

15 September 2023

**SUNRISE RESOURCES PLC**  
**("Sunrise" or the "Company")**

**Market Study and Pozzolan Project Update**

Sunrise Resources plc is pleased to provide the following project update and to release the findings of a market study commissioned by the Company to evaluate market opportunities and market growth predictions for cement and the use of supplementary cementitious materials ("SCMs"), including natural pozzolan, in the USA, and California and Nevada in particular.

**Key Points**

*The Market Study:*

- was commissioned by the Company with Cement Distribution Consultants, Amsterdam to examine the cement markets in California and Nevada which are being targeted by the Company with its CS and Hazen natural pozzolan projects in Nevada.
- provides the Company with a detailed breakdown of cement markets, county by county in California and for the two main population centres in Nevada (Reno-northern Nevada and Las Vegas-Henderson).
- details the production profiles of all cement producers and ready-mix companies in California and Nevada and details movements of cement within and between different US states.

*Forecasts, considering the US as a whole:*

- The consumption of cementitious materials (including ordinary Portland cement) is forecast to increase at 10% annualised rate from just over 129 million tonnes in 2021 to over 154 million tonnes by 2030.
- The production of ordinary Portland cement will be largely static as no new cement plants will be built or existing plants expanded.
- The increased consumption of cement will come entirely from increased use of the main SCMs.
- US consumption and production of natural pozzolan will increase from a very low base in 2021 to nearly 6 million tonnes per annum by 2030.

*Forecasts for California and Nevada:*

- Production of natural pozzolan is forecast to increase substantially in both states based on known resources of volcanic natural pozzolan which include both the Company's Hazen and CS Projects in Nevada.
- The Company's natural pozzolan projects are well placed to benefit from these structural changes in the cement and concrete industries.
- California and Nevada together are expected to produce 62% of all SCMs consumed in the US.

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**Commenting today, Executive Chairman Patrick Cheetham said:**

*"The study that we have commissioned provides a detailed breakdown by volume and location for all cement production and use of cement and SCMs in the USA, and is already proving to be a useful tool in our endeavours to find a development partner for our natural pozzolan projects in Nevada."*

*"The Company is currently waiting for a bulk sample from its Hazen natural pozzolan project to be test ground in a commercial grinding mill by an existing producer of natural pozzolan. It is also discussing joint development of its CS Natural pozzolan Project with three companies. One, a large cement and ready-mix group, has successfully completed an extensive programme of testwork. The second is a materials company that is currently undertaking its own testwork programme on CS natural pozzolan. The third is a cement company that is just starting its evaluation of the project."*

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### **Market Abuse Regulation (MAR) Disclosure**

The information contained within this announcement is deemed by the Company to constitute inside information as stipulated under the Market Abuse Regulations (EU) No. 596/2014 which forms part of UK domestic law by virtue of the European Union (Withdrawal) Act 2018 ('MAR'). Upon the publication of this announcement via Regulatory Information Service ('RIS'), this inside information is now considered to be in the public domain.

### **Detailed Information**

The following information has been extracted from a market study commissioned by the Company with Cement Distribution Consultants of Amsterdam ("CDC") to examine the cement markets in California and Nevada which are being targeted by the Company with its CS and Hazen natural pozzolan projects in Nevada.

The market study provides the Company with a detailed breakdown of cement markets, county by county in California and for the two main population centres in Nevada (Reno-northern Nevada and Las Vegas-Henderson). It also details the production profiles of all cement producers and ready-mix companies in these two states and details movements of cement within and between different US states.

Much of the information is commercially sensitive but summary information of possible interest to shareholders has been included in this news release.

Moreover, the report is helping the Company to identify a wider range of potential partners for the development of its natural pozzolan projects in Nevada.

### **Cement Markets**

California cement production of around 10.7 million tons per annum ("mtpa") is located almost entirely in southern California. CalPortland Cement ("CPC", a subsidiary of Japan's Taiheiyo Cement Corporation in Japan) is the largest cement producer in California with an installed capacity of 4.5 mtpa. Cemex is second with 3.1 mtpa and Mitsubishi is the third largest with a capacity of 1.4 mtpa. The California plants are currently working at a high-capacity utilisation.

Only CalPortland's Redding plant with a capacity of about 0.6 mtpa supplies northern California directly following the closure of Heidelberg Cement's Permanente plant at Cupertino near San José in northern California.

The cement market in Nevada is much smaller than in California. Nevada's cement consumption in 2022 was 1.7 mt. Of this volume about 0.7 mt is produced in Nevada's only cement plant at Fernley by Nevada Cement (Eagle Materials) and the rest is supplied from California, Arizona and Utah. Nevada Cement has a rail terminal in Sacramento, supplied from its Fernley cement plant and it has recently purchased a ship import terminal in Sacramento.

The California cement market is strongly influenced by the overall cement market in the wider Southwest US as the combined states of Nevada, Arizona, Utah, New Mexico and Colorado have a structural cement deficit which is compensated from the cement plants in southern California.

When cement consumption is low in the region, the region is largely self-sufficient with only small inflows from the large cement plants in southern California. These plants then supply a significant part of their production by rail to the northern California market. In these periods (e.g. during and after the 2008 - 2011 financial crisis) there are no cement imports into California.

When cement consumption in the southwest US grows then an overall deficit builds and this is then filled by the cement plants in southern California which direct their output more to the region and reduce the supply (by rail) to northern California. The corresponding shortage in northern California is then resolved by imports from Asia via the ship terminals. The ship terminals are mainly owned by the cement producers. When cement demand in the southwest US grows further the cement plants in southern California direct more cement to the region and when they cannot fully supply the southern California market anymore the local cement terminals in the port of Los Angeles, Long Beach open up. Here, also, the import terminals are owned by the cement producers.

### **Ready-Mix Companies**

Most cement and SCM's are destined, with sand and gravel aggregates, for the production of concrete in pre-cast concrete structures or for use by the ready-mix industry.

In California and Nevada, the production and sale of concrete is dominated by the major cement producers who are vertically integrated. Nevertheless, there are a significant number of large independent ready-mix companies owned by non-cement producing materials (aggregate) companies, some of which are showing interest in adding natural pozzolan to their mix of products.

### **Natural Pozzolan**

All of the cement producers in southern California have shown interest in natural pozzolan as an SCM and CPC is currently permitting a deposit of natural pozzolan near to their Mohave cement plant in southern California. In northern Nevada, Nevada Cement is producing natural pozzolan from a third-party quarry near Reno.

Independent production of natural pozzolan is currently taking place at dedicated grinding plants in Utah (Geofortis) and Arizona (Kirkland Mining & Drake Cement) where the market is either internal or with the ready-mix companies and with fly ash suppliers producing blended fly ash/natural pozzolan products.

### **Market Forecasts**

In the Company's announcement of 23 May 2023, which followed the 2023 Symposium of the Natural Pozzolan Association, the Company presented its views on the direction of travel of the cement industry which is looking to reduce the Portland cement clinker component in cement manufacture through the introduction of 1L, 1P and 1T

cements where limestone (1L) and natural pozzolan (1P) are introduced as clinker extenders and substitutes or used together in Ternary blends (1T).

CDC has provided the Company with forecasts to 2030 of consumption and production of cement and the three main volumetrically important SCMs - fly ash, ground granulated blast furnace slag ("GGBS") and natural pozzolan. This data has been provided independently from the market study commission by the Company. The forecasts are detailed and cover every state in the USA. CDC has also provided 2021 figures for comparison which is taken as a baseline year when natural pozzolan was in its infancy.

The forecast and comparison are shown the attached Tables 1-3 which show the 2030 forecasts and 2021 comparisons for the US as a whole, and for California and Nevada separately.

Considering the US as a whole, Table 1 shows that:

- the consumption of cementitious materials (including ordinary Portland cement) is forecast to increase at 10% annualised rate from just over 129 million tonnes to over 154 million tonnes by 2030.
- the production of ordinary Portland cement will reduce, albeit marginally, as no new cement plants will be built nor existing plants expanded so cement clinker production will be relatively steady.
- the increased consumption of cement will come entirely from increased use of the main SCMs through the production of blended cements or by blending SCMs and cement at the ready-mix or casting plants or at various cement terminals.
- fly ash production will reduce from over 24.3 mtpa in 2021 to 15.7 mtpa in 2023 but consumption will increase and be met from overseas imports and/or reclamation of historically ponded fly ash.
- US consumption and production of GGBS will increase marginally, constrained by domestic and international availability, and changing iron and steel making technologies.
- US consumption and production of natural pozzolan will increase from a very low base to nearly 6 mtpa by 2030.

Whilst looking at the US is instructive, when those same statistics are considered on state-by-state basis there are substantial regional differences. These differences arise due to the availability of different SCMs in different states, transport costs and state-to-state infrastructure etc., as well as varying state legislation on mandating SCM use and decarbonisation of the cement industry.

Of primary interest to Sunrise are the target markets in California and Nevada.

Tables 2 and 3 show comparable statistics for California and Nevada respectively for 2021 and 2030. The tables show that:

- production of cement will increase in both states through increased use of SCMs in line with predicted national trends.
- consumption of fly ash will increase only marginally and the production of fly ash in Nevada will cease. This reflects the lack of fly ash production and ponded fly ash in California and Nevada.
- production of natural pozzolan will increase substantially in both states based on known resources of volcanic natural pozzolan which include both the Company's Hazen and CS Projects in Nevada.
- California and Nevada together are expected to produce 62% of all SCMs consumed in the US.

### Project Updates - Hazen and CS Natural Pozzolan Projects

The Company's natural pozzolan projects are well placed to benefit from these structural changes in the cement and concrete industries and the forecast increase in the market for natural pozzolan.

The Company is currently waiting for a bulk sample from its Hazen pozzolan project to be test ground in a commercial grinding mill by an existing producer of natural pozzolan. It is also discussing joint development of its CS Project with three companies. One, a large cement and ready-mix group, has successfully completed an extensive programme of testwork. The second is a materials company that is currently undertaking its own testwork and the third is a cement company that is just starting its evaluation of the CS Project.

**Note:** The news release contains certain statements and expressions of belief, expectation or opinion which are forward looking statements, and which relate, inter alia, to the Company's market forecasts, proposed strategy, plans and objectives or to the expectations or intentions of the Company's directors. Such forward-looking statements involve known and unknown risks, uncertainties, and other important factors beyond the control of the Company that could cause the actual performance or achievements of the Company to be materially different from such forward-looking statements. Accordingly, you should not rely on any forward-looking statements and save as required by the AIM Rules for Companies or by law, the Company does not accept any obligation to disseminate any updates or revisions to such forward-looking statements.

	<b>2021</b>	<b>2030</b>
<b>Total cement + SCM consumption</b>	<b>129,439,000</b>	<b>154,692,000</b>
<b>Cement</b>	<b>109,913,000</b>	<b>108,284,000</b>
<b>SCM (all)</b>	<b>19,526,000</b>	<b>46,408,000</b>
<b>Fly Ash</b>		
<b>US Consumption</b>	<b>10,651,000</b>	<b>29,806,000</b>
<b>US Production</b>	<b>24,338,000</b>	<b>15,710,000</b>
<b>Imports or reclaimed from landfill</b>	<b>500,000</b>	<b>14,096,000</b>
<b>Surplus (Landfill + other)</b>	<b>14,187,000</b>	<b>-</b>
<b>Ground Granulated Blastfurnace Slag</b>		
<b>US Consumption</b>	<b>8,335,000</b>	<b>10,875,000</b>
<b>US Production</b>	<b>6,200,000</b>	<b>7,750,000</b>

US Imports from overseas	2,135,000	3,125,000
<b>Natural Pozzolan</b>		
US Consumption	540,000	5,726,000
US Production	520,000	5,726,000
US Imports from overseas	20,000	-

**Table 2. California Cement & SCM Consumption 2021 & 2030**

	2,021	2,030
<b>Total cement + SCM consumption</b>	12,649,000	15,116,000
Cement	10,741,000	10,581,000
SCM (all)	1,908,000	4,535,000
<b>Fly Ash</b>		
State Consumption	965,000	1,255,000
State Production	-	-
Imports from other states (inc.reclaimed)	803,000	513,000
Imports from overseas	162,000	742,000
<b>Ground Granulated Blastfurnace Slag</b>		
State Consumption	653,000	852,000
State Production	-	-
Imports from other states	3,000	74,000
Imports from overseas	650,000	778,000
<b>Natural Pozzolan</b>		
State Consumption	290,000	2,428,000
State Production	280,000	1,800,000
Exports to other states	10,000	628,000
Imports from overseas	20,000	-

**Table 3. Nevada Cement & SCM Consumption 2021 & 2030**

	2,021	2,030
<b>Total cement + SCM consumption</b>	2,037,000	2,435,000
Cement	1,730,000	1,704,000
SCM (all)	307,000	731,000
<b>Fly Ash</b>		
State Consumption	267,000	339,000
State Production	93,000	-
Imports from other states (inc.reclaimed)	174,000	329,000
Imports from overseas	-	-
<b>Ground Granulated Blastfurnace Slag</b>		
State Consumption	-	-
State Production	-	-
Imports from other states	-	-
Imports from overseas	-	-
<b>Natural Pozzolan</b>		
State Consumption	40,000	391,000
State Production	20,000	1,100,000
Exports to other states	20,000	709,000
Imports from overseas	-	-

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