

## Corporate

Current price **0.505p**

Sector **Mining**

Code **ROCK.L**

Listing **AIM**

### Share Performance



% Change	1m	3m	12m
— ROCK.L	+15.2	+16.5	-42.1

Source: Thomson Reuters, Allenby Capital

### Share Data

Market Cap (£m) **5.75**

Shares in issue (m) **1,135.4**

52 weeks (p)	High	Low
	<b>1.18</b>	<b>0.36</b>

Financial year end **31 December**

Source: Company Data, Allenby Capital

### Key Shareholders

Nicholas Walley	5.20%
Michael Somerset-Leeke	4.32%
David Price	3.42%
Patrick Elliott	1.36%
Edward Fry	1.14%

Source: Company Data, Allenby Capital

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# Rockfire Resources plc (ROCK.L)

## Impressive Molaoi maiden resource

Rockfire Resources has announced an impressive maiden resource for the recently acquired Molaoi zinc project in southern Greece. Based on only 1.4 km of the deposit's identified 7 km of strike a contained Zn Eq resource of 250,000 tonnes has been delineated. This is not only significant in terms of tonnage but the grade at 11% Zn Eq is competitive vis-à-vis other mine development projects. We believe that Rockfire's view that Molaoi has the potential to evolve as a 'globally significant', zinc project is well founded. Indeed, it could become a company maker. Rockfire is planning to appraise the remaining 5.6 km of strike in the coming months with an intensive drilling programme. Significantly, earlier drilling by the Greek government has already intersected high-grade zinc so arguably we are looking at a relatively low-risk project. In the light of a reassessment of the Molaoi project following the resource announcement, we have upgraded our Rockfire valuation from 2.3p/share to 2.6p/share.

- Molaoi location and background:** The 100% owned Molaoi project is located in the Peloponnese Province of southern Greece about 250 km southwest of Athens. Significantly, the location is a mere 10 km from the coast. The project is of long standing reflecting the original discovery in the 1960s by an arm of the Greek government. A Greek privately owned company, Hellenic Minerals IKE, identified Molaoi as a project of interest in 2016 and discussed development potential with the Greek government in 2018. Hellenic, with the technical and financial support of Rockfire, participated under an MOU in an international tender to acquire Molaoi in 2021. Hellenic was awarded a 30-year exploration and mining licence in March 2022. Under the MOU, Rockfire acquired 100% of the shares in Hellenic in early May 2022.
- Maiden resource:** Rockfire's maiden JORC resource for Molaoi was based on diamond drilling undertaken between 1979 and 1988 by the Greek government. In total, 173 cored holes were drilled along 7km of NW-SE trending strike. The bulk of the drilling, however, was in the lower 1.5 km. The maiden inferred resource was 2.3m tonnes of ore @ 9.4% Zn, 1.7% Pb and 47 g/t Ag. Contained Zn Eq was 250,000 tonnes while the zinc element alone was 210,000 tonnes. Calculations were based on a 4% Zn cut-off and recovery rates through the flotation process of 96% and 92% for zinc and lead respectively. The recovery rates reflect earlier metallurgical test work.
- How does the Molaoi resource compare?** There are perhaps five major high-grade zinc development projects underway globally at present with Zn Eq grades over 10%. All five are at a later stage of development than Molaoi having gone through feasibility or at least scoping studies. Arguably the most relevant benchmark is the TSX-V-listed Metallum Resources, Superior Lake project in Ontario. This has an ore resource of 2.35m tonnes and contained Zn Eq of 491,000 tonnes with an exceptionally high grade of 20.9%. The other four projects, owned by Nexa Resources, Teck and MMG have contained Zn Eq resources between 1.7m and 3.1m tonnes. In our view, given the apparent prospectivity of the Molaoi deposit along strike, a resource within the range of our peer group would appear plausible.

### Year End: December

(£'000)	2018	2019	2020	2021E	2022E
EBITDA	(532)	(546)	(707)	(848)	(988)
NET (DEBT)/CASH	294	763	1,351	1,291	(862)

Source: Company; Allenby Capital. Allenby Capital acts as Nomad & Broker to Rockfire Resources plc (ROCK.L).

Please refer to the last page of this communication for all required disclosures and risk warnings.

Exhibit 1: Molaoi project location



Source: ilovemaps.co.uk

**VMS deposit**

Rockfire believes that the evidence so far suggests that the Molaoi project is based on a volcanogenic massive sulphide (VMS) deposit. Such deposits are accumulations of metal sulphides, such as sphalerite (zinc sulphide) or chalcopyrite, resulting from under-sea volcanic activity. Sulphides precipitated from magmatic heated hydrothermal fluids containing valuable metallic elements. Typically, VMS deposits appear as polymetallic lenses in the form of pods or sheets. They are a major source of base metals. According to the technical literature, around 25% of the world’s zinc is sourced from VMS deposits.

Exhibit 2: How the high grade zinc deposits compare

	Metallum Resources	Nexat Resources	Teck Resources	MMG	Teck Resources	Rockfire Resources
Exchange	TSX-V	NYSE	NYSE	Hong Kong	NYSE	AIM
Symbol	MZN	Nexa	TECK	1208.HK	TECK	ROCK
Share price	C\$0.06	US\$8.57	US\$41.76	HK\$3.34	US\$41.76	0.51p
Enterprise value m	US\$9.35	US2302	US\$27803	US\$10849	US\$27803	US\$4.99
Project	Superior Lake	Florida Canyon	SU Claims	Izok Lake	Lik	Molaoi
Location	Ontario, Canada	Peru	Alaska, USA	Nunavut, Canada	Alaska, USA	Greece
Development status	Feasibility study	Prefeas/scoping	Reserves	Feasibility	Prefeas/scoping	Resource
Other commodities	Cu, Au, Ag	Pb, Ag	Pb, Ag, Cu	Cu, Ag, Au, Pb	Pb, Ag	Pb, Ag
Fraser Institute ranking	12.0	42.0	4.0	28.0	4.0	NA
Ore resources mt	2.4	17.3	17.0	14.6	23.5	2.3
Grade Zn eq %	20.9	12.0	10.0	21.0	11.5	11.0
Contained Zn Eq (t 000's)	491	1,690	1,700	3,060	2,703	250
Grade Zn %	17.7	9.8	10.0	13.1	8.2	9.4
Contained Zn (t 000's)	416	1,690	1,700	1,913	1,829	210
Initial Capex (US\$m)	US116	US\$213	NA	NA	324.0	NA

Source: Metallum Resources, Company reports, Refinitiv and Allenby Capital. Exchange rates: £1=US\$1.247, US\$1=C\$1.283, US\$1=HK\$7.85

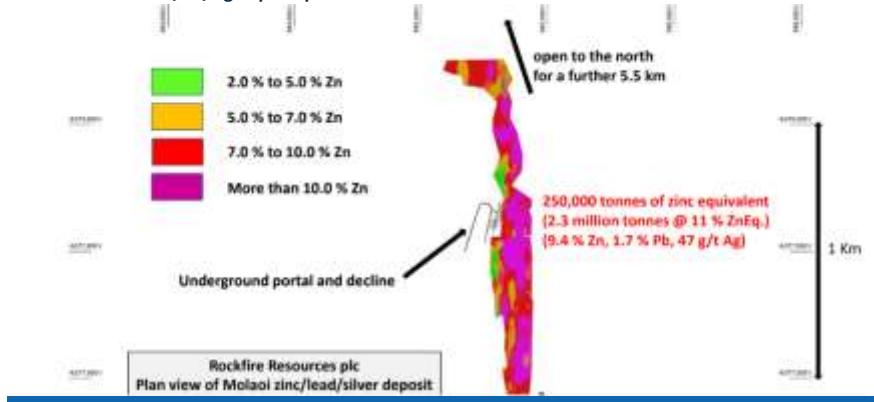
As we have noted, drilling at Molaoi has yielded impressive assay results while the recently announced inferred resource Zn Eq grade of 11% is within the range of high-grade zinc projects currently underway. According to industry sources, grades for existing mines are typically 4.5% to 5.0% for zinc metal and perhaps around 7% on a Zn Eq basis.

### Exploration upside

Drilling at Molaoi has been undertaken down to 220m. Zinc mineralisation starts at the surface and remains open at depth. Rockfire has referred to multiple, stacked zinc-bearing layers having been mapped over the total strike length. This it believes provides ‘enormous’ exploration upside for additional zinc mineralisation towards the upper end of the line of strike where drilling activity has been less intensive than in the lower 20%.

The combination of high grades and the stacked zinc-bearing layers potentially point to a sizeable Zn-Pb-Ag deposit at Molaoi. This all augurs well for a competitive position on the international cost-curve. Historically, copper potential has not been analysed but Rockfire believes the presence of this metal could possibly further enhance the zinc equivalent grade.

Exhibit 3: Molaoi Zn/Pb/Ag deposit plan view



Source: Company

### Potential germanium exposure

#### Reanalysis of core data revealed germanium

An interesting aspect of the recent reanalysis of the drilling cores at Molaoi concerns the potential for commercial quantities of the strategic metal, germanium (symbol Ge). The metal exists as a compound, is scarce in commercial quantities and is mainly produced from zinc ores such as sphalerite. Based on 51 core samples collected for reanalysis from Molaoi the weighted average grade was 51 g/tonne Ge while the peak grade was 197 g/tonne Ge. Significantly, 41% of the samples returned germanium grades above 50 g/tonne Ge. It is not clear what would be an economic grade.

#### Semiconductor and fibre optic material

The economic significance of germanium reflects in significant part its property as a semiconductor. A semiconductor has conductivity midway between an insulator such as glass and metals such as copper. Conductivity can be altered either through temperature changes or the addition of doping elements for bespoke applications. Significantly, semiconductor conductivity rises as temperatures increase whereas the opposite is the case with metals.

Germanium has been used in semiconducting devices since the beginning of the age of electronics after the second world war. The chief competitor to germanium as a semiconductor material is silicon. Interestingly, silicon-germanium alloys are used for high-speed integrated circuits. According to the US Geological Survey (USGS), there are four key application groups for germanium as follows: infrared optics, fibre optics (fibre optic cable cores), polymerization catalysts (polyethylene terephthalate or PET) and integrated circuits. Fibre optics is the largest accounting for about 35% of demand. This

application stems from germanium dioxide's high index of refraction or speed at which light passes through a material.

#### **Production around 140,000 tpy**

Germanium is typically produced from concentrate using a chlorination and distillation process to produce germanium tetrachloride. This is then reduced using hydrogen to form a germanium powder. Germanium metal is produced by melting the powder at high temperature. According to the USGS, world production of germanium is running at about 140,000 tpy with China accounting for almost 70% of the total. Around 30% of production is derived from recycled scrap. Major western world germanium producers are Teck Resources (TECK:TSX) and Umicore (UMI:BR).

#### **Price about \$1,200/kg**

Based on USGS data germanium metal was selling for \$1,200/kg in the US in 2021. The price of the intermediate product, germanium dioxide, was \$770/tonne. Interestingly, the germanium price has slipped since the mid-2010s from around \$1918/kg reflecting, it appears, releases from the US strategic stockpile and an influx of recycled material. Note, the price of the metal is for a high-purity downstream product. The price of concentrate would be considerably lower. Nevertheless, in all likelihood, germanium concentrate production with adequate critical-mass would potentially provide a meaningful enhancement to margins.

## **Development programme**

Rockfire has commenced its work programme at Molaoi both expeditiously and successfully with the completion of the maiden JORC inferred resource statement. The company has yet to reveal its near-term development plans in detail. We do know, however, that before drilling or other invasive work can commence Rockfire will need to submit a work programme to the Greek government and complete environmental and technical studies. As far as we are aware, work on the technical study is underway and quotes have been received for the environmental study from three local consulting firms.

Post presentation of the work programme and permitting we, would expect Rockfire to move quickly to implementing a drilling programme at Molaoi. This should pave the way to upgrading the scale and classification of the resource base. We believe a new resource estimate is likely over the next 12 months. A scoping study will probably follow.

Historical work on the Molaoi project resulted in some early stage mine development work. This included a mine portal which was subsequently capped and the construction of a 700m long mine decline. Rockfire is looking to reopen the portal and reinstitute the decline which would provide access to the top of the sulphide mineralisation. Given social and environmental constraints, Rockfire has indicated that it is planning an underground mine at Molaoi. Ore processing will be via conventional froth flotation to produce a 50% zinc sulphate concentrate.

The medium-term aim of the prospective development programme will be to take the Molaoi project to the pre-feasibility study stage. Assuming a satisfactory outcome this should enable Rockfire to investigate financing options for mine development either through project debt finance or joint-ventures. An outright sale might also be a possibility. Based on the estimates for our peer group of large-scale zinc projects, mine and mill development will probably cost comfortably over US\$100m. We believe that to reach the pre-feasibility completion stage will take at least two years.

## **Smelter logistics**

Concentrate from a prospective Molaoi mine would need shipping to a zinc smelter/refinery for toll treatment to produce close to 100% refined zinc. We see Molaoi

as well placed in this regard. This reflects firstly the short distance of 10 km or so by highway to the coast. From there the most plausible destination is Glencore's Potovesme smelter in Sardinia, assuming it has spare capacity. As an alternative, there is the KCM AD smelter near Plovdiv in central Bulgaria. The drawback to this is a 1,180 km trip by highway from Molaoi. We believe Potovesme is likely to be a lower cost option.

## Acquisition of Hellenic Minerals

Hellenic Minerals IKE was the privately owned Greek company that participated in an international tender offer to obtain the exploration and mining licence for the Molaoi project. Under the terms of a Memorandum of Understanding (MOU) Rockfire provided financial and technical support during the tender process. Hellenic was awarded a 30 year mining and exploration licence in March 2022. In accordance with the MOU Rockfire announced on May 16, 2022 that it had acquired all the shares in Hellenic and therefore also obtained 100% of the Molaoi project. The consideration was 50.0m shares in Rockfire at an issue price of 1.0p/share or £0.50m. The vendors voluntarily agreed to escrow the shares for six months from the date of issue.

A second stage of the acquisition of Hellenic becomes effective within 28 days of an announcement by Rockfire of a JORC-compliant resource of >400,000 tonnes of Zn Eq. The consideration would be £0.40m comprising £0.20m in cash and £0.20m in shares. The shares issued will be based on the 5-day VWAP (volume weighted average price) at the time of the RNS related to the JORC resource estimate. The shares issued under the second stage provisions will be voluntarily escrowed for six months from the date of issue.

The third tranche of the Hellenic acquisition enables Hellenic's vendors to retain an enduring 2.0% Gross Production Royalty on saleable product extracted from the Molaoi assets. Rockfire has the right to acquire the Royalty for a cash consideration of £1.00m at any time.

### CEO David Price

Rockfire's interest in the Molaoi project stems from the earlier experience of the company's CEO, David Price in the mining industry in Greece. He is familiar with the industry backdrop and we believe master minded the acquisition of Hellenic. David Price had an agreement with Hellenic which entitled him to 50% of the first tranche of acquisition shares. This has boosted his interest Rockfire from 1.28% to approximately 3.42%.

## Financials

We are leaving our key financial forecasts unchanged from our April 20, 2022 report. We believe the cash position at end December 2021 was around £1.29m and as of late May 2022 might be about £0.70m. It should be noted that over the balance of the year the cash outflow will tend to increase partly reflecting the pick-up in exploration activity with the onset of the dry season in northern Australia and partly the consolidation of Molaoi. The latter could involve an extra £0.10m in G&A and £0.15m in capital outlays. Clearly, the latter will depend on just how quickly Rockfire can commence drilling activity in earnest at Molaoi. In Australia the key area of capital spending is likely to be the planned deep drilling programme at Copper Dome.

Our forecasts call for a cash outflow in 2022 of £2.15m which would imply a theoretical net debt position at year end of £0.86m.

## Valuation

Our valuation methodology continues to be a sum-of-the parts calculation. The parts are Lighthouse Plateau and the other gold projects in northern Queensland, the two copper projects Copperhead and Copper Dome also in northern Queensland and the Molaoi

zinc/lead/silver project in southern Greece. For Lighthouse we have assumed a success case in terms of a resource base weighted by the chance of success. We define success as completing a pre-feasibility study showing viability. The Lighthouse Plateau valuation reflects prospective resources multiplied by a benchmarked valuation quotient. The valuation metric is US\$/unit of resources. For Copperhead and Molaoi, both of which have inferred resources, we have applied valuation quotients benchmarked against the comparables. In the case of those projects without a defined resource base we have used nominal valuations based on an assessment of the spend to date and the stage of appraisal.

Following the announcement of the maiden resource for Molaoi and the softening trend in sterling we have reassessed and upgraded our absolute Rockfire valuation. The new valuation is US\$36.4m or £29.1m based on an exchange rate of £1=US\$1.25 against US\$1.31 previously. The latter reflects an uplift of 18.7% from the level given in our April 20 report.

Following the maiden resource announcement, the Molaoi valuation has been benchmarked against the TSX-listed junior Metallum Resources which has the advanced and large scale Superior zinc project in Ontario. This however is selling on an EV of a mere US\$9.4m or US\$19/tonne of Zn Eq resources. Given the scale and advanced feasibility stage of the Superior project, we would have expected a significantly higher valuation quotient. We regard the apparently anomalous valuation as capable of significant upward adjustment in due course. Bearing in mind this and our view that Molaoi has the potential for a similar resource base we have decided to use a somewhat higher valuation quotient for Molaoi at US\$25/tonne. This would imply an absolute valuation for Molaoi of US\$6.25m against US\$2.00m previously. Note the prior valuation reflected a nominal assessment purely taking into account the historical development work.

On a per share basis our new corporate valuation is 2.6p/share. This is up 13% on the 2.3p given earlier with the near 5% increase in shares since the last report constraining the gain.

#### Exhibit 4: Rockfire Resources valuation

Project	Resources			Valuation quotient			Risk factor	Absolute Valuation		Valuation/share
	Au m oz	Cu tm	Zn Eq tm	US\$/oz Au	US\$/t Cu	US\$/t Zn Eq	COS	US\$m	£m	£
Lighthouse	1.50			35			0.45	23.63	18.90	0.017
Other gold projects								2.00	1.60	0.001
Copperhead		0.12			25			3.00	2.40	0.002
Copper Dome								1.50	1.20	0.001
Molaoi			0.25			25		6.25	5.00	0.004
<b>Total</b>								<b>36.38</b>	<b>29.10</b>	<b>0.026</b>

Source: Company; Allenby Capital. Note: Exchange rate £1 = US\$1.25; Undiluted valuation/share based on 1135.4m shares outstanding; COS is chance of success.

## Share price catalysts

We continue to see the potential for some interesting high-impact news flow in the coming months as follows:

- The Molaoi work programme with an announcement concerning drilling northwards along strike particularly significant. As noted previously, uncertainty surrounds the near-term work programme given the need for authorisation from the Greek government. We think however that an announcement on the work programme will be made in the coming months.
- An announcement over the next month or two concerning deep diamond drilling at the Copper Dome project. The indications are that drilling could take place during the third quarter of 2022.
- Results of the prospective Copper Dome drilling possibly early in the fourth quarter of 2022.
- The work programme for the Plateau and Copperhead projects. An announcement is now pending given the start of the dry season in northern Queensland.
- Results of the Lighthouse soil sample laboratory analysis. We believe these could be released over the next month or two.
- Announcement of scoping study at Molaoi post further drilling activity. We think this could occur in early 2023.

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