10%</b>	<b>35.8</b>
<b>TOTAL CAPITAL COST</b>	<b>393.4</b>

Source: European Metals Holding Limited

Overall, we believe that the Cinovec project has been de-risked significantly in a short period. The mining modelling, the metallurgical tests and the capacity to potentially produce high-grade LCE (>99.5%) provides a strong base for sound Project economics going forward. Whilst we believe that further drilling is required to confirm Ore Reserves, the fact that the Project has been previously mined and can be accessed to check the mineralisation in-situ, reduces the geological risks. Strategically, the Project has no local competitors and is well located to be potentially the only real provider of LCE for the increasing LCE demand in the European market.

Figure 8: Key PFS Findings

Metric	Value	Metric	Value
NPV @8% Discount (US\$)	540 M	Project Breakeven (IRR=0% ) US\$/t Li <sub>2</sub> CO <sub>3</sub>	\$5,200 /t
NPV @ 10% Discount (US\$)	US\$392 M	Avg Li <sub>2</sub> CO <sub>3</sub> Production (yr. 3-20)	20,800 tpa
IRR (Pre-tax)	21.6 %	Avg Potash Production (yr. 3-20)	12,954 tpa
IRR (Post Tax)	20.9 %	Avg Production Cost (without credits) (US\$/t)	\$ 5,211
Capital Expenditure (US\$)	US\$393 M	Avg Production Cost (with credits) (US\$/t)	\$3,483/t
Total Mined Ore	34.4 Mt	Life of Mine	21 Years
Peak Mill Feed	1.8 Mtpa	Avg Mill Rate (yr. 3-20)	1.68 Mtpa
Long Term LCE (US\$/t)	10,000	Long Term Tungsten (US\$/MTU)	330
Long Term Tin (US\$/t)	22,000	Long Term Sulphate of potash (US\$/t)	520
Lithium Recover to Conc.	90%	Lithium Recovery in Carbonate Plant	85%
Overall Lithium Recovery	76.5%	Tin Recovery	65%

Source: European Metals Holding Limited



## CORPORATE

As 31 December 2016, EMH had a cash position on \$3.4m and an expected cash position of \$2.0m at the end of March 2017. We believe that these funds could be potentially insufficient to reach the end of the calendar 2017 year, considering that the Company is performing a PFS.

Rare Minerals PLC (REM) is EMH's largest shareholder with a 20.76% holding in the Company or 26.8m shares. Mr Kiran Morzaria is REM's Chief Executive Officer and is one of four directors on the Board of REM. He is also a Non-Executive Director of EMH.

The latest Appendix 3B, released on 24 November 2016, indicated that the Company had 129.4m ordinary shares, 3.75m Options at \$0.166 exercise price expiring on 17 August 2020, and 5m B Class Performance Shares.

## VALUATION

We have used the recently published information from the PFS to base our valuation on EMH. We have estimated the value of the Company at A\$1.68/share using a sum-of-parts methodology. We applied a Discounted Cash Flow method, discounted at a rate of 10% pa, increased Capex by US\$21m (from US\$393m to US\$414m) to cover further contingencies and risked 10% of total project value (for Project's unknowns) of the Cinovec Project. We have included A\$30m given to the exploration upside of the Cinovec Project. The Company's cash balance at the end of December 2016 of \$3.4 m was added to the estimate.

The valuation methodology for each segment is described in further detail below:

We have used our long-term prices for lithium averaging US\$10,200/t LCE (from 2022 onwards), tin at a flat-price of 20,000/t and tungsten at a flat pricing of \$29,000/t. We used a capital spend of US\$415m to be raised in a 70/30 debt/equity split (an issue price for the equity component of A\$0.90/share was assumed). We assumed a 21-year life-of-mine yielding 20.8ktpa of LCE at 99.5% and 39kt of total tin concentrate containing 50% Sn, and we have also accounted for tungsten and potash credits. We have valued the Cinovec Project cash flows at a discount rate of 10%. Given the European location of the project and the likelihood of project LCE off-take and finance, we could reduce our discount rate to 8% as the Project matures.

We have also included a ten-year tax-free "holiday" from the Czech Government as indicated by EMH. The Company tax rate after that is assumed as the current tax rate of 19%. We derived a value on the Cinovec Project of US\$383m. Using an exchange rate of US\$0.76/AUD, we calculated a final AUD valuation of \$508m. The current payback for the project is calculated as just over four years.

Our evaluation has estimated an operating cost of c.US\$3,700/t LCE after tin, tungsten and potash credits (EMH indicates this cost is US\$3,483/t). We believe that the by-products are essential to the success of the Cinovec project, as it could potentially make it competitive, even against lithium brine producers.

Project funding remains a critical point into the value of EMH. We believe that the Project location in Europe could generate significant interest from European businesses to access a "local" lithium supply. The Project is very close to the German border and could benefit from future lithium battery manufacturers for electric vehicles.

## SENSITIVITIES

We have tested the effect of lithium price on the Cinovec Project. We believe that there is room to improve the economics of the project, this is due to the valuation being performed using a conservative price for 99.5%LCE. EMH has indicated that Cinovec lithium carbonate can be purer than this, hence the LCE product could potentially attract a premium of US\$500-1,000/t. Figure 9 illustrates the value of EMH to changes in long-term LCE prices. The value of EMH could increase to \$1.94/share if the lithium product attracts a 5% price increase (c.US\$500/t) or increase to \$2.20/share if the premium rises to 10% or c.US\$1,000/t.

A reduction in the discount rate can potentially increase our valuation on Cinovec. As mentioned earlier on, we could adjust the discount rate accordingly as the project matures. As a test, a 8% discount rate on Cinovec will translate to a valuation of \$2.21/share for EMH.

Figure 9: European Metals Holdings Limited Share Price Sensibility Table

Price Change	-5%	0%	+5%	+10%
Average Long Term LCE Price US\$/t	9,500	10,200	10,700	11,200
Cinovec Value US\$m	320	383	445	508
EMH Share Price (A\$)	1.42	1.68	1.94	2.21

Source: Patersons Securities Limited Estimate

## LITHIUM MARKET

### CURRENT OUTLOOK

During 2016, the global LCE price experienced a surge reaching US\$12,000/t for an LCE grading 99.5% purity. It is estimated that during 2017 the price could average US\$13,500/t for the same grade. The current supply is expected to catch up from 2018 onwards reducing the expected value for the product to around US\$10,200/t as an estimated long-term price. However, we believe that the lithium price may face future spikes (or hold its current value) as the demand for lithium batteries increases and supply is already contracted and provided only by a few projects worldwide.

### CAR MANUFACTURERS - EUROPE

According to EMH, the car manufacturing sector is rapidly changing and could bring significant changes to the lithium demand and European demand for physical lithium carbonates. Volkswagen plans to build 1.5 million EVs per year & release 30 new models by 2025, with reports of a new EUR10bn battery factory in Leipzig - 150kms from Cinovec. Meanwhile, Porsche indicates it has an estimated EUR1bn EV program, headquarters in Stuttgart & a factory in Leipzig, as well as confirmed to be working on a production EV sedan. Mercedes-Benz has an EUR2bn EV program with a target to bring 10 EV models to the market by 2025, making up 15-25% of global sales. BMW plans to introduce electric Mini and BMW X3 SUV to a range of EVs built in a factory, near Leipzig. BMW is attempting to expand EV sales to 15-25% by 2025. Daimler, based in Dresden, 45 minutes from Cinovec, is building a 2<sup>nd</sup> battery factory & expanding production by investing EUR2bn. The overall investment by 2020 is expected to be EUR10bn.

### BATTERY PLANTS - EUROPE

EMH reports that new lithium battery plants are being built in Europe and close to Cinovec, demanding further lithium carbonates at battery grade. LG is building a battery factory in Wroclaw, Poland. Samsung is building two battery factories in Hungary & Austria. The Company A123, a specialist Lithium-Ion battery manufacturer, has recently begun operations in a new plant in Ostrava, Czech Republic. Northvolt (Company with ex-Tesla executives) plans to build Europe's largest Lithium-Ion battery plant (US\$4bn) in Sweden. Tesla intends to build a 2<sup>nd</sup> Giga Factory in Europe, reported to be in the Czech Republic.

### EUROPEAN GOVERNMENTS

The German Government has recently made the most significant changes that will affect the demand for lithium carbonates in the mid-term. The Government has committed to EUR1bn in subsidies to buyers of electric vehicles with a further EUR300m towards electric vehicles infrastructure to support the proposed changes to the car industry. Moreover, the Government has set a deadline for the year 2030 to stop building new combustion engine (petrol/diesel) vehicles.

The Netherlands and Norway have set the year 2025 as the deadline for no more new petrol/diesel vehicles, ahead of Germany. The UK Government has pledged an additional GBP290m towards electric vehicles and GBP2bn per year by 2020 to fund electric vehicles research & development. At a larger scale in Europe, the European Union has drafted a directive for the year 2019 indicating that new homes and 10% of parking bays in new buildings will have electric vehicle charging points.

Given the high estimated demand in Europe for securing the physical lithium carbonates for new batteries, we believe that the Cinovec lithium product has the potential to attract a premium for its product. This is due to the Project potentially being the only source of physical lithium carbonate directly sourced from Europe.

## RISKS

- **Resource risk.** There is a risk that in the future resources may be negatively revised, impacting the size and quality of the Project and that any exploration targets may not be confirmed.
- **Sovereign risk.** Any change in political government, legislation, or fiscal regimes of the Czech Republic may markedly impact the ownership, financing, permit, or economics of each of EMH's Projects.
- **Commodity price risk.** Declines in LCE, tin, tungsten and potash prices may negatively impact the revenues and profitability of EMH's projects
- **Exchange rate risk.** The EMH share price is denominated in A\$ and yet its commodities priced in US\$. Any rise in the A\$ may reduce the translational impact of US\$ into A\$.
- **Operating risk.** Problems may occur during the mining, processing, transporting and selling of a product that may negatively impact revenues, costs, and profit. These problems may or may not be foreseen in any feasibility, economic assessment, scoping, or conceptual studies undertaken by the Company or other parties.
- **Funding risk.** The Company may not be able to source the necessary funding for developing its project(s), and may require highly dilutive equity raising and/or debt that may dilute shareholders or cause the Company not to meet debt payments.
- **Technology risk.** Changes in technology may reduce the demand for lithium and /or electric vehicles, dampening growth, prices and the profitability of EMH.

## BOARD OF DIRECTORS

### **David Reeves - Chairman**

A qualified mining engineer with 25 years' experience in Africa and Australia. Highly experienced underground mining specialist - First class honours degree in mining engineering from the University of New South Wales, a graduate diploma in applied finance and investment from the Securities Institute of Australia and a Western Australian first class mine managers certificate of competency - Managing Director of Keras Resources Plc (AIM).

### **Keith Coughlan - Managing Director**

Keith has almost 30 years' experience in stockbroking and funds management. He has been largely involved in the funding and promoting of resource companies listed on the ASX, AIM and TSX. He has advised various companies on the identification and acquisition of resource projects and was previously employed by one of Australia's then largest funds. He has recently retired from the role of Non-Executive Chairman of ASX listed Talga Resources Limited, and is a Non-executive Director of ASX listed Southern Hemisphere Mining Limited.

### **Dr Pavel Reichl - Non-Executive Director**

Over 24 years' experience in precious, base and PGE metals exploration and production - PhD University of Montana - Formerly Business Unit Manager of a Canadian-listed minerals exploration company. Responsible for Europe and Central Asia. The former head of Newmont acquisition program in Eastern Europe and exploration manager for Kyrgyzstan and Uzbekistan. Exploration and mine geologist - Montana, Nevada, Newmont Gold. Fluent in English, Czech and Russian. Pavel is a 43-101 Certified Professional Geologist and a Fellow of Society of Economic Geologists.

### **Mr Kiran Morzaria - Non-Executive Director**

Kiran is currently Chief Executive Officer and Director of the Company's largest shareholder, Rare Earth Minerals plc.

Kiran holds a Bachelor of Engineering (Industrial Geology) from the Camborne School of Mines and an MBA (Finance) from CASS Business School. He has extensive experience in the mineral resource industry working in both operational and management roles. Kiran spent the first four years of his career in exploration, mining and civil engineering before obtaining his MBA. He has served as a director of a number of public companies in both an executive and non-executive capacity.

### **Julia Beckett, CSA(Cert) - Company Secretary**

Julia holds a Certificate in Governance Practice and Administration and is a Certificated Member of Chartered Secretaries Australia.

Julia is a corporate governance professional, having worked in corporate administration and compliance for the past five years. She has been involved in business acquisitions, mergers, initial public offerings and capital raisings, as well as statutory and financial reporting.

Julia is currently Company Secretary of Ensurance Ltd.



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