



# HALLGARTEN & COMPANY

## Coverage Update

Christopher Ecclestone  
[ceccestone@hallgartenco.com](mailto:ceccestone@hallgartenco.com)

## Phoenix Copper

(LSE: PXC, OTCQX: PXCLF)

Strategy: LONG

### Key Metrics

Price (GBP)	£0.37
Target 12mth (GBP) - Post-Financing	£1.07
Upside to Target	189.2%
12mth hi-low (GBP)	£0.05 to £0.647
Market Cap (GBP mn)	£23.547
Market Cap (GBP mn) - Post-Financing	£40.926
<b>Shares Outstanding (mns)</b>	<b>63.64</b>
<b>Shares Outstanding -(mns) Post-Financing</b>	<b>110.61</b>

# Phoenix Copper

## Riding Copper's Renaissance

- + Copper's surge since late 2020 has dramatically changed the outlook for those few companies that have projects with a short trajectory to production
- + With the revival of all three key metals (Copper, Gold & Silver) present in the Empire project the economics of various mining options are significantly boosted
- + Expanded mine plan sets out the basis for reactivating the past producing Empire Mine in Idaho as an open-pit mine over four stages across ten years
- + Starter pit for the oxide already in place
- + Life of mine copper equivalent cash cost of \$1.83/lb of Cu equivalent
- + Low capex of US\$52.6mn for initiating the Empire open-pit
- + Idaho comes out with flying colours from the latest Fraser Institute survey
- + Strong free cashflow after initial payback lays the ground for a steady and rising dividend payout
- + Financing closed this month raising £16.45mn with a potential further subscription to qualifying shareholders of nearly £2mn more
- + Red Star project, on an adjoining concession, is showing strong potential with a different type of mineralisation and different metals mix (more Zinc/Lead & Silver)
- ✗ Gold has lost some of its lustre after its 2021 peak
- ✗ Financing of mine development remains difficult

### Copper – Back with a Vengeance

Copper has managed to be one of the metals that is seen as both traditional and yet new-tech at the same time. Its *aficionados* can reel off how many kilos there are in the average EV and thus its fortunes are linked to the great new wave of the future.

One does not need to be a subscriber to apocalyptic views of shortages caused by the EV revolution to be nevertheless bullish on copper. The metal has not been as underinvested in recent times as say, Zinc, but the long period of quiescence in mining markets meant exploration was minimal and development to mining status was largely in the hands of the Chinese, (e.g. MMG at Las Bambas). Big mines (or rather big discoveries of potentially new big mines) though, are generally viewed to be a thing of the past. While it is not said out loud in public “Peak Copper” in Chile is a real threat. All this augurs well for upcoming new producers.

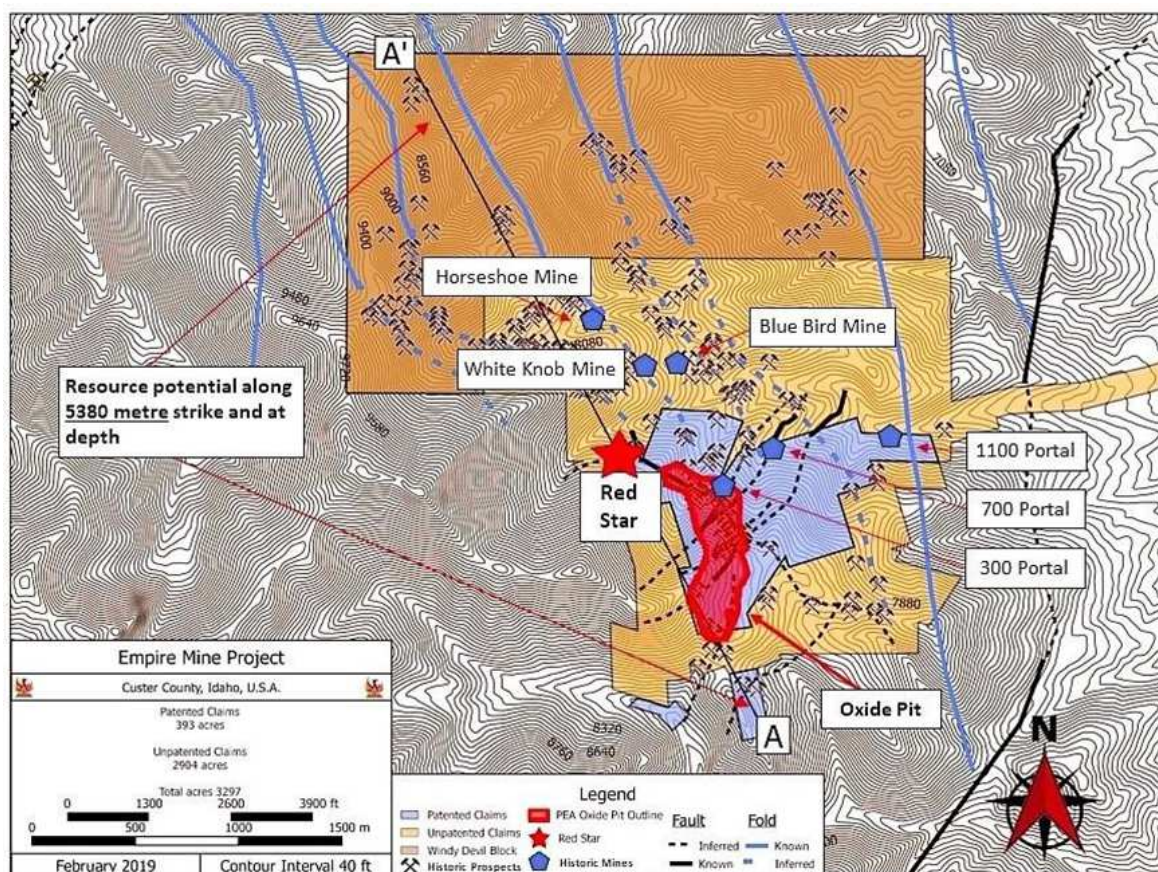
Phoenix Copper has just published a revised economic model for its “new” Empire Mine with strong cashflows and a short payback period. The market has blithely ignored the good news while pursuing

more nebulous exploration plays, which do nothing to grapple with the increasing supply deficit in the “red metal”. In this coverage update we shall look at the economics of the revised plan, review the recent exploration work and muse upon the possible revenue implications of the breakthrough past \$4 per lb in the copper price.

## The Empire Mine

The Empire Mine is a former copper/gold/silver producer located in the Alder Creek Mining District in Custer County, central Idaho. The property is approximately 5.5 km southwest of Mackay, Idaho in the Big Lost River Valley between Arco, Idaho and Challis, Idaho.

The property, at the time that Phoenix acquired it, consisted of 23 patented (private) claims, 21 unpatented claims and six unpatented mill-site claims covering a contiguous 301 hectares (743.7 acres). Since then it has been added to, in November 2017, with the Horseshoe claims to the north consisting of 564 acres in 33 claims.



At Empire, it is estimated that less than 1% of the potential ore system has been explored or exploited to date and, accordingly, there is significant opportunity to increase the resource through phased exploration; the current resources relate to the oxide resource only, with the exception of the Red Star



discovery "Inferred" resource, which remains open along strike and does not include the deeper, higher grade sulphides. In addition, Phoenix has increased the claim area from 818 acres at the time of its acquisition to 5,717 acres, mainly to the northwest and west, and in so doing has increased the potential for additional oxide and sulphide resources by a total strike length of approximately 2,500 metres towards another brownfield mine, the Horseshoe Mine, which is now within the property boundary.

In April of 2018 Phoenix added to its holdings at the Empire Mine increasing its land position by 397 acres in 21 claims, to a total land package of 1,774 contiguous acres. The new mining claims were contiguous with the existing Horseshoe Claim Block, extending the eastern and western ends of the block, allowing for future expansion and access.

In August of 2018 the Granite claims were added, consisting of 20 acres of patented claims and 43 acres of unpatented ground, increasing the overall acreage to 1,837 acres. There is mineralisation and some old workings in this claim group which indicates the possibility of further mineralisation to the south along strike. A review of the historical smelter receipts provided in the Granite Block data package indicates that production of gold, silver, copper and zinc ores occurred intermittently from 1936 to 1943, and again from 1961 to 1964. Other documentation in the data package suggests that production was predominantly from a shallow shaft sunk in the northwest corner of the patented claim.



## Geology

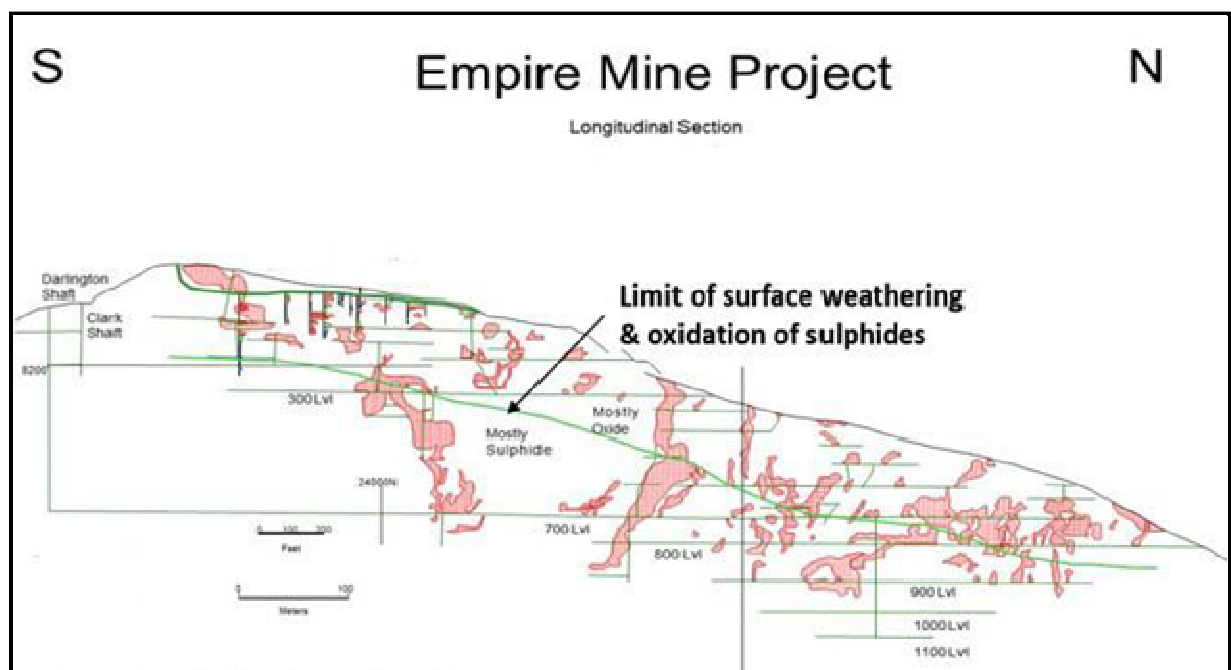
The project area overlies a north-trending contact zone between an Eocene granitic complex, and the

Upper Mississippian age White Knob Limestone. This contact zone includes a garnet-pyroxene-magnetite skarn developed in both the carbonate and intrusive rocks. The skarn hosts the polymetallic copper mineralization which characterizes the Empire mine. The intrusive contact is sharp and dips steeply eastward.

Copper-gold-zinc-silver mineralization at the Empire mine falls into the skarn-hosted, polymetallic deposit type. Polymetallic mineralisation is hosted along a calc-silicate skarn that forms a 493 feet wide sinuous belt extending for more than 8,202 feet along the limestone - porphyry contact from the south end of the property to the White Knob mine. The mineralisation intersected is oxidised copper from surface to a vertical depth of approximately 120m, with sulphide copper mineralisation dominating below that depth. Historical results and mining records suggest that skarn mineralization at Empire may exhibit depth zonation with copper giving way to zinc and finally tungsten mineralization.

The highest-grade mineralization at the Empire mine occurs as a poorly-defined, series of en echelon steeply-dipping, 5m to 15m thick, copper-gold zones located within and below the large body of skarn-hosted disseminated copper mineralization. In the deeper levels of the mine, this structure contains lenses and veins of copper-bearing massive sulphide. This higher-grade zone forms the bulk of the historical Empire mine, which has been partially worked for 350 m vertically and 900 m laterally. The near-surface oxide mineralization is interpreted to remain open along strike. The higher-grade sulphide zone, which underlies the oxide zone, is open in all directions, and remains virtually unexplored.

The horizon between the oxide and sulphide zones is shown as the green line in the cross-section below:



## Exploration

While drilling has taken place over many decades by various companies, the work by the US Bureau of Mines (USBM) in 1943 is particularly interesting as they drilled as many as 21 diamond drill holes totaling 3,863 feet from underground while the mine was functioning.

Of the USBM work, only 11 drillholes totaling 1,665 feet are included in the current database. No downhole surveys were recorded for the program. The USBM drillholes were used for the estimation of mineral reserves by U.S. Geologic Survey. Drilling was oriented in multiple directions and variably intersected significant copper, gold, and silver mineralization. The results of the U.S.B.M. drilling program confirmed high grade copper, gold, and silver near existing mine developments as can be seen in the table below:

Hole ID	From (ft)	To (ft)	Length (ft)	Cu %	Au g/t	Ag g/t	Zn %
B2	144	158	14	2.6	0.1	19	Not Analyzed
B10	0	52	52	2.9	3.1	32	Not Analyzed
B11	0	30.5	30.5	2.1	1.6	24	Not Analyzed
B12	0	22	22	2	1.5	24	Not Analyzed
B13	0	9	9	2.5	1.8	28	Not Analyzed
B16	0	45.5	45.5	1.6	0.3	22	Not Analyzed
B17	0	42	42	2.1	0.4	22	Not Analyzed
B23	0	24.5	24.5	3.1	5.5	43	Not Analyzed
B28	0	57.5	57.5	3.1	2.3	44	Not Analyzed

Since the mine closure, exploration has been primarily focused on the surface copper oxide mineralisation, which is amenable to SX-EW cathode copper recovery; a total of 220 exploration shallow drill holes were completed between 1964 and 1997 by various exploration companies. Nonetheless, data collected also provided insight into the enriched secondary sulphide copper zone (supergene zone), with intersections recovered ranging from 1.2% Cu to 11.4% Cu.

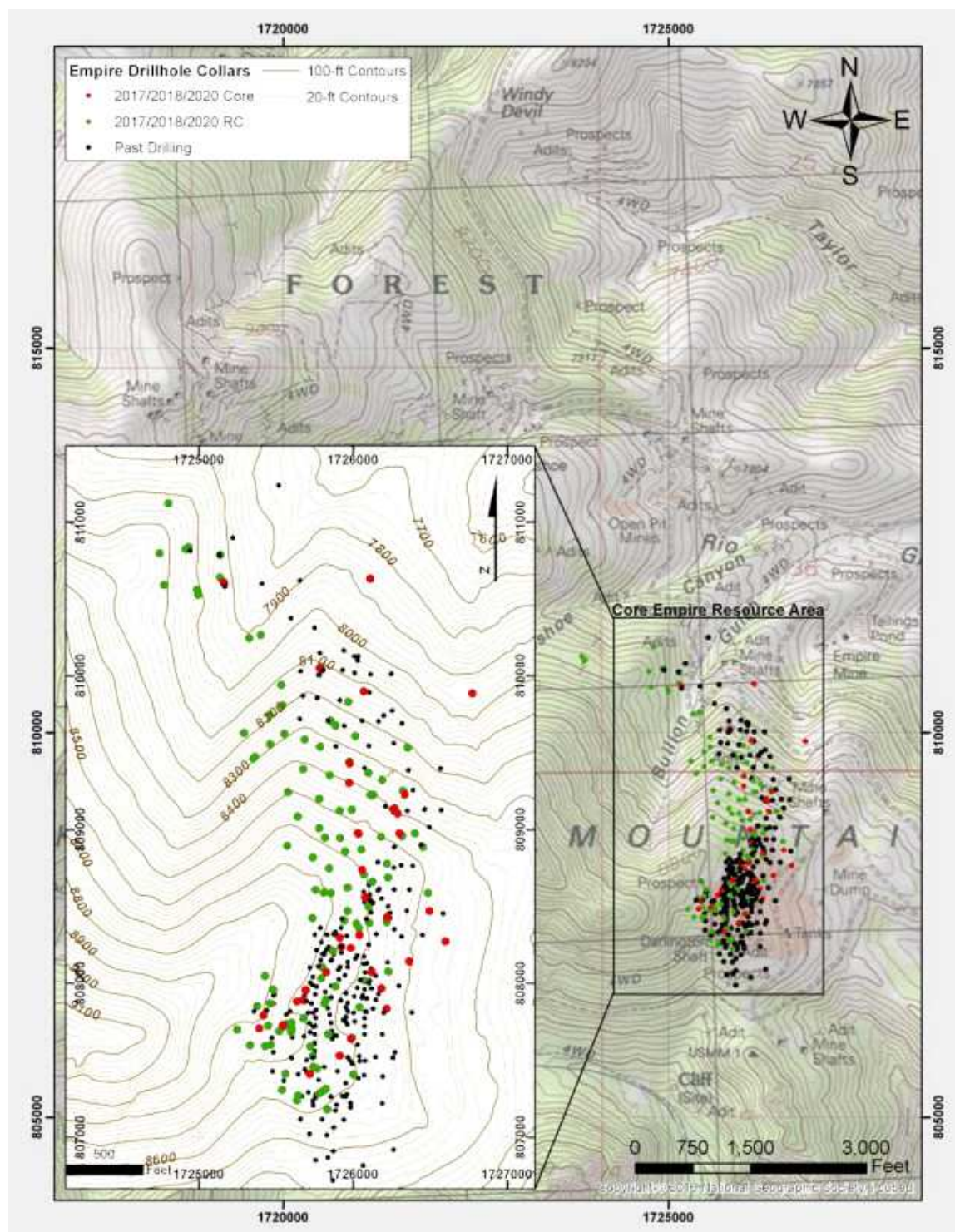
Drilling at Empire, prior to that undertaken by Phoenix/Konnex, covered only 71 hectares and totaled 26,700 metres, consisting of both RC and Core drilling. Drilling has been conducted predominately from the surface, except for drilling completed by the USBM. Drillholes at ground surface were oriented either vertically or perpendicular to mineralized skarn. Drilling has been concentrated in the southern extent of the property with only an estimated <1% of the potential ore system having been explored to date.

In 2017, Phoenix (Konnex Resources as the operating company in Idaho) completed 30 drillholes totaling 7,067 feet in the aforementioned 71 ha area. The drilling program included infill and step out holes to test mineralization continuity up dip to the west. Twenty-two RC drillholes account for 5,257 feet, and 8 diamond drillholes total 1,810 feet. Drillholes were oriented either vertically or angled in a westerly direction to be perpendicular to mineralized skarn.

In 2018, Konnex completed 7,318ft of core drilling and 20,350 feet of RC drilling. The 2018 drilling campaign was designed to target the inferred areas within the proposed pit boundary and improve



understanding of mineralization in those areas, and to target peripheral mineralization in the northern and eastern portions of the project area outside of the pit. Based on the 2018 drill results, known mineralization now covers a strike length of roughly 2.2 miles.



In 2020, Konnex completed 356 feet of core drilling and 5,215 feet of RC drilling. The 2020 drilling campaign was designed to confirm the presence and extent of near-surface, high-grade gold in the southern half the project area. Drillholes were generally angled west to be perpendicular to mineralized skarn. Due to topographic constraints, two holes were angled south, one hole was angled southeast, two holes were angled east-southeast, and one hole was angled northeast.

## Resource

The previous JORC-compliant resource dated from November 2017 and was prepared by Hard Rock Consulting of Lakewood, Colorado. In October of 2020, Phoenix published a NI43-101 resource, prepared again by the same consultants, which incorporated the 32-hole, 1,700-metre Empire reverse-circulation and core drilling program results undertaken in 2020.

Empire Mine - Resource Estimate - October 2020									
	Tonnes	Copper		Zinc		Gold		Silver	
		%	tonnes	%	tonnes	g/t	ozs	g/t	ozs
Measured	8,289,719	0.42	34,655	0.22	18,160	0.33	87,036	11.4	3,031,791
Indicated	14,619,340	0.36	52,888	0.18	25,711	0.32	151,370	9.7	4,563,407
M & I	22,909,059	0.38	87,543	0.14	43,871	0.32	238,406	10.3	7,595,198
Inferred	10,612,556	0.4	42,098	0.14	14,569	0.34	117,117	7.4	2,538,574

Below can be seen the evolution of resource in recent years:

Measured & Indicated NI 43-101 Resources	Copper Tonnes	Zinc Tonnes	Gold Ounces	Silver Ounces
April 2018	53,770	14,314	79,000	3,560,000
May 2019	73,872	29,813	139,000	6,038,000
May 2020	81,948	37,686	218,000	6,803,500
October 2020	87,543	43,871	238,406	7,595,198
<b>NI 43-101 Inferred Resources October 2020</b>				
October 2020	42,098	14,569	117,117	2,538,574

The current resource does not include this sulphide zone where intercepts of up to 11.4% Cu have been returned. The higher-grade sulphide zone underlying the oxide zone is open in all directions and remains virtually unexplored.

Five drill hole intercepts contain predominantly chalcopyrite & bornite copper sulphide mineralisation. Hole KX18-47 confirmed the presence of higher-grade sulphide mineralisation beneath the oxide open



pit. These results prompt the thought that mining of the sulphide by open pit may be the best strategy in the short term rather than the long-term.

## **Rationale**

The plan for production at the Empire Mine has been through several iterations as the state of the mining equities market and the various component minerals has evolved in the last three years. In our initiation of coverage in 2018 we reported on the PEA of April 2018.

In early August 2019, the company announced a revised economic model prepared by Hard Rock Consulting. That new economic model was developed following the publication in May 2019 of an updated NI 43-101 compliant resource, which incorporated the 8,600-metre Empire drilling program results from exploration work done in 2018. That model was based on ore production of 1.6 million tons per annum over an initial nine-year mine life, with an additional two years of low-grade ore processing at the end of mining. That model (done as it was before the rally in precious metals prices began) did not take into account recovery of gold and silver but did include zinc recovery.

The latest updated EM has likewise been prepared in conjunction with HRC, and is derived following the publication in October 2020 of the new NI 43-101 compliant resource. Now the company is moving towards a Pre-Feasibility Study to be published in mid-2021.

## **Revised Economic Model – February 2021**

As mentioned earlier the rapidly evolving copper price has made a constantly moving target of projecting a mine plan and the likely economic outcomes. This is evidenced by the latest version which employs metal prices of \$3.60/lb Copper, \$1.20/lb Zinc, \$1,825/oz Gold and \$27/oz Silver when formulated likely revenues. The copper assumption was already out by 10% by the time the new model rolled off the production line.

The proposed 10-year Life of Mine (LOM) involves processing a total of 14.3 million tonnes Measured & Indicated (M&I) ore at a 0.5% copper cut-off grade.

The addition of gold and silver production from the Empire open pit was made possible by drilling and metallurgical test work undertaken in 2020. The new model uses a 0.5% copper cut-off grade and assumes mining and processing of 14.3 million tonnes of M&I ore in two phases, leading off with copper and zinc production in the first three years of operations, and adding gold and silver production from the fourth year of operations.

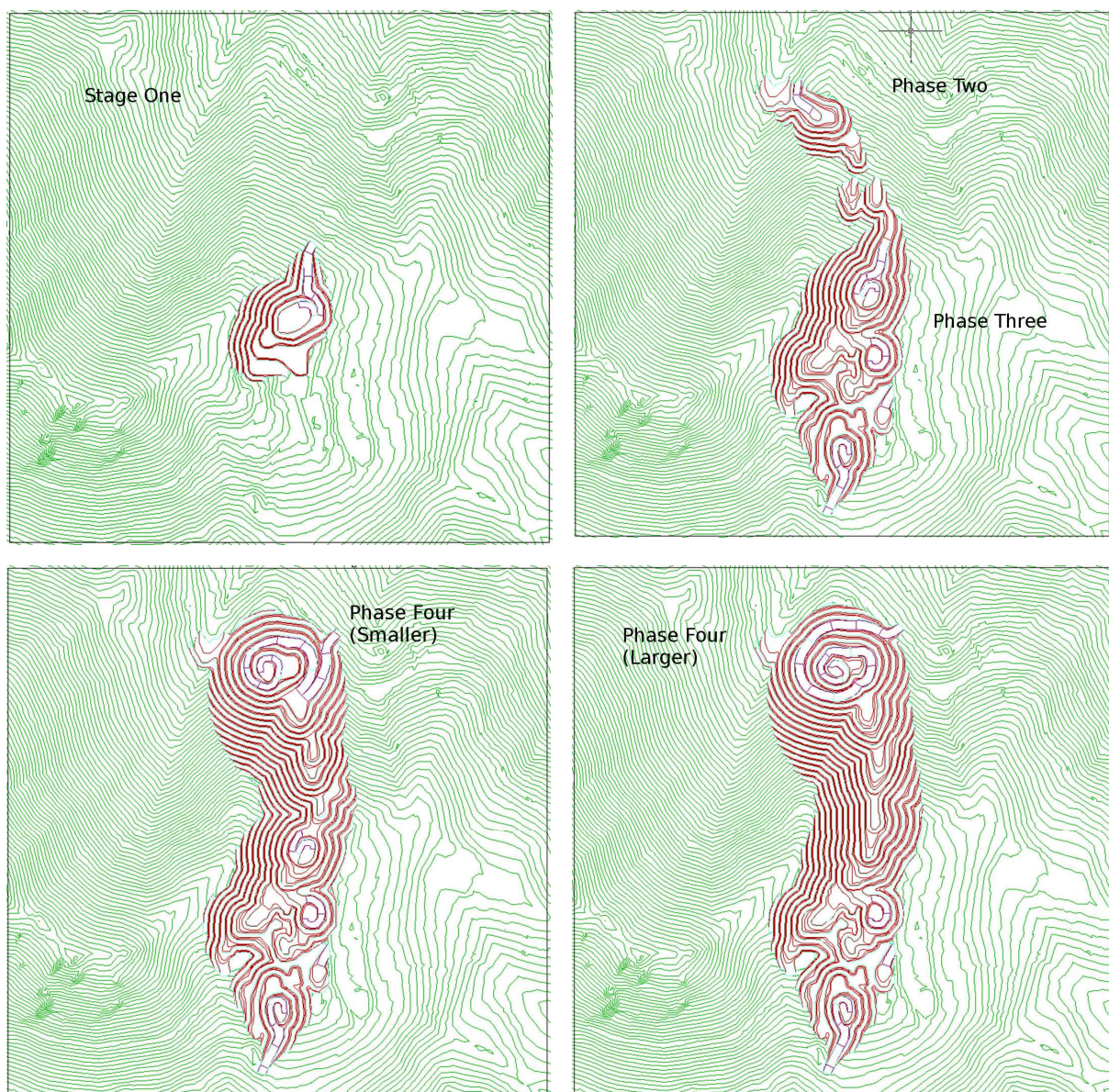
Under this revised plan, open-pit operations (in theory) end in Year 7, although the management team is confident that this mine life will be extended. The initial capital requirement for the two-phase approach is estimated at \$52 million, and the model indicates that, at current metal prices, the mine can pay back this initial capex in less than two years.

There is clearly considerable opportunity to extend the LOM through exploration and development

funded from project cashflows.

## Mining

As mentioned, the revised economic model utilises two separate processing circuits, with approximately 14.3 million tonnes of ore production, at 2.1 million tonnes per annum at a 0.5% copper cut-off grade, over the initial seven years. The company has used the pit production schedule prepared by HRC, and production, capital and operating cost estimates prepared by Phoenix staff in conjunction with HRC.



The Empire mine is situated at an elevation of 8,500 feet, while the proposed plant will sit at an

elevation of 6,000 feet, essentially in the same location of the historic Empire mine concentrator and tailings.

It is intended that the Empire Project will use solvent extraction/electrowinning (SX/EW) to recover copper from a heap leach pad. The SX/EW facility is designed to recover copper from pregnant leach solution at a nominal flow of 1,480 gpm and copper feed grade of 2.67 grams per liter to produce cathode-quality copper with 99.99% purity.

### **Phased Ramp-Up**

It is envisaged that there will be a two-phased process to recover copper, zinc, gold and silver:

- Phase 1 heap leach project, a seven-year operation processing 2.1 million tonnes per year, producing copper and zinc from years one to seven of the LOM
- Phase 2 agitation leach project, a seven-year operation processing ore from Phase 1, producing gold and silver from years four to 10 of the LOM, using environmentally friendly ammonium thiosulphate (ATS) processing reagent

The two-phase plan allows for the initial production of copper and zinc by heap leaching over a seven year open pit mine life, followed by the rehandling of the heaps into a gold- and silver-recovery circuit beginning in Year 4 and continuing through to year 10.

This phase is focused on delivering an open-pit copper operation to mine the oxide resource utilizing the heap-leach option. The initial rate of production will be 8,700 tonnes of cathode copper per annum with a minimum life of mine of 10 years.

### **Processing**

The ore will be processed sequentially, first for copper-zinc utilising standard heap leach SX/EW, followed by gold-silver recovery in an ATS circuit. In Year 4 of operations, the ore previously leached for copper-zinc will be moved from the Phase 1 leach pad and introduced to the gold-silver circuit. The heaps will be staged such that copper-zinc leaching can continue with ore stacked to the pad in Years 4 through 7, and then moved to the precious metals circuit after the copper-zinc recovery reaches its optimal level.

Open-pit operations currently end in Year 7 with residual copper-zinc leaching continuing through maximum recovery, and the gold-silver circuit operating through to Year 10.

The use of environmentally-friendly Ammonium Thiosulphate (ATS) for the processing of the precious metals minimizes the potential for problems from regulators. ATS, which is much less industrially utilized in the US, but is noted for being non-toxic and environmentally-friendly, as well as low cost when compared to sodium cyanide.

The process flow diagram is shown on the following page:





Its use potentially allows Phoenix to time the processing of the Empire precious metals streams in parallel with the base metals given that the company will not need to enter into a lengthy permitting process for the cyanide operation. Management believes that this presents a clear advantage in bringing forward the timing of precious metal production, making the project more robust economically.

Precious metals tests performed on samples from the Empire open pit deposit using ATS reagent resulted in high gold recoveries of 97.8% and 97.7%, and silver recoveries of 69.8% and 78.2%, respectively. ATS reagent consumption was shown to be comparable to sodium cyanide in back-to-back bench scale tests.

In the wake of those tests the company moved on to a pilot scale test plant sited in the AuRIC Laboratory in Salt Lake City and scaled to run multiple tonnage leach samples from various locations around the Empire open pit deposit using the ATS reagent.

### **Economic Outcomes**

The updated economic model envisages a “starter” operation with revenues of \$784 million with a pre-tax 7.5% NPV of \$105 million and an IRR of 57%. The significant increase in the NPV from the previous EM (August 2019) is a product of increased M&I resources, a higher head grade for copper, the use of ATS to recover gold and silver, and an increase in ore processing capacity from 1.6 to 2.1 million tonnes per year. The NPV is also well in excess of pre-production capital costs.

Some key metrics of the latest model include:

- LOM revenue of \$784mn, producing average annual production of 8,550 tonnes of copper, 1,970 tonnes of zinc, 17,235 ounces of gold and 680,050 ounces of silver
- Initial head grade of 0.7% copper
- Pre-production capital cost of \$52.6mn
- LOM copper equivalent cash operating cost of \$1.83/lb
- LOM gold equivalent cash operating cost of \$1,190/oz
- LOM EBITDA of \$310mn and post-tax cash flow of \$155mn
- 7.5% base case NPV of \$105mn pre-tax (57% IRR) and \$88mn post-tax (47% IRR)
- 7.5% NPV of \$157mn pre-tax (77% IRR) and \$140 million post-tax (68% IRR) with 10% increase in metal prices

Encouraging project economics to support debt finance to minimise dilution

Ongoing optimisation of the project to improve the economics and extend the mine life.

Of course, these calculations were made using a copper price of \$3.60 a lb and now the current price is \$4.30. Feeding the new copper price into the model has the following effects:

- ✓ The Measured and Indicated contained copper value rises by \$124m from \$621m to \$745m.
- ✓ The post-tax Net Present Value (7.5%) rises from \$87.9m to \$150m. This compares with pre-production CAPEX of \$52.6m
- ✓ The post-tax Internal Rate of Return (IRR) rises from 47% to 80%.

### CapEx

The open pit mining equipment is assumed to be leased rather than purchased.

The processing complex will require:

- Crushing & screening plant
- Crushed ore stockpile
- Agglomerator and conveyors
- Leach pad & ponds
- SX plant with one train with two extraction mixer settlers and one stripper mixer settler
- Tank farm for handling process liquids;
- EW tankhouse with 40 electrowinning cells and a semi-automatic stripping machine
- Electrical substation

<b>Empire Mine - Pre-production CapEx</b>	
US\$mns	
Crushing & Conveying	\$9,157,000
Infrastructure	\$1,250,000
Leach Pad & Ponds	\$4,267,000
Mine	\$9,478,000
Process Plant	\$24,358,000
Site Works	\$5,888,000
Utilities	\$2,200,000
Reclamation	\$2,000,000
Working Capital/first fill	\$2,845,000
<b>Total</b>	<b><u>\$61,443,000</u></b>

At year three of production, the construction of the Agitation Leach circuit for the precious metals production shall commence, with revenues starting to flow from year four.



### **Empire Mine - Agitation Leach CapEx**

US\$mns

Loading & Hauling \$2,135,000

Agitation Leach ATS Process Plant \$25,811,000

Reagents first fill \$2,891,000

Owners costs \$6,000,000

Total \$36,837,000

### **Earnings Outlook**

On the following page one can see our version of the economic model. We use different prices and slightly varying assumptions to those of the management.

As far as pricing is concerned, we used:

- Copper at \$4.20 per
- Gold at \$1,750
- Silver at \$26
- Zinc at \$1.25

Using these inputs and some assumptions on the interest payment flow as the debt outstanding should fall rapidly through repayment out of strong free-cashflows we come up with these results for the mine operation.

Gold and silver revenues kick in from Year 4 with the contribution from the Agitation Leach operations. These revenues continue for another three years after the (theoretical) closure of the mining operation.

Peak revenues should come in year six with a searing pre-tax bottom line of over \$100mn. However the revenues right from the beginning of operations should permit a dividend payment per annum of at least the current market cap. It is this factor more than anything else that leaves us slightly boggled by the current low valuation of the company. If one could be repaid the totality of one's investment within the first two years of operations then all the rest is a free carry.

This then negates the arguments of those who would point to the limited mine-life. Those arguments should go the way of all things anyway due to the consideration that it is highly likely that the shift into the sulphides will expand the mine life, whether this is undertaken as an expansion of the open pit or going underground. Over and beyond that there is potential expansion along trend and the prospect of Red Star as a satellite mine.

### Empire Mine - Hallgarten Earnings Model

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Gross Revenues</b>										
Base metals	110.0	85.0	88.0	65.0	55.0	106.0	60.0			
Gold/Silver				48.0	48.0	48.0	47.0	47.0	47.0	38.0
Royalty/NSR	6.5	5.0	5.0	7.0	6.7	9.7	6.5	3.0	3.0	2.5
<b>Net Gross Revenues</b>	<b>103.5</b>	<b>80.0</b>	<b>83.0</b>	<b>106.0</b>	<b>96.3</b>	<b>144.3</b>	<b>100.5</b>	<b>44.0</b>	<b>44.0</b>	<b>35.5</b>
Mining Cost	11.0	10.4	13.0	22.5	24.3	14.3	6.0			
<b>Processing</b>										
Base metals	19.0	19.0	18.8	18.0	17.7	19.0	16.5			
Gold/Silver				31.5	31.5	31.5	31.5	31.4	31.4	25.0
<b>Gross Profit</b>	<b>73.5</b>	<b>50.6</b>	<b>51.2</b>	<b>65.5</b>	<b>54.3</b>	<b>111.0</b>	<b>78.0</b>	<b>12.6</b>	<b>12.6</b>	<b>10.5</b>
GS&A	2.7	2.7	2.7	3.7	3.7	3.7	3.1	1.0	1.0	0.9
Local taxes	0.6	0.6	0.5	0.2	0.5	0.6	0.6	0.7	0.7	0.6
Financing Costs	0.7	2.7	2.8	3.0	3.6	1.4	1.3			
Interest	5.0	4.0	3.0	2.0	1.0	0.3	0.2			
<b>Pre-tax Profits</b>	<b>64.5</b>	<b>40.6</b>	<b>42.2</b>	<b>56.6</b>	<b>45.5</b>	<b>105.0</b>	<b>72.8</b>	<b>10.9</b>	<b>10.9</b>	<b>9.1</b>

## **The Sulphide Opportunity**

In some ways the more exciting part of the Empire project is the sulphide zone, that underlays the oxide later. The original plan here was to extend the life of mine and capitalise on the significant potential presented by the sulphide mineralisation via an underground operation.

While it is too early to elaborate on the way an underground revival might be staged at this moment for, while it was exploited in the past, none of the extant resource relates to the mineralisation at depth. Nevertheless, it is important to note that the top of the sulphide zone is already laced with significant drifts and other workings from the period pre-1943. This provides the potential to not only access the zone for exploration work (i.e. underground drilling) but also potentially reduces the future capex and time to production should a decision be made to exploit this opportunity.

As we noted in our initiation of coverage there is even a Tungsten zone at depth that could be exploited at a future date and which was the subject of some limited exploitation in the 1940s.

## **Red Star**

The newly discovered sulphide occurrence named Red Star, located 330 metres northwest of the oxide pit. This prospect was drilled for the first time in October 2018. Three drill holes plus surface sampling were completed in a short campaign. These showed a transition to a high-grade Silver/Lead system.

The drilling highlights -Silver and Lead intercepts - were:

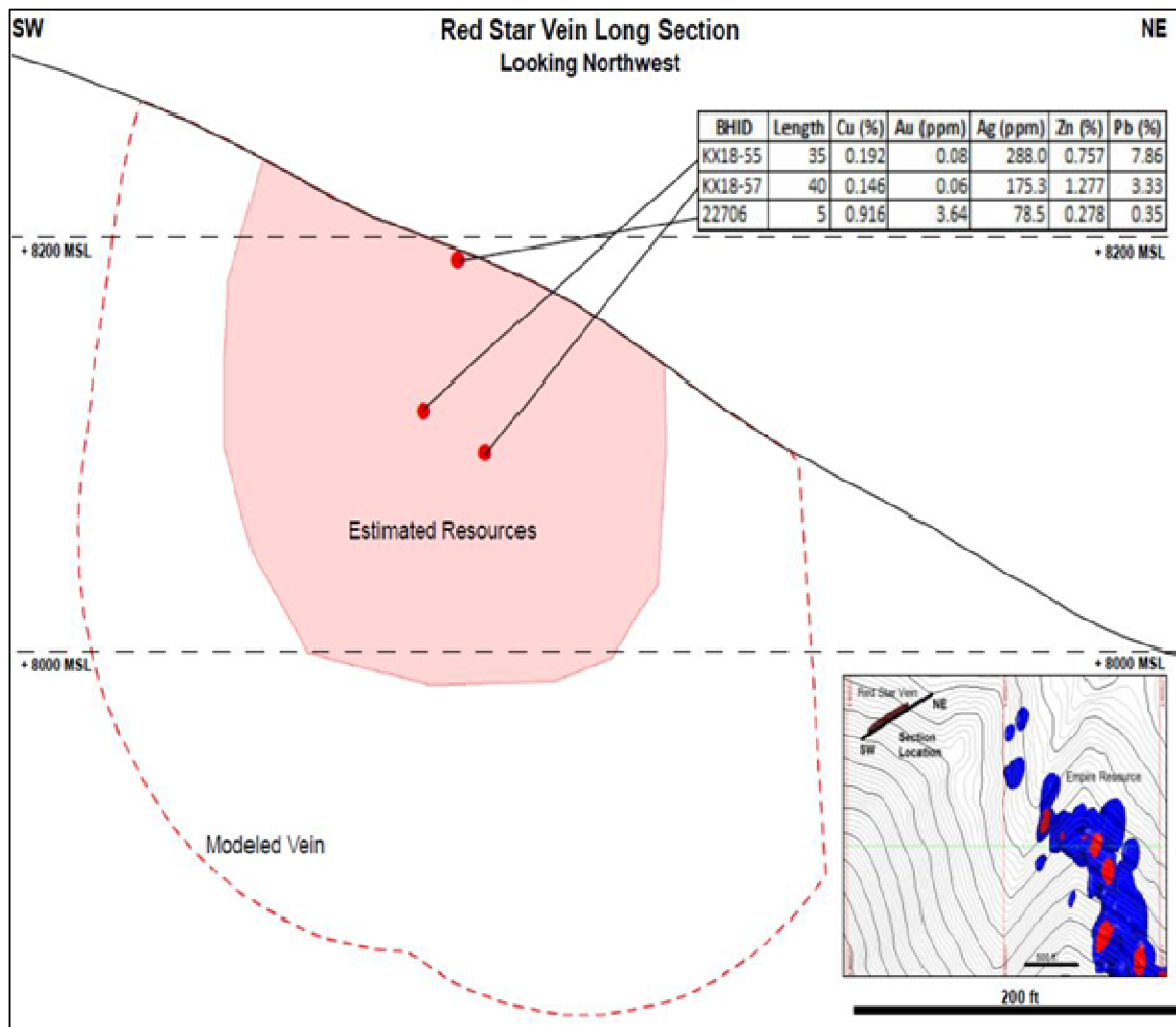
- Hole KX18-55:            9.1 m of 360 g/t Silver and 9.92% Lead  
                             including 1.5 m of 497 g/t Silver and 13.30% Lead
- Hole KX18-57:            15.2 m of 159 g/t Silver and 2.83% Lead  
                             including 1.5 m of 1,111 g/t Silver and 20% Lead

Management sustains that these results confirm its hypothesis that the Empire Mine's mineralisation zone is part of a considerably larger mineralised system which includes the Red Star Zone and the Horseshoe Block.

The Red Star Zone, and the Horseshoe Block, to the north appear to be the "upper" portion of the whole mineralised system, with an underlying zone of Empire Mine style copper, zinc, gold and silver mineralisation.

The company's strategy is to advance systematic mapping, sampling and drilling work to confirm the continuity of the mineralisation to the north-northwest from the Empire Mine.





A maiden resource estimation was completed by HRC showing a contained metal value per tonne of US\$238, primarily in lead and silver values.

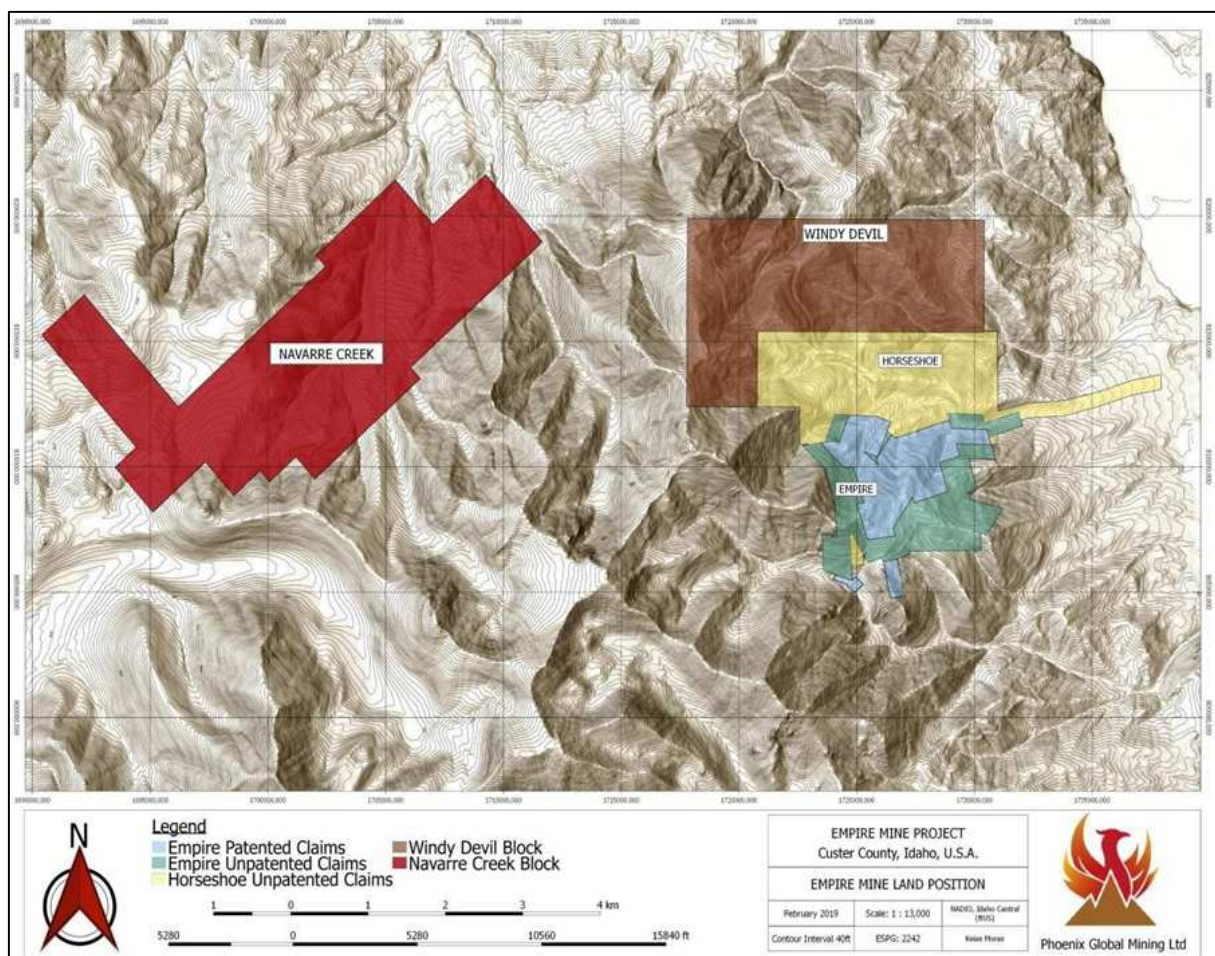
Red Star - Resource Estimate											
Category	Tonnes						Contained Metal				
		Ag g/t	Au g/t	Pb %	Zn %	Cu %	Ag ozs	Au ozs	Pb tonnes	Zn tonnes	Cu tonnes
Inferred	103,500	174.4	0.85	3.85	0.92	0.33	580,324	2,828	3,985	952	342

Red Star is showing an Inferred resource of 103,500 tonnes with an average grade of 173.4 grams per tonne silver, 0.85 grams per tonne gold, 0.33% copper, 3.85% lead, and 0.92% zinc. We look forward to the continued evaluation of the Red Star Zone.

The old Horseshoe Mine, 1,200 m to the northwest of Red Star within the 1,837-acre property, operated from 1916 to 1928 with reported grades of 20% Pb and over 100 ozs Ag per tonne.

### Navarre Creek

It is still early days still on this prospect. The map below shows it in relation to the main block of claims. The Navarre Creek claim block was acquired in 2019. It is comprised of 9.79 square kilometres (2,420 acres) of unpatented mining claims and is located approximately five kilometres north-northwest of the Empire Mine. In the opinion of the technical team the geology, with hydrothermally-altered volcanic rocks, appears similar to volcanic-hosted gold deposits on the Carlin Trend in Nevada.



During the summer of 2020, the exploration team mapped and sampled the property, with 90 rock-chip and grab samples collected from the Navarre Creek claims and sent to ALS Laboratories in Reno, USA for geochemical analysis.

Of the 90 samples, 53 were above the detection limit for gold with a high of 0.569 g/t, and 25 above the

detection limit for silver. There was also a strong correlation between elevated gold values and elevated antimony values, typical in Carlin-type epithermal gold systems. The presence of limestone in surface float is evidence that the Paleozoic sedimentary rocks that occur at the Empire Mine may be near the surface.

The Empire orebody is partly comprised of a magnetite skarn body hosted in Paleozoic limestone. Additional sampling is planned to be conducted in the area, as well as a ground magnetics survey. It was also noted that volcanic outcropping across the Navarre Creek area is strongly weathered and highly leached to depths of two to four metres.

### **Idaho – Rising in the Ranks**

The Fraser Institute remains the most respected survey of the fluctuating fortunes of the world's mining jurisdictions. The 2020 survey crowned Idaho with top spot when most observers would have blithely assumed that Nevada was the friendliest US state of mining.

In the rankings of the Policy Perception Index, Idaho displaced Finland from the top spot last year with the highest PPI score of 100. Idaho was followed by Wyoming in the second place, which moved from 16th in the previous year. Along with Idaho and Wyoming the top 10 ranked jurisdictions are Finland, the Republic of Ireland, Nevada, Utah, Arizona, Newfoundland & Labrador, Saskatchewan, and New Mexico.

Idaho ranked 9<sup>th</sup> in the investment attractiveness index. In particular the timeliness of dealing with exploration and drilling permits was cited by respondents amongst Idaho's attractions. The state also ranked fifth in the world in terms of legal system and sixth best amongst taxation regimes. In the important infrastructure category it ranked second (after Finland).

### **Our Take on Copper**

The global crisis of 2008 was a seminal year for the copper market. It was not that the metal went down. All metals did. It was that up until that time the global copper market had been in the hands of the major miners. While the prices did not always work out for them in the way they wanted they had quite a large degree of control over the stock of copper that was "seen" in the markets.

The wrenching effects of the crisis enabled the Chinese with trillions of dollars in accumulated reserves to devote some small part of the financial firepower to start to accumulate sizeable copper stockpiles in unmeasured warehouses and port facilities. Having substantial undisclosed" stockpiles meant that the Chinese could then add or subtract from exchange warehouses at will and pour cold water on the copper price when it was getting too overheated for Chinese purposes.

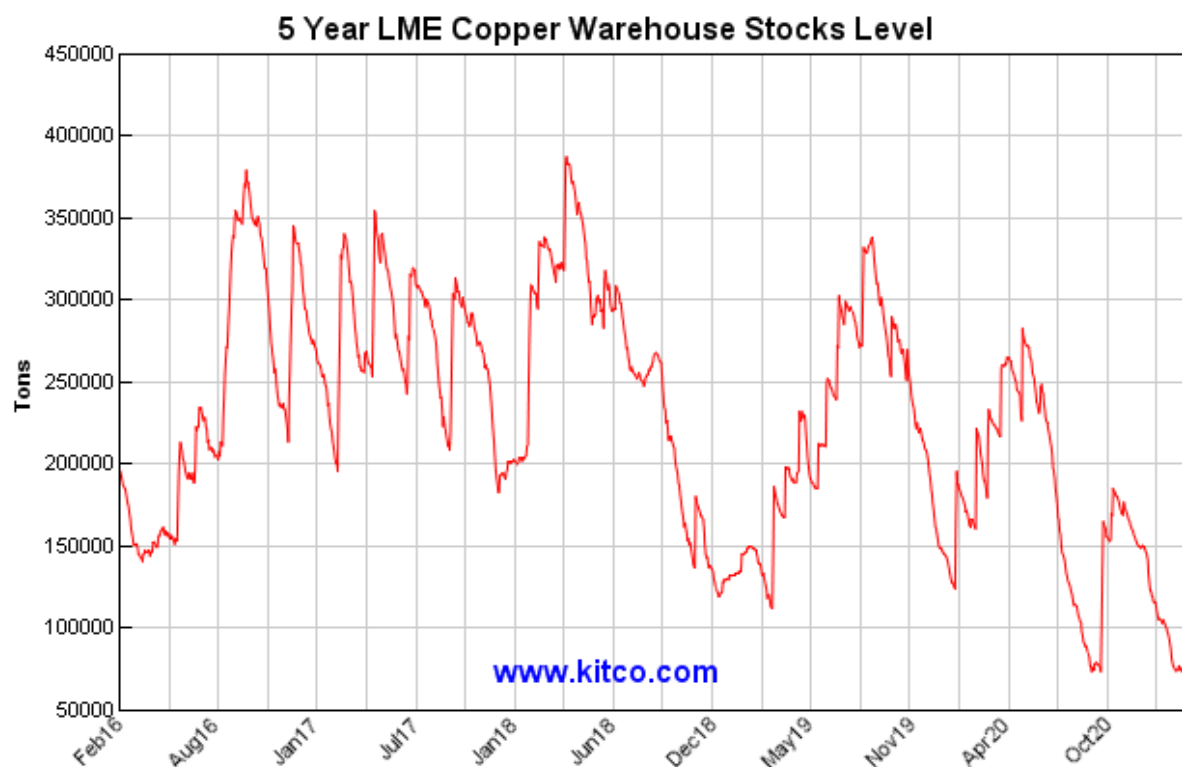
This new "nine-tenths of the iceberg one cannot see" provided the opportunity for scamsters on more than one occasion over the last decade to use the vagaries of stockpile sizes to borrow against supposed collateral with the likes of Standard Bank and Citibank falling prey to the ruse.

Some would dismiss this as mere conspiracy theory. However this period of Chinese control of the Copper price happens to have coincided with the depressed period of the mining sector in general (in a somewhat chicken-and-egg fashion) with the result that the Chinese have been able to position themselves in some of the most sizeable Copper assets under development such as Tenke Fungurume and Las Bambas. Funny that...

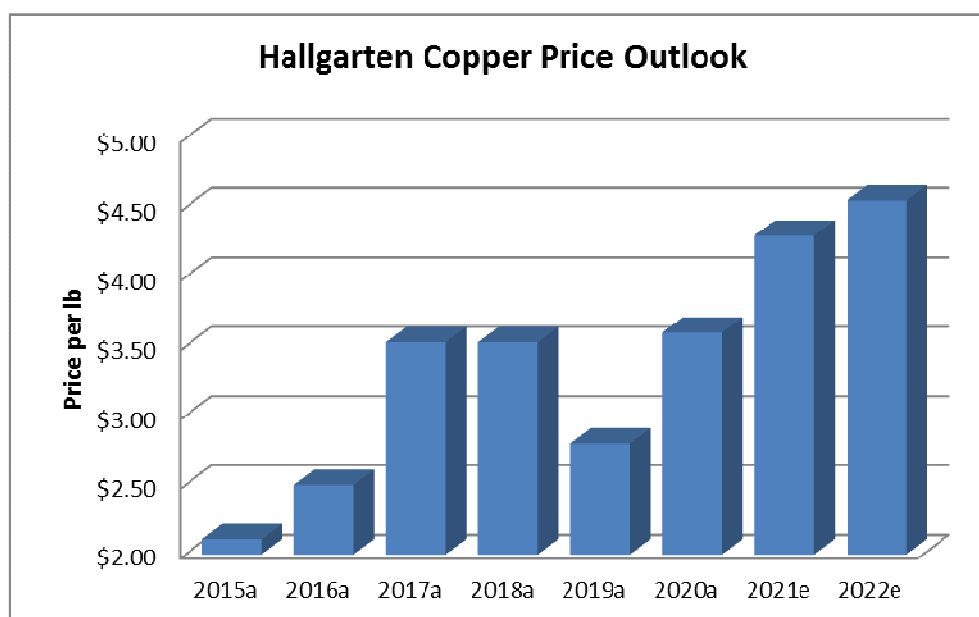


As the chart above shows the price started to pull out of its swoon in late 2016. It started a virtually unchecked march higher until it breached the \$3 per lb level. After mid-2018, the price doodled about for 18 months, but chiefly lower. It plunged to a five-year low on the outbreak of the pandemic but has since powered higher, decisively breaking through the key \$3 per lb mark, then charged higher, breaching the \$4 level in recent weeks, getting to \$4.30 before pulling back slightly.

The following chart shows the LME warehouse stocks. This shows an interesting seesaw action in recent times. Anyone would think that the trend is down and someone keeps moving in stocks to make it look like a stock build and then it gets slapped down again.



Unlike metals like Zinc/Lead and Nickel, there was some copper development during the downtime (e.g. Las Bambas, Constancia etc) but this is nowhere near sufficient to replace mines that have exited or reduced production and deal with even conservative forecasts of growth in consumption.



As the chart on the proceeding page shows we are looking for gradualism in our price projections from here through to 2022. We see resistance above US\$4 per lb, not so much from the general marketplace, but from the Chinese. They do not want to be at the mercy of “Western” miners again in this metal. How the pushback might manifest itself is not clear, but the Chinese firepower is considerable and should not be underrated.

In any case, the Copper price lingering between the current levels and we view any price over \$3.50 as a good place to be for copper miners and it ensures that mines with fair grades and CapEx numbers “within the ball park” will be seen as doable and desirable.

### **Financing**

With the salmon running it is always the best time to go fishing, and with the Copper price on a roll, Phoenix launched a financing in the first week of March. It announced that it had raised a total of £12.3mn (before costs), through the placing of 35,129,991 new shares at an issue price of 35 pence per share. It also announced a direct subscription for 11,870,009 new shares raising £4.15 million. In total funds raised through the placing and subscription shares will be £16.45mn.

In addition, in order to provide qualifying shareholders with an opportunity to participate in the raising at the discounted price, those qualifying may subscribe for new shares to raise up to a further £1.95mn.

This financing significantly increases the likelihood of getting the balance of construction money through debt (as the company now has sufficient equity to support it, if required).

The funds are to be employed to advance the open-pit, further exploration and to retire £2mn in debt. The exploration efforts will range across a number of targets, Red Star, Navarre and the sulphide targets beneath the planned open-pit. In particular the drilling of the sulphides during 2021, hopefully will expand the resource at depth and thus the mine life, further enhancing the economics. .

### **Risks**

There are a number of potential risks that should be taken into consideration:

- ✗ Global economic conditions deteriorate due to a rising interest rate scenario or slowing growth or both
- ✗ That the Copper price loses upward momentum
- ✗ The EPA under the Biden Administration proves to be less amenable to mining than it has been of late
- ✗ Financing difficulties for larger projects



The copper market is on the move but doubts still exist as to whether this is a secular change prompted by long term lack of new projects & development or whether it is a surge in demand. We would still signal caution as the long term economic effects of the current pandemic are still not clear. A number of Western economies have been severely battered and are showing decreased, or negative, growth.

The copper price could weaken again if it rises too far too fast, if interest rates perk up or if China shows significant slowdown due to the effects of retaliatory measures against the country or just slower exports to the West. As noted earlier, China has an interest in lower prices and has significant stockpiles and trading positions that it can exploit to play whackamole with the prices of metals it wishes to see lower.

The EPA is an unknown quantity in these early days of the Biden regime. Under Trump it was definitely “out of sight, out of mind” but whether it will be as predatory as it was under previous Democrat administrations remains to be seen. There will be a big intellectual disconnect between arguing for resource independence in key metals and then blocking mines that might help achieve that goal.

Financing is a perennial dilemma. The copper retreat of recent weeks shows a welcome consolidation. Nevertheless the relatively low capex to reboot the Empire Mine is definitely a major point in Phoenix Copper’s favour. As the precious metals are not the major target of the company an eventual streaming deal on the output on gold and/or silver should not be discounted.

## **Conclusion**

The Copper resurgence has been long in coming. The enthusiasts of the metal have long been voices crying in the wilderness about imminent supply shortages and chronic underinvestment in new capacity. In the curious days/weeks/month/years of pandemic with the world’s economies on their knees, Copper has risen and risen, overtaking the other base metals and moving inversely to gold as the red metal drew near to the key \$4 per lb threshold and then burst through it. In the process it has set alight the copper exploration space where many years of indifference have left only a hardy band of advanced developers, one of which being Phoenix Copper on which we launched coverage in 2018, shortly after its listing in London.

Part of the journey from explorer to producer is the inevitable evolution from first exploration through resource estimation, upgrades thereof, a PEA (maybe) and then on to the feasibility studies. In recent weeks Phoenix Copper has released a new economic study, which hit the markets just as copper was bursting through the key \$4 per lb level.

The recovery in Copper has not lifted the price of Phoenix Copper in the way we would have expected as it is one of the few mid-sized projects with a relatively short timeline to production and an unchallenging capex requirement. The error in investors’ thinking would seem to relate to their perception that the Empire Mine is not a mega-project and that it “only” has a ten-year Life of Mine. This fails to take into account that the current proposal is a “starter” open-pit operation, focusing on the oxide mineralisation

with potential for substantial expansion at depth and along strike.

With the “known unknown” of the sulphide potential of the Empire Mine, at depth, and recent exploration work fanning out into promising territory at Red Star to the north (and beyond), the prospect of the current mine plan being the be-all-and-end-all is remote indeed. The strong cash-flow and low capex of the Empire Mine reboot would signal strong cash-flow early on that would enable an aggressive dividend policy that should further boost the share price going forward.

The recent financing has expanded the number of shares on issue but paradoxically this strengthens the case for our price target by removing the chance of piecemeal financings which can weigh upon a stock price. We rate Phoenix Copper as a **LONG** (and have re-established a Long position in the Model Resources Portfolio during February) while upping our 12-month target price to GBP£1.07.



## Important disclosures

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60 Madison Ave, 6th Floor, New York, NY, 10010