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# Emmerson Plc ("Emmerson" or the "Company")

## Finalised Decline Design Confirms Low Capex Mine Access at Khemisset

Emmerson Plc, the Moroccan focused potash development company, is pleased to announce that it has finalised the Feasibility Study components for the mine access design and costing for its world class Khemisset Potash Project in Northern Morocco ("Khemisset" or "the Project"). The Project is advantaged by industry leading capital costs and bottom quartile all-in delivered cost to customer, yielding outstanding economic metrics including average annual life of mine EBITDA of US\$236 million and a post-tax NPV<sub>10</sub> of US\$1.14 billion<sup>1</sup>.

### Highlights

- Scoping Study development approach confirmed with the mining horizon proposed to be accessed by twin declines constructed using underground mining machinery which will later be used in mining production
- Direct capital cost estimate of mine access component of approximately US\$34.1m including a 21.7% contingency, a slight reduction on the Scoping Study estimate of US\$34.7m
- This cost forecast places Khemisset in the lowest 10% for mine access cost for potash developments globally
- Design and estimate completed by independent engineering group, Golder Associates ("Golder"), according to AusIMM guidelines for capital cost estimates
- Mine access design and cost estimates are the final deliverable prior to the completion of the full Feasibility Study, which remains on track for first half 2020 completion despite challenges presented by the ongoing COVID-19 outbreak

### Hayden Locke, CEO of Emmerson, commented:

"One of the most prominent barriers to entry in the potash market is the overall capital cost to develop the mine. Mine access, typically via a shaft, is one of the single largest determinants of overall capital cost of these projects, and can be hundreds of millions, and in many cases billions, of dollars. We are fortunate to have a Project where this major capital component can be achieved for only \$34.1m, a cost saving of over 90% when compared to most projects globally. This reduction in capital cost has numerous knock-on benefits including allowing a smaller project to be developed and providing a more readily financeable project regardless of potash prices.

"A detailed trade-off study was completed to select the preferred site location and considered multiple variables including several relating to optimising the decline construction. One of the key aspects was the overall development timeline of the decline, which is now 14 months, to ensure it was not a critical path item and had sufficient buffer within the overall development schedule.

"To have improved both cost and timeline forecasts for mine access development from our Scoping Study phase gives us further confidence that the forthcoming Khemisset Feasibility Study will demonstrate a world class, low capex, high margin potash project.

"This is the fourth completed workstream item from the ongoing Feasibility Study, which continues to progress well and is on schedule for final release during the first half of 2020."

<sup>&</sup>lt;sup>1</sup> Scoping Study results, based on industry expert Argus FMB price forecasts

### Summary Overview

Golder, which was appointed by the Company to manage the delivery of its Feasibility Study, has completed design and cost estimates for decline access at Khemisset. Designs and estimates have been prepared in line with guidelines provided by the Australasian Institute of Mining and Metallurgy ("AusIMM"). The total costs of \$34.1m including contingency is a slight reduction on the Scoping Study estimate and represents a 95% reduction in capital cost when compared against typical Canadian peers.



Figure 1: Comparison of Mine Access Capital Costs

The proposed access to the potash horizon is comprised of twin declines driven at a slope of 1 in 7, which is similar to the Scoping Study design, however, it provides significant improvements to the original concept primarily due to the new preferred plant site location. The construction of twin declines allows one to be utilised for personnel access and air intake for mine ventilation, and the other for the mineral transport conveyor and ventilation exhaust.

The declines will be constructed using continuous miners ("CMs"), machines which will eventually be responsible for mine production and gallery development. The declines have been designed to access the primary horizon in the eastern edge of the deposit, at a depth of approximately 450m below surface. The decline position and orientation has been selected to balance accessing the optimum part of the deposit at the shallowest depth while also allowing the plant site to be located as close as possible to the existing local infrastructure (roads, power, water). The initial portal location can be seen in **Figure 1** below.



Figure 2: Plan of Decline Route

### Geology and Stratigraphy

The decline will be driven through three key lithologies: minor clay formation (~10m thick); primary massive salt horizon (~320m thick); and an overlying basalt unit (~60m thick). Figure 2 below shows a long section of the proposed mine access decline as it passes through the different strata and a plan view showing the co-ordinates of the twin decline and connecting cross cuts.



Figure 3: Decline Long Section and Plan

### Decline Design

At surface, a portal will be established to provide a stable entry way to the mine through the near surface lithologies and minimise the volume of surface water and runoff entering the decline. The proposed portal structure is comprised of a series of precast concrete box sections placed in an open cut, excavated to the level where the upper salt strata is assumed to be self-standing (10m below surface), and then backfilled to restore the original ground surface level. Drainage channels and pumping will be used to catch and remove any water running down the floor of the decline. Mechanical excavation can begin as soon as the upper salt horizon is reached. The portal box section structure will

terminate when there is sufficient excavation roof cover in the upper salt to create the tunnel opening; with the information available, this is expected at a depth of approximately 16m below surface.

The total length of each decline is planned to be approximately 3,200m. A barrier pillar separates the two parallel declines by a distance of 24m. This is separation distance is equivalent to three tunnel spans, chosen to minimise the length of connecting cross cuts whilst maintaining sufficient separation to isolate one tunnel from the other in the case of an emergency.

Cross cuts are spaced every 200m along the decline, a distance selected to provide an efficient tramming distance for shuttle cars between continuous miners and the load-out conveyor during construction. This also allows the machines to operate with a 200m power cable attached as a typical machine tether length.

A different support class has been designated for use when tunnelling through each major stratum, the details of which are shown in **Table 1** below. They have been selected to maintain stability in those strata for the life of mine, based on empirical methods, apparent rock quality and experience.

Upper Salt	8m x 3.5m for both main roadway and cross cuts	2.4m fully encapsulated 22mm AT/KT bolts at 1.5m spacing with 100% mesh roof
Basalt	8m x 3.5m for both main roadway and cross cuts	2.4m fully encapsulated 22mm AT/KT bolts at 1.2m spacing with 100% mesh roof
Ain Horma Fault	8m x 3.5m for both main roadway and cross cuts	Basalt zone support plus the addition of w steel straps installed perpendicular to tunnel direction at 2.4m intervals. W steel straps secured by 4m long fully encapsulated 23mm FRS bolts.

### Table 1: Decline Support Classes

### Schedule and Cost Estimation

The total programme duration of the decline construction activities is anticipated to be approximately 14 months with an estimated capital cost of approximately US\$34.1 million including a 21.7% contingency.

A summary of the cost breakdown is presented in **Table 2** below:

Item	US\$ millions
Direct Costs	\$28.0
Portal Construction	\$4.3
Upper Salt & Ain El Orma Development (Zone 2)	\$8.5
Basalt & Cross Cut Development (Zones 3 & 4)	\$6.4
Power	\$3.4
Equipment purchase (vent fans, etc)	\$0.3
Mobilisation/Demobilisation	\$3.2
Supervision	\$1.9
Contingency (21.68%)	\$6.1
Total Costs including Contingency	\$34.1

Table 2: Summary of Costs for Decline Development

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#### Notes to Editors

Emmerson's primary focus is on developing the Khemisset Potash Project located in Northern Morocco. The project has a large JORC Resource Estimate (2012) of 537Mt @ 9.24% K<sub>2</sub>O and significant exploration potential with an accelerated development pathway targeting a low capex, high margin mine. Khemisset is perfectly located to capitalise on the expected growth of African fertiliser consumption whilst also being located on the doorstep of European markets. This unique positioning means the project will receive a premium netback price compared to existing potash producers. The need to feed the world's rapidly increasing population is driving demand for potash and Emmerson is well placed to benefit from the opportunities this presents.

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.