

Shovel Ready Industrial Minerals for the Green Economy

Sunrise Resources plc (“the Company”) is an AIM-listed industrial minerals business with three key projects located in Nevada, USA. The Company is focused on moving its flagship CS Pozzolan-Perlite Project into near-term production, to generate cash flow that can be reinvested to advance and, or, monetise the other projects within its portfolio.

The CS Project is now shovel ready, with all major permits secured. Sunrise is working towards securing offtake agreements, or partnership agreements, with users of natural pozzolan and, or, raw perlite to secure a route to market for its products.

Once these agreements are in place and a route to market is secured, Sunrise plans to obtain the required funding and commence mine development. Sunrise is considering several development options for the CS Project, which could produce a range of products, and, importantly, all these options are expected to require relatively low capital levels, that should be fundable for a company of Sunrise’s size.

Sunrise has also been advancing two of its other key projects at very low cost:

- The Pioche Sepiolite Project is under an option agreement with the world’s leading sepiolite producer, Tolsa S.A. Tolsa has an option to purchase the Pioche Project for US\$1.25 million and a 3% revenue royalty.
- Commercial scale testing is currently underway at the Hazen Pozzolan Project. This testing is being completed by an existing processor of natural pozzolan at no cost to Sunrise and could lead to a further agreement depending on the results.

Offtake agreements, or partnership agreements, such as that secured with Tolsa, are the key value driver for Sunrise, and once secured they will act as a catalyst to allow the Company to transform from developer to producer.

In addition to these more advanced projects Sunrise has a portfolio of earlier stage projects and royalty interests that help underpin the Company’s current market value and which could also add additional value in the future with further exploration success.

Valuation

In this note we assess the value of Sunrise Resources’ principal projects. The CS project was valued at £20.9 million using a discounted cash flow analysis and several assumptions outlined below. The Pioche Project was valued at £1.9 million based on the potential cash flow generated from its sale and a discounted cash flow analysis of the 3% royalty. The Hazen Project we valued at £3.6 million based on a discounted cash flow analysis. Sunrise’s other earlier-stage projects we have valued at £1.9 million based on a 2X multiple of the amount of capital invested to date. As a result of this analysis, we value Sunrise Resources at £28.2 million or 0.71p per share, an upside of 691% on the current share price.

Company Data	
Epic	AIM: SRES
Shares in issue	3,969,389,373
Share Price	0.090p
Share Price (52 week range)	0.08-0.180p
Market Cap.	£3.57m
Warrants in issue (0.11-0.195p)	51,000,000

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Mining and Metals
Research Corporation Ltd.

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What is Pozzolan

Pozzolan is a siliceous or siliceous and aluminous material that chemically reacts with water and calcium hydroxide (lime) at ordinary temperatures to form a cement.

Natural pozzolan is one of a range of materials that can partially replace fly ash and ordinary Portland cement in cement and concrete mixes (usually up to 25%) to both improve the long-term strength and resistance of concrete compared to concrete made using only Portland cement.

Fly ash supply is globally in a steep decline due to the phasing out of coal-fired power stations and pozzolans are mandated in many US state construction projects.

Natural pozzolans include some glassy volcanic tuffs, tephra, pumice, and perlite.

Natural Pozzolan in CO2 Net-Zero Strategies

The cement and concrete industries are being forced to evaluate the composition of their products in order to reduce carbon dioxide emissions in the US and globally. Portland cement is responsible for 8% of the global man-made carbon dioxide emissions with nearly one tonne of carbon dioxide generated for each tonne of cement produced.

Net-zero CO2 targets are therefore a major challenge for the cement and concrete industries. In the US, as elsewhere around the world, these targets are enshrined in Federal and State legislation and industry-body commitments, and are increasingly driven by cement and concrete customers and specifiers.

One of the Implementation Priorities in US President Biden's November 2021 Executive Order "Implementation of the \$1.2 trillion Infrastructure Investment and Jobs Act" is "building infrastructure that is resilient and that helps combat the crisis of climate change". The Inflation Reduction Act of 2022 includes a \$5.8 billion financial package for decarbonisation of heavy industries like steel and cement. California has the largest economy of all the US States and southern California is a major target market for the CS Project. In September 2021 California's Carbon Cap-and-Trade scheme was signed into legislation and directly targets greenhouse gas emissions associated with the cement industry. This Cement Decarbonization legislation is focused on achieving net-zero emissions from the industry by the end of 2045.

Natural pozzolan can replace up to 30% of Portland cement in cement and concrete mixes and can be a major contributor to net-zero strategies.

What is Perlite

Perlite is a glassy material that, when heated, pops like popcorn and expands by up to 20 times in volume into a white or pale coloured low-density material. Expanded perlite is used:

- As a potting medium in gardening and horticulture to aid water retention and aeration of the soil
- in filter aids
- in various industrial and household applications such as insulation, paint texturing, plaster and concrete fillers, building materials fillers, formed insulation and fire proofing

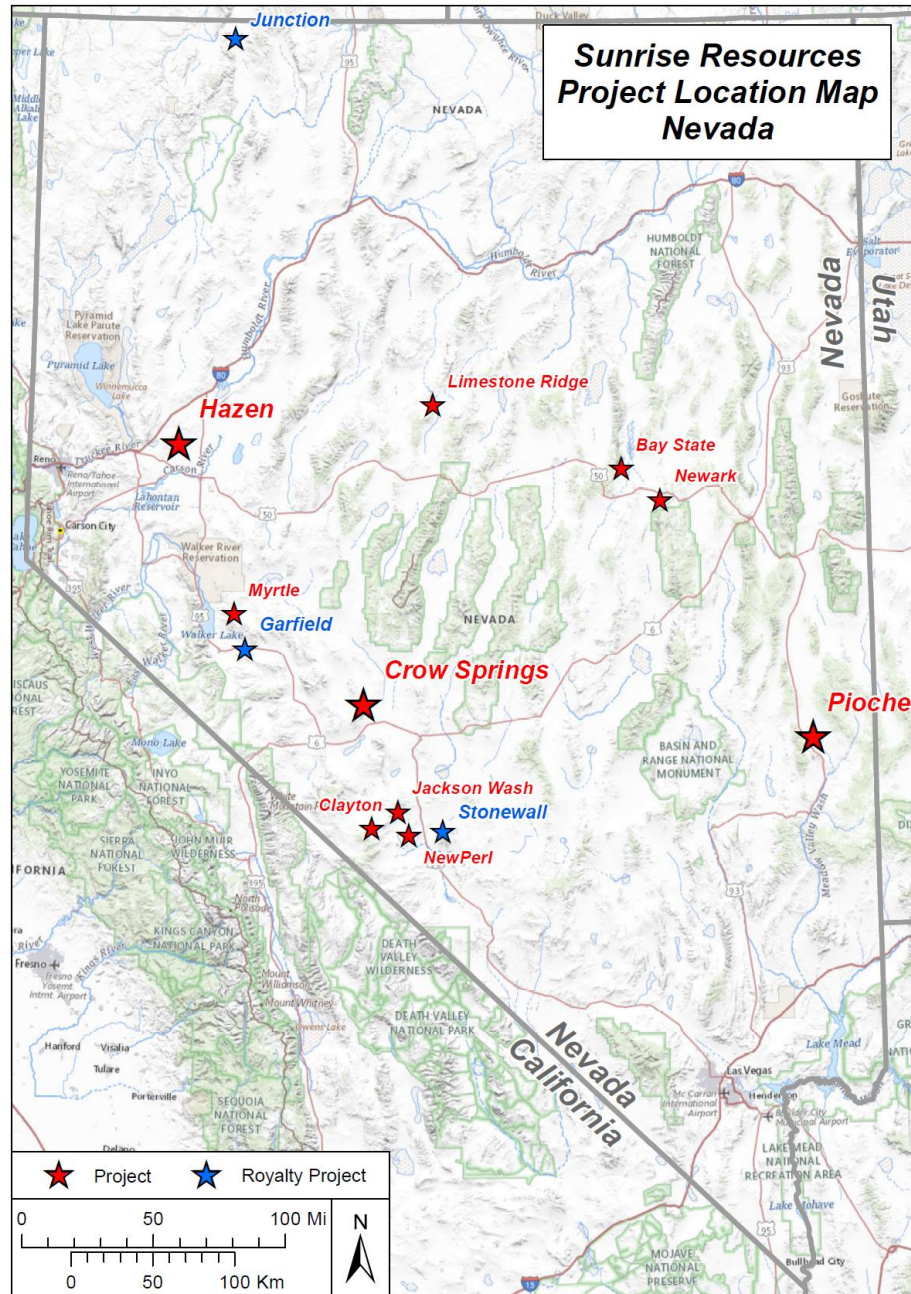
What is Sepiolite

Sepiolite is a rare form of clay that is non-swelling, lightweight and highly porous. It is used extensively in pet litter, agriculture as a slow-release absorbent and adsorbent carrier for chemicals and pesticides and in animal feeds as a binder and carrier for nutrients and growth promoter. It is also a valuable gelling agent and viscosity modifier in several industrial products.

Introduction

Sunrise Resources has interests in a host of projects and royalty interests principally located in Nevada, USA (Figure 1).

Figure 1: Sunrise Resources Interests in Nevada.



Source: Sunrise Resources

These projects range in development stage from early reconnaissance stage exploration to much more advanced development projects. The key projects are focused on industrial minerals, though Sunrise does have interests in several base and precious metal projects. The most advanced projects are the CS Pozzolan-Perlite Project, Pioche Sepiolite Project and the Hazen Pozzolan Project.

CS Pozzolan-Perlite Project

The CS Pozzolan-Perlite Project is located in Esmeralda County, Nevada just 25Km northwest of the town of Tonopah (Figure 2). The project covers an area of 7.5Km² and is located adjacent to a County maintained road. It is within trucking distance of major municipal centres, including Southern Nevada and Southern California, which have a current market for pozzolans of approximately 1.4 million tons per annum.

Figure 2: Location of the CS Project & Target Markets

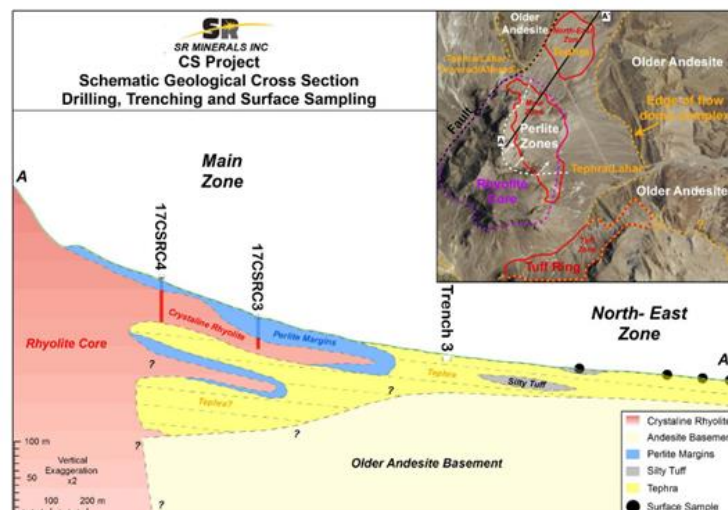


Source: Sunrise Resources

Geology

The CS Project is comprised of extensive layers of volcanic ejecta including perlite, tephra and tuffs, which surround a rhyolite core that overlies older andesitic basement rocks (Figure 3).

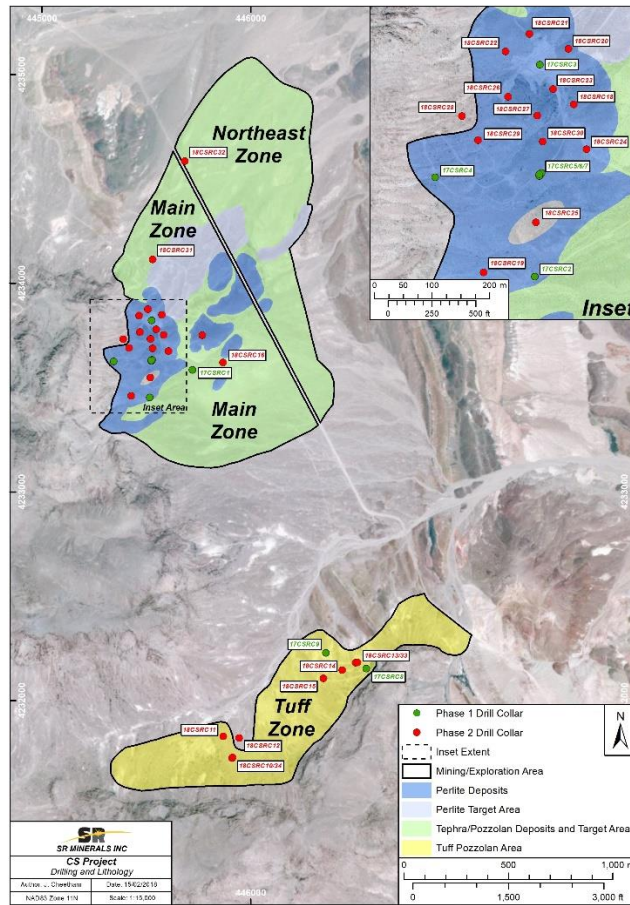
Figure 3: Geology of the CS Project



Source: Sunrise Resources

Large deposits of both perlite and natural pozzolan have been defined by mapping, trenching, drilling and bulk sampling and three main zones of economic interest have been defined (Figure 4). The Main Zone is comprised of a series of perlite deposits to the west surround by tephra deposits (pozzolan) to the east and north. Around 1Km to the south lies the Tuff Zone, which is an extensive area of tuff-type pozzolan. An additional area, the Northeast Zone, presents a large additional target for natural pozzolan so far defined only by one drill hole and surface samples.

Figure 4: Pozzolan Deposits at the CS Project



Source: Sunrise Resources

Potential Products

Future operations at the CS Project could produce a range of natural pozzolan and perlite products.

Natural pozzolan

Natural pozzolan can replace up to 25% of ordinary Portland cement in mortar mixes and ready-mix concrete by substituting for coal-fired power station fly ash. It also adds strength and durability to concrete structures requiring less maintenance and replacement.

A new and emerging market for natural pozzolan is in the production of geopolymer cement, a new type of cement, the production of which does not evolve carbon dioxide and which has lower embodied carbon compared to Portland cement.

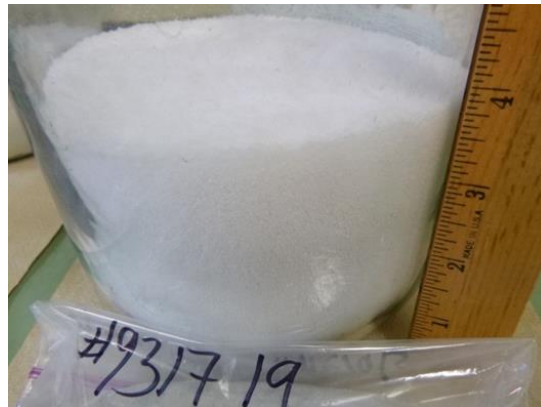
Natural pozzolans have a variety of forms including glassy varieties of perlite, tuffs and tephras all of which need to be ground to a fine size for use. Sunrise could produce run-of-mine natural pozzolan for direct sale to cement companies at a very low capital cost (in which case the cement companies would grind the pozzolan alongside cement clinker), or for a higher, but still modest, capital cost, construct a fixed process plant to crush and grind natural pozzolan for direct sale to ready-mix concrete companies, opening a larger customer market.

Perlite

Sunrise could also produce a range of perlite products at the CS Project, and to date has focussed on the most valuable, horticultural grade, perlite. This would require the purchase of mobile crushing and screening equipment and would be a lower cost option that would also produce undersized perlite as natural pozzolan by-product.

Sunrise could also construct a fixed perlite processing plant to produce a range of perlite products (Figure 5) in coarse, medium and fine grades to allow sales to a much wider market.

Figure 5: Expanded Perlite from the CS Project



Source: Sunrise Resources

Testing and Marketing

Sunrise is seeking an offtake or investment partner for the CS Project and has completed joint test programmes with several prospective partners, mainly integrated cement and ready-mix companies but it is also targeting larger ready-mix and construction material companies.

Collaborative testing programmes have included two separate bulk sampling programmes on pozzolan from the CS Project. These bulk samples of 100 tons and 500 tons each were ground in commercial scale facilities by two separate cement companies and the product of the larger bulk sample used successfully in real-life concrete pours, demonstrating the suitability of the CS Project to produce high-quality natural pozzolan.

Sunrise has recently commissioned a very detailed study of the California and Nevada cement and ready-mix markets which it expects will generate additional marketing opportunities.

A bulk sample of perlite has been processed to horticultural grade and is currently undergoing testing with several potential customers and a 200-ton bulk sample is awaiting further preparation.

Permits

Sunrise has completed an Environmental Assessment (EA) for the CS Project and the US Bureau of Land Management (BLM) has approved the Company’s mine plan which captures 14.5 million tons of pozzolan and 1.3 million tons of perlite and allows for production rates of up to 500,000 ton/year of pozzolan and 100,000 tons/year of perlite. The Mine Plan of Operations envisages a 27-year mine life where both perlite and natural pozzolan are mined from the Main Zone in years 1-15 with pozzolan continuing to be mined in the Tuff Zone in years 16-27.

Sunrise does not expect that drilling and blasting will be required to mine the perlite and pozzolan, but if it does a blasting licence is a short lead time item, and an explosives storage facility is included in the BLM approved mine plan. A few other minor short-lead-time permits are required and are not expected to hold up the development of the project.

Project Valuation and Potential Production Metrics

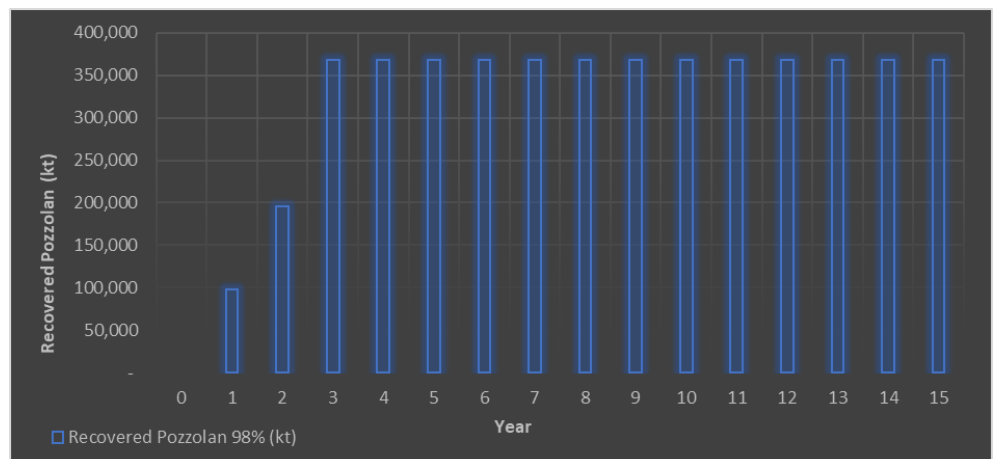
The definitive plan by which Sunrise will advance the CS Project, will depend on the offtake or partnership agreements that the Company makes with potential purchasers, and, as a result, at this stage we are not able to give a definitive forecast of what, and when, the mine will produce.

Instead, we have built a model based on one potential scenario to give a guide as to the what an operation could look like and what returns it could generate. In our valuation we assume Sunrise focuses on the production of both perlite and tephra/tuff as natural pozzolans and constructs a fixed grinding plant to do this.

We have modelled a 15-year mine life, though it can be as high as 27 years, a 12-month construction period and selling the ground pozzolan for an average price of US\$100 per ton over the life of the operation. We assume an upfront capital cost of US\$22.6 million with life of mine sustaining capex US\$14 million.

In Year 1 we have modelled production of 98,000 tons of pozzolan, increasing to 196,000 tons in Year 2 and 367,500 tons in Year 3 (Figure 6). Thereafter and for the remaining mine life production levels remain flat.

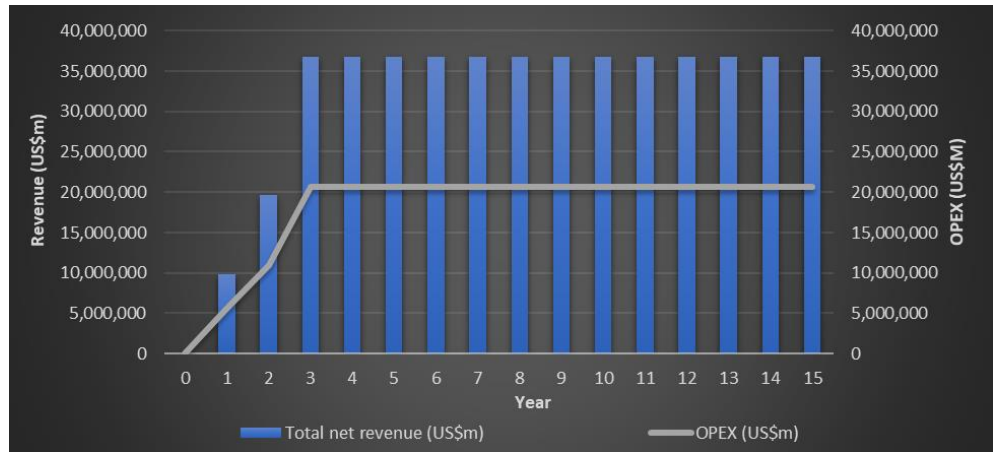
Figure 6: Potential Production Levels at the CS Project



Source: MMRC

These production levels will generate revenue of US\$9.8 million in Year 1, increasing to US\$19.6 million in Year 2 and US\$36.8 million thereafter (Figure 7). Opex is estimated to be US\$5.6 million in Year 1, US\$11 million in Year 2 and US\$20.6 million thereafter (Figure 7).

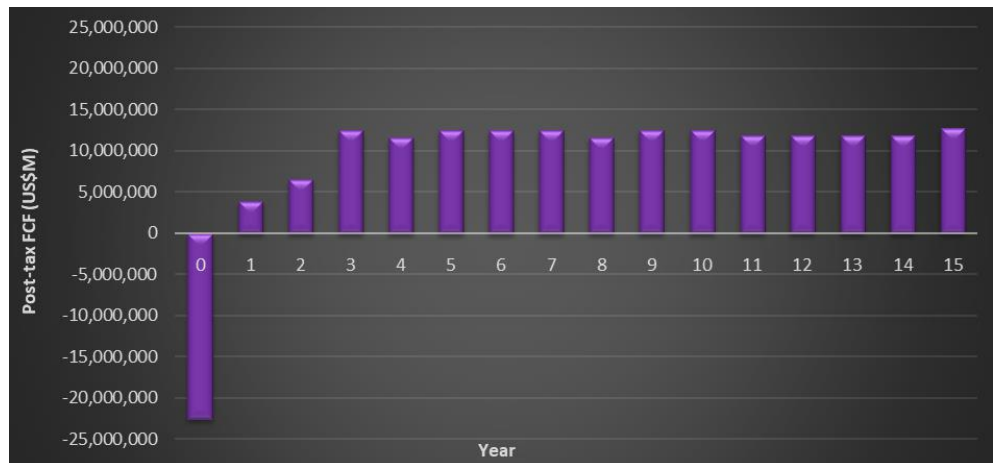
Figure 7: Potential Revenue and Opex at the CS Project



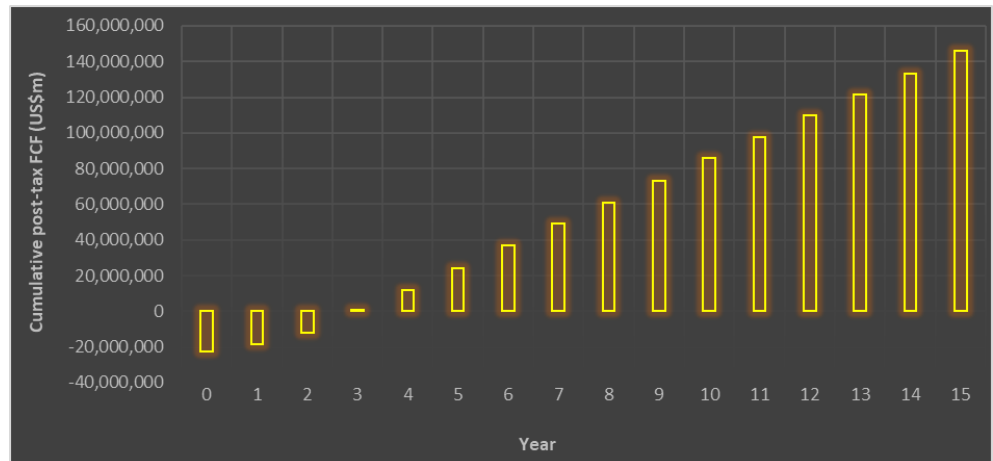
Source: MMRC

During Year 1 our model generates post-tax free cash flow of US\$3.8 million, increasing to US\$6.5 million in Year 2 and between US\$12.4 million and US\$11.9 million there after (Figure 8). Over the assumed 15-year life of mine, we estimate that the CS Project could generate cumulative free cash flow of US\$146 million (Figure 9).

Figure 8: Potential Post-Tax Free Cash Flow from the CS Project



Source: MMRC

Figure 9: Potential Post-Tax Cumulative FCF from the CS Project

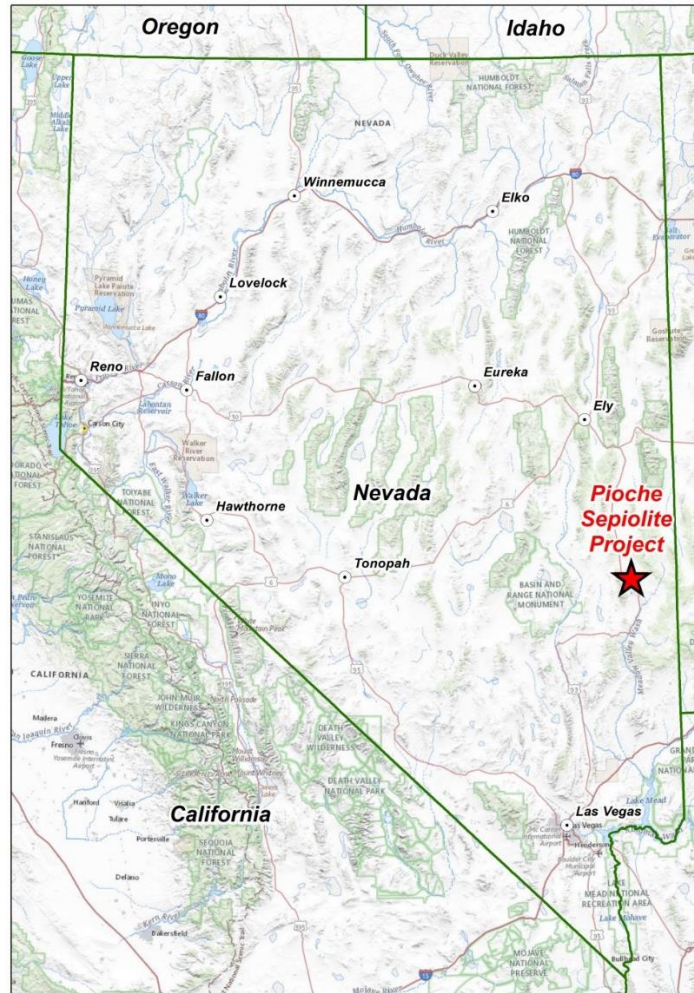
Source: MMRC

An operation that followed these metrics would have a post-tax NPV10 of US\$52.5 million and a post-tax IRR of 38%. To this NPV we apply a 1% geopolitical risk discount and 50% development stage discount to arrive at a valuation £20.9 million for the CS Project.

Pioche Sepiolite Project

The Pioche Sepiolite Project is located close to the historic mining town of Pioche in Lincoln County, Nevada (Figure 10). The project covers an area of 1.6Km² and is within 4Km of a highway, and 47km from a railway at the town of Caliente, Nevada.

Figure 10: Location of the Pioche Project



Source: Sunrise Resources

Tolsa S.A. Option Agreement

Sunrise has entered into an option agreement with Tolsa S.A., the world's leading sepiolite producer, which gives Tolsa the option to acquire the Pioche Project for US\$1.25 million payable in cash by 28 December 2023 and pays Sunrise a 3% revenue royalty for a 25-year period from the commencement of commercial production.

Since signing the initial agreement, Tolsa has staked an additional 31 claims to double the size of the project and cover projected extensions of the sepiolite deposits outlined in the 2022 mapping and trenching programmes. Under the agreement, Sunrise's 3% revenue royalty will extend to all the new claims.

Tolsa is reported to be planning a resource definition drilling programme, with further industrial testing leading towards a decision on exercising the purchase option at the end of the year.

Sunrise was able to option out the Pioche Project within just 9 months of staking the ground. This demonstrates the Company's ability to rapidly recognise, secure and then monetise mineral assets.

Geology

Sepiolite beds have now been mapped and exposed in trenching over a significant extent within the licence holding.

The sepiolite occurs at the base of a flat lying cap of siliceous dolomite and both formed from volcanic ash deposited and weathered in an extensive ancient lake system that once covered the area. The depth and extent of the sepiolite beds will be tested by Tolsa in a scheduled drilling programme.

Potential Products

Sepiolite is a non-swelling, lightweight, porous hydrous magnesium silicate clay that can be used for cat litter, agriculture, medicines, pharmaceuticals and cosmetics and drilling muds for geothermal wells. Exactly what types of products could be produced from the Pioche Project will be defined with Tolsa's further studies.

Project Valuation

In our valuation of the Pioche Project, we consider the 80% of the sale price which is payable to Sunrise, assuming the option agreement is exercised. We also use a DCF with a 5% discount rate over an assumed life of operation of 25 years that assess the potential cash flow, which could be generated from Sunrise's 80%-interest in the 3% royalty over the project. To the royalty we apply a 75% development stage discount and a 1% geopolitical risk discount. This gives us a risked valuation for the Project of £1.9 million.

Hazen Pozzolan Project

The Hazen Pozzolan Project is located in Churchill County, Nevada, 20 miles by road from the town of Fernley (Figure 11). The project covers an area of 1.3km² and is just 9Km from a rail siding on the arterial east-west Union Pacific line, which accesses the regional markets of northern California and the local markets around Reno and northern Nevada which are less likely to be served from the CS Project.

Figure 11: Location of the Hazen Project & Target Markets



Source: Sunrise Resources

Hazen is a brownfield site and was previously mined in the 1960s for lightweight aggregate from two shallow open pits (Figure 12).

Figure 12: Open pits at the Hazen Project



Source: Sunrise Resources

Bulk Sampling Agreement

Sunrise has entered a collaborative arrangement with an existing processor of natural pozzolan, to extract a 250-ton bulk sample from the Hazen Project. Under this arrangement testing of the pozzolan is being carried out to assess the mining characteristics and grinding behaviour of the pozzolan on a commercial scale.

Geology

The Hazen Project is comprised of a Late Tertiary volcanic sequence beneath a thin surficial layer of Holocene Lahontan beach gravels deposited on the pediment surface. The poorly-sorted grey-white coloured rhyolite pumice occurs as semi-rounded fragments that vary in size from small cobble to granular sizes (Figure 13). The pumice fragments are 100% glass with almost no colour differentiation.

Figure 13: Rhyolite Pumice at the Hazen Project



Source: Sunrise Resources

Potential Products

The Hazen Project is at a much earlier stage of development than the CS Project but initial laboratory test work has demonstrated material of a similar high quality to that of the CS Project.

Pozzolan from Hazen, exceeds the specifications of ASTM standard C618 and, like the CS natural pozzolan, it mitigates the deleterious alkali silica reaction that occurs when concrete is made using reactive aggregates. It is also lightweight and so could potentially be used a lightweight aggregate for lightweight concrete blocks and facing stones.

Project Valuation

To value the Hazen Project, we have used a discounted cash flow analysis, with a discount rate of 10%. In the valuation we make several assumptions regarding what a potential operation at the project could look like, in order to give a guide to the projects potential value.

The model is largely based on a smaller operation than our assumption for the CS Project, but is located closer to potential markets, which is reflected in our lower operating cost assumptions.

How the project is developed and what products are produced will depend on potential partnership agreements of offtake agreements at the project, these figures are a guide to one potential development scenario.

We assume a 10-year life of mine with a 12-month development schedule. To the discounted cash flow analysis, we apply a 90% development stage discount and 1% geopolitical risk discount, which gives us a valuation of £3.6 million for the Project.

SOTP Valuation

In addition to our valuation of Sunrise Resources' three more advanced Projects, we value its portfolio of earlier stage projects and royalties using a 2X multiple of exploration expense to value the portfolio at £1.9 million.

The combined sum of the parts valuation for Sunrise Resources is £28.2 million or 0.71p per share (Figure 14). This is an upside of 691% on the current share price.

The bulk of our valuation (73.9%) comes from the CS Project, with the Hazen and Pioche projects contributing 12.6% and 6.7%, respectively. The earlier-stage projects make up 6.8% of our valuation (Figure 14).

Figure 14: Sunrise Resources Valuation Summary

Valuation Summary	Value (GBPm)	Per Share Value (GBX)	(%)
CS Pozzolan Project	20.9	0.53	73.9
Hazen Pozzolan Project	3.6	0.09	12.6
Pioche Sepiolite Project	1.9	0.05	6.7
Other Projects	1.9	0.05	6.8
Total Valuation	28.2	0.71	100.0
Current Share Price		0.09	
Upside/downside (%)		691	

Source: MMRC

Directors & Management

Executive Chairman - Patrick Cheetham

Patrick Cheetham is a mining geologist with 38 years' experience in mineral exploration and 33 years' experience in public company management. He was formerly joint managing director of Dragon Mining NL, and co-founder of Archaean Gold N.L., which was the subject of \$50 million takeover bid by Lachlan Resources NL. He is currently also Chairman of Tertiary Minerals plc.

Non-Executive Director - Roger Murphy

Roger Murphy is a geologist with extensive mining finance experience. He was formerly managing director of Investment Banking for Dundee Securities Europe Ltd. He also held the position of CEO with African Battery Metals Plc, and was managing director of Renaissance Capital. Mr Murphy holds a B.Sc. Hons in Geology, a M.Sc. in Hydrogeology, and an MBA.

Non-Executive Director - James Cole

James Cole is a qualified chartered accountant and has a strong commercial background and a track record of success in fund raising, mergers, disposals and acquisitions. Most recently he was Finance Director for the Goal Group Limited. He was formerly Chief Financial Officer for Cominco Resources Ltd, European Minerals Corporation plc and Crew Gold Corporation.

Company Secretary - Rod Venables

Rod Venables is a qualified solicitor who specialised in company and commercial law, before moving to the financial services sector. He worked in corporate finance and corporate broking with several stockbroking and advisory firms, including Greig Middleton & Co Limited, Old Mutual Securities Limited, Allenby Capital Limited and Northland Capital Partners Limited. Over the last 30 years, he has advised the boards of both private and public companies, based in the UK and overseas. He is a Director and Head of Company Secretarial Services at City Group PLC and is Company Secretary for Tertiary Minerals plc.

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