



## Highfield Resources Ltd (HFR.ASX)

*End of permitting process in sight for low cost project*

### Event:

- We initiate research coverage on Highfield Resources (HFR).

### Investment Highlights:

- HFR is an emerging potash producer, its flagship asset the Muga MoP (muriate of potash, KCl) project in Spain.** Following receipt of environmental approval last year, updated DFS, and offtake MoUs, the company is currently awaiting grant of mining concession. We expect it by end CY2020/ beginning CY2021.
- Production of 1Mtpa MoP.** DFS projects Muga producing 1Mtpa MoP in Phase 2 (Phase 1 0.5Mtpa) over 30 years, underpinned mostly by JORC Reserves. Pre-production capex is €368M which is >30% lower capital intensity vs other greenfield projects.
- Muga forecast to be lowest quartile MoP producer.** DFS estimates Muga's C1 costs of US\$95/t and AISC US\$104/t. An independent report commissioned by European banks found Muga to be in the lowest global cash cost quartile. The project is advantaged by a number of attributes: nil government royalties; shallow, thick, and continuous seams; local workforce; proximity to port; and relative short shipping distance to major ex-Southern Europe markets (USA, Brazil, Northern Europe, and Africa) vs competitors.
- Salt by-product adds revenue, reduces waste.** The key change in Muga's updated DFS was altering the processing circuit to produce salt. This provides a two-fold benefit – the addition of by-product credit and reduction of waste. Muga is located close to key de-icing markets and higher purity vacuum salt will also be produced for industrial applications.
- Potash price recovering.** Having hit a four-year low mid-CY2020, potash prices have since recovered on draw-down of China stockpiles and improving demand in Brazil, USA, and South East Asia, as well as reduced production. Potash prices have held above US\$200/t over past decade, attributed to disciplined industry response when markets are unfavourable.
- Potash deficit in Europe bodes well for offtake.** HFR has secured over 0.5Mtpa (>Phase 1) MoP offtake. We see little risk in placing the balance under contracts. Western Europe alone is currently a net importer of potash and its deficit is forecast to increase from 3Mtpa over the next decade to 5Mtpa.

### Earnings and Valuation:

- We forecast Muga commissioning and first revenues in CY2023e, and maiden earnings in CY2025e.** We expect first full year of Phase 2 production in CY2027, forecasting A\$258M EBITDA and A\$195M NPAT.
- We value HFR at \$1.34/share, based on 0.7x unrisks NPV, using 10% WACC on nominal cash flows.** Our valuation assumes 50:50 debt:equity funding of pre-production capex, with equity raised at current share price.

### Recommendation:

- We initiate with **Buy** recommendation and **\$1.34/share 12-month price target based on our risked valuation**
- Catalysts for the share price include:** 1) Grant of mining concession; 2) Binding offtake agreements; 3) Financing of Muga; 4) Commencement of construction; and 5) Rising potash prices.

### Disclosures

The analyst does not own HFR securities. Foster Stockbroking and associated entities (excluding Cranport Pty Ltd) do not own HFR securities. Cranport Pty Ltd does not own HFR securities. Refer details end of report.

Recommendation	Buy
Previous	n/a
Risk	High
Price Target	\$1.34
Previous	n/a
Share price (A\$)	\$ 0.70
ASX code	HFR
52 week low-high	\$0.24-\$0.82
Valuation - risked (A\$/share)	\$ 1.34
Methodology	risked NPV

### Capital structure

Shares on Issue (M)	330
Market cap (A\$M)	231
Net cash (debt) (A\$M)	25
Options (M)	35
Diluted EV (A\$M)	231
Ave daily volume ('000)	104

Earnings y/e Dec A\$M	FY19a	FY20e	FY21e	FY22e
Sales	0	0	0	0
EBITDA adj	-7	-7	-7	-8
NPAT reported	-8	-24	-7	-4
<b>NPAT adj</b>	<b>-7</b>	<b>-7</b>	<b>-7</b>	<b>-4</b>
<b>EPS adj. \$*</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.01</b>	<b>-0.01</b>

\* Adj =underlying

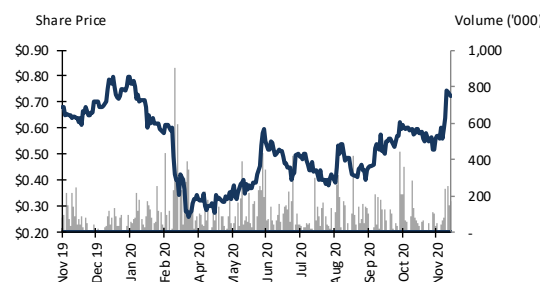
### Substantial shareholders

EMR Capital Investment (No.2) Pte Ltd	32%
WWB Investments Pty Ltd	11%
Australian Super Pty Ltd	5%

### Board

Richard Crookes	Non-Executive Chairman
Pauline Carr	Non-Executive Director
Roger Davey	Non-Executive Director
Jim Dietz	Non-Executive Director
Brian Jamieson	Non-Executive Director
Isaac Querub	Non-Executive Director

### Share price graph



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**Highfield Resources (HFR)**

Full Year Ended 31 December

Profit and Loss A\$M	2019a	2020e	2021e	2022e
Revenue	0	0	0	0
Operating costs adj.	7	7	7	8
<b>EBITDA adj.</b>	<b>-7</b>	<b>-7</b>	<b>-7</b>	<b>-8</b>
D&A	0	0	0	0
<b>EBIT adj.</b>	<b>-7</b>	<b>-7</b>	<b>-7</b>	<b>-8</b>
Net Interest exp / (income)	0	0	0	-4
<b>PBT adj.</b>	<b>-7</b>	<b>-7</b>	<b>-7</b>	<b>-4</b>
Tax exp / (benefit) adj.	0	0	0	0
<b>NPAT adj.</b>	<b>-7</b>	<b>-7</b>	<b>-7</b>	<b>-4</b>
Non-recurring items	-1	-17	0	0
<b>NPAT reported</b>	<b>-8</b>	<b>-24</b>	<b>-7</b>	<b>-4</b>

<b>EPS diluted adj. (\$)</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.01</b>	<b>-0.01</b>
Wtd ave share diluted (M)	330	330	737	737

Cashflow A\$M	2019a	2020e	2021e	2022e
EBITDA adj.	-7	-7	-7	-8
Change in WC	1	0	0	0
Net interest	0	0	0	4
Tax	0	0	0	0
Share based expense	2	2	2	2
Other	0	0	0	0
<b>Operating Cashflow</b>	<b>-3</b>	<b>-4</b>	<b>-5</b>	<b>-2</b>

Purchase of PP&E	0	0	-100	-293
Acquisitions	0	0	0	0
Capitalised expenses	-11	-13	0	0
Investments	0	0	0	0
Other	0	0	0	0
<b>Investing Cashflow</b>	<b>-11</b>	<b>-13</b>	<b>-100</b>	<b>-293</b>

Equity issue	0	0	289	0
Debt proceeds	0	0	0	289
Debt repayments	0	0	0	0
Other	0	0	0	0
<b>Financing Cashflow</b>	<b>0</b>	<b>0</b>	<b>289</b>	<b>289</b>

<b>Net Cashflow</b>	<b>-15</b>	<b>-17</b>	<b>185</b>	<b>-6</b>
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Balance Sheet A\$M	2019a	2020e	2021e	2022e
Cash	40	23	208	201
Receivables	1	1	1	1
Inventories	0	0	0	0
PPE	0	0	100	393
Capitalised expl'n	117	111	111	111
Intangibles	0	0	0	0
Other	0	6	4	2
<b>Total Assets</b>	<b>158</b>	<b>141</b>	<b>423</b>	<b>708</b>

Accounts payable	5	5	5	5
Provisions	0	0	0	0
Debt	0	0	0	289
Other	0	0	0	0
<b>Total Liabilities</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>295</b>

Capital & reserves	202	202	491	491
Retained earnings	-49	-66	-73	-77
<b>Total Equity</b>	<b>153</b>	<b>136</b>	<b>418</b>	<b>414</b>

Company Valuation				
DCF, WACC 10% nominal				
Segment	Unrisked A\$M	Unrisked A\$/sh	Risked A\$M	Risked A\$/sh
Muga	871	\$0.99	697	\$0.79
Sierra del Perdon	363	\$0.41	182	\$0.21
Pintano	50	\$0.06	15	\$0.02
Corporate	-75	-\$0.09	-60	-\$0.07
Future equity	364	\$0.42	292	\$0.33
Options in-money-at val'n	35	\$0.04	28	\$0.03
<b>Net cash</b>	<b>25</b>	<b>\$0.03</b>	<b>25</b>	<b>\$0.03</b>
<b>Total</b>	<b>1,634</b>	<b>\$1.86</b>	<b>1,178</b>	<b>\$1.34</b>

Shares now M	330
Future equity M	513
Options-in-money at val'n M	34
<b>Fully diluted shares M</b>	<b>877</b>

Commodity Assumptions	2019a	2020e	2021e	2022e
<b>Prices:</b>				
Potash, MoP, NW Europe FOB	US\$/t 304	257	280	288
Salt wtd ave. (de-icing & vacuum)	US\$/t 37	35	33	33
A\$	US\$ 0.70	0.71	0.73	0.75
Euro	US\$ 1.10	1.14	1.17	1.18

<b>Shipments:</b>				
Potash, MoP	kt 0.0	0.0	0.0	0.0
Salt	kt 0.0	0.0	0.0	0.0

<b>AISC</b>	US\$/t	-	-	-
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Resources	Ore Mt	K <sub>2</sub> O%	K <sub>2</sub> O Mt
Muga	267	12.4%	33
Sierra del Perdon	82.1	10.6%	9
Pintano	71	11.9%	8
<b>Total</b>	<b>420</b>	<b>12.0%</b>	<b>50</b>

Reserves	Ore Mt	K <sub>2</sub> O%	K <sub>2</sub> O Mt
Muga	109	10.2%	11

Exploration Targets	Ore Mt	K <sub>2</sub> O%	K <sub>2</sub> O Mt
Vipasca - base	1,160	13%	154
Sierra del Perdon - midpoint	250	11%	28

Capital structure	M
Ordinary shares	330
Options	34
<b>Fully diluted</b>	<b>364</b>

Source: Company; Foster Stockbroking estimates



## INTRODUCTION

### Potash – one of three components in fertilisers

- Potash (potassium), along with phosphorous and nitrogen, is the most widely used nutrient fertiliser. The benefits are numerous including improvements to:
  - Plant growth and yield;
  - Taste, appearance, and shelf-life of harvested crop;
  - Nutrient value;
  - Enzyme activation;
  - Transport of water and photosynthesis products (assimilates);
  - Soil fertility;
  - Strength of plant cell walls, development of strong roots, stalks, and stems, increasing resistance to plant stressors such as high wind and extreme temperatures,
  - Enhanced water retention during droughts;
  - Disease and insect resistance; and
  - Compensating for environmental leakage and loss from crop harvesting of potassium.

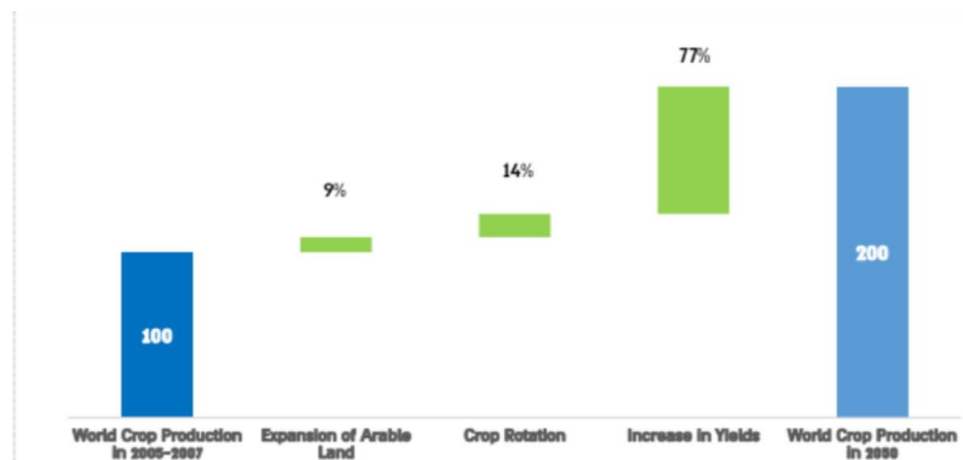
### No substitute

- Fertiliser accounts for 95% of potash consumption, the balance used in industrial applications. Potash fertiliser is used for grains including wheat, rice, corn, oilseeds such as soybeans, palm oil, and fruit and vegetables. Potash can be used as a component of N-P-K composite fertilisers which combine potassium, phosphorous, and nitrogen. There is no known substitute for potash. It is usually applied around sowing time and utilisation is about 50%-60% during the year of application.
- Muriate of potash (MOP) – also known as sylvite, potassium chloride, or KCl - is by far the major global source of potash, accounting for approximately 90%. The next major source is sulfate of potash (SoP, potassium sulfate, or  $K_2SO_4$ ) which accounts for almost 10%. Other minor sources are nitrate of potash (saltpeter, potassium nitrate, or  $KNO_3$ ); and langbeinite (potassium magnesium sulfate, or  $K_2SO_4 \cdot 2MgSO_4$ ).
- Pure MoP contains 63.2% potassium oxide ( $K_2O$ ) equivalent. Specifying  $K_2O$  is a common way to indicate the amount of potassium in ore or fertiliser and permits comparisons between various potash forms. K60 and K62 are terms specifying the  $K_2O$  grade of MoP product. MoP is usually supplied in standard or granular form, the latter incurring a slight premium.
- Potash occurs primarily in salt-bearing sediments (evaporates) that are usually laterally extensive and layered with tabular geometries. Simple potash deposits tend to be dominated by sylvinite ore, a mix of sylvite and the salt halite (sodium chloride or NaCl), for an overall grade of 10%-35%  $K_2O$ . Variable concentrations of impurities such as carnallite ( $KMgCl_3 \cdot 6H_2O$ ), and insolubles, typically clays, can also be present with the sylvinite ore. Carnallite is an alternative to sylvinite as an abundant potash source, but is lower grade with  $K_2O$  only as high as 16.9%, more complex to process, and less economic than sylvite.

### POTASH GROWTH DRIVERS

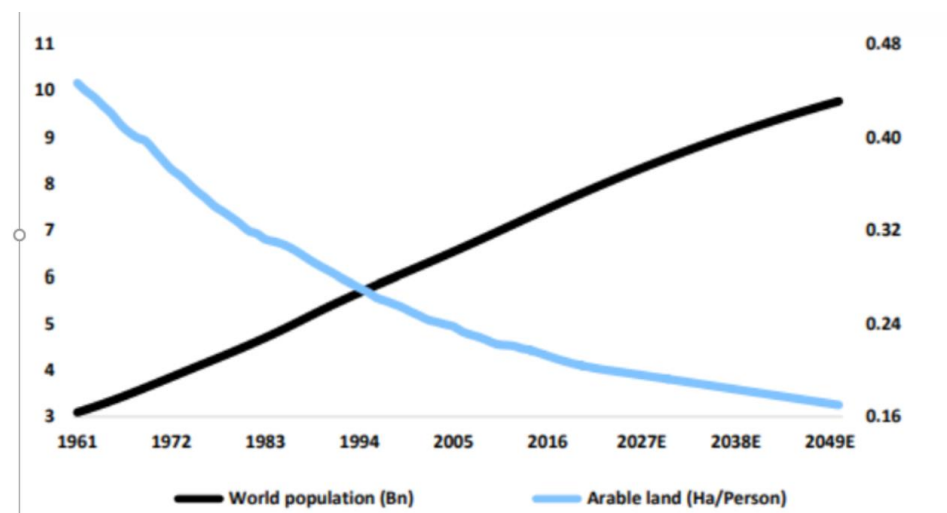
- Drivers of potash demand are global population growth, arable land per capita, and protein per capita. This translates to more people to feed, less land available for growing food, and more intensive use of land. According to FAO, arable land per capita expected to decrease from 0.22ha per person to 0.18 between 2020 and 2050 – a decline of just under 26%. This requires increase in crop yields to maintain similar production. Consequently, over two-thirds of the increase in crop supply to 2050 will derive from higher yields. The largest sources of future demand are forecast to come from Latin America and Africa as these regions have the lowest yields currently.
- World population is expected to reach 9.7b in 2050 (*International Fertiliser Association, IFA*). The IFA believes the agricultural sector needs to improve productivity by 60% from 2005 levels to meet increasing demand for food.

Figure 1: World grain production to 2050 (indexed to 100)



Source: ICL, FAO.

Figure 2: World Arable Land and Population

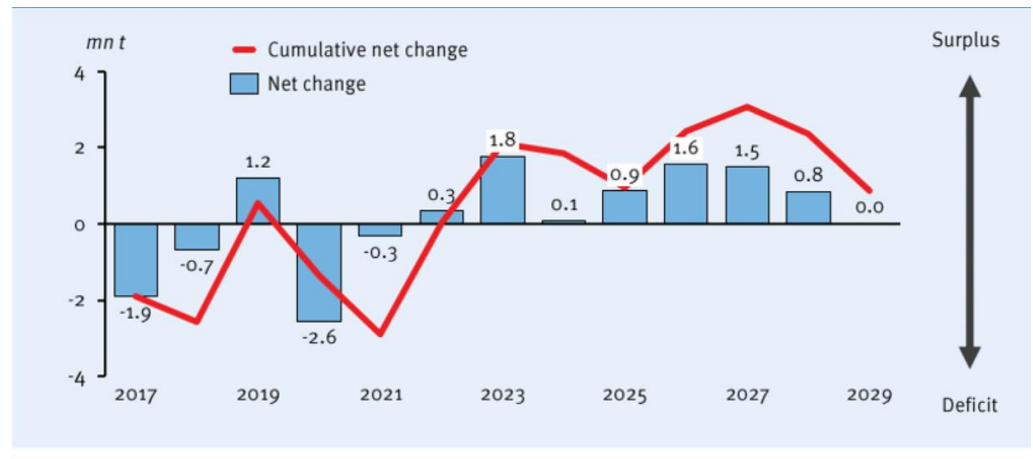


Source: ICL, FAO

**MARKET**

- Argus forecasts 67Mt MoP demand in 2020, rising to 70Mt in 2021, and 2.1% CAGR to 2033 from 2020. This is equivalent to over 1Mt/tpa potash required each year to 2033. Brazil, India, and China are the largest consumers of potash.
- Potash capacity is forecast to increase 2.3% over same period. The only new supply in 2020-21 has been from Eurochem and Belaruskali ramping-up new mine production. However from mid-2020s decade supply of potash is forecast to be flat. This is even after including BHP brings its Jansen project onstream.

**Figure 3: Global potash demand and supply, Mt**

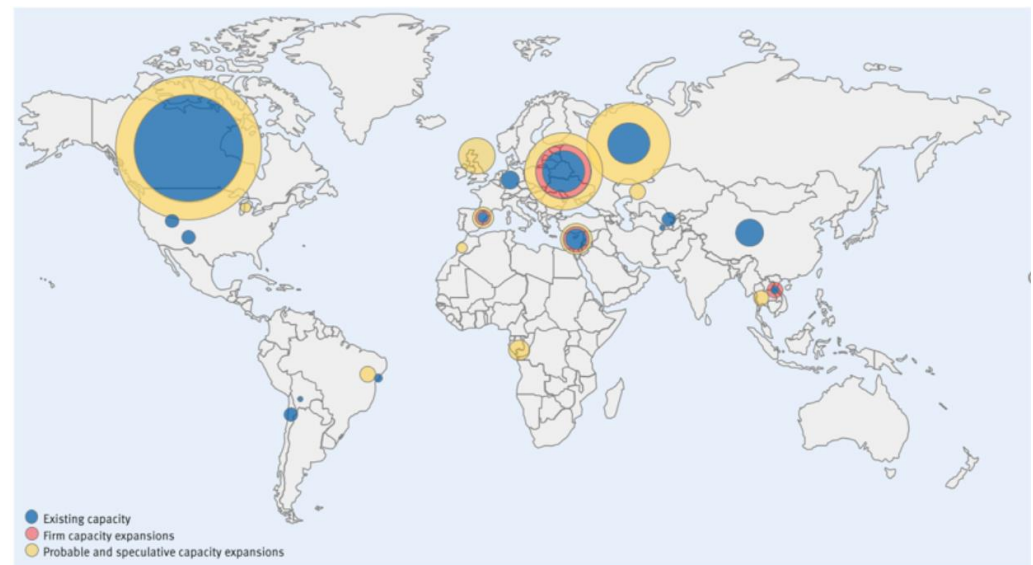


Source: Argus.

**Concentrated supply**

- Four companies across mostly three countries Canada (Nutrien, Mosaic), Belarus (Belaruskali), and Russia (Uralkali) supply nearly 70% of global potash. Most of the recent new supply has been by majors, which has further concentrated the industry. Only Eurochem (Russia) and Turkmenhimiya (Turkmenistan) have been new entrants.

**Figure 4: Concentrated supply of potash**



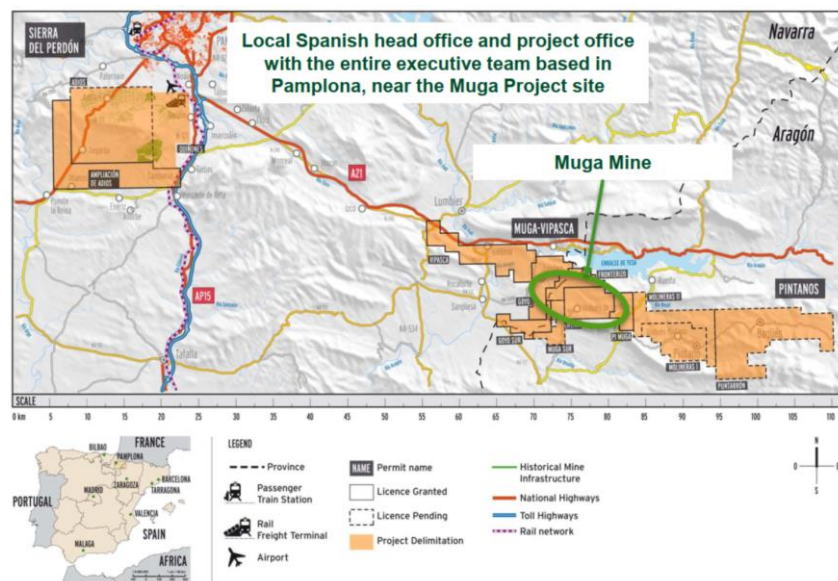
Source: Argus

## HIGHFIELD RESOURCES

### Potash projects in key Western Europe producing basin

- Highfield Resources (HFR) is an ASX listed company with its major assets being three wholly owned development potash projects in northern Spain in the Ebro potash producing basin: Sierra del Perdon; Pintano; and Muga-Vipasca (Muga). The projects were initially acquired in 2012. HFR has its Spanish office in Pamplona, and its Australian office in Adelaide, South Australia.
- Spain is an established potash supplier, and ranks second only to Germany in Western Europe in potash production. Israeli fertiliser company ICL produces over 1Mtpa potash from its Suria mine, also located in Ebro basin.

Figure 5: HFR Project Locations



Source: Company.

### MUGA (HFR 100%)

- Muga is HFR’s most advanced potash project, having completed a DFS and receiving environmental approval, and currently awaiting grant of a mining licence. Muga covers 61km<sup>2</sup> and is located in the Navarra sub-basin, within the Ebro basin, 450km northeast of Madrid and 35km southeast from Pamplona.

#### DFS highlights

- A DFS on Muga was initially completed in 2015. Since then HFR has optimised and refined it further with updates in 2018 and most recently in late 2019. Key metrics of the project are:
  - NPV<sub>8</sub> post-tax of €1,970M and IRR 25%;
  - EBITDA in first year of Phase 2 production of €300M;
  - 30 year mine life based on average 3.2Mtpa ROM in Phase 1, and 6.0Mtpa in Phase 2.
  - Average 1.0Mtpa granular K60 potash product in Phase 2, 0.5Mtpa in Phase 1; and
  - C1 cost of €82/t and pre-production capex €368M.



**Figure 6: Muga DFS Highlights**

Parameter	Unit	Value
<b>Costs:</b>		
Capex pre-production	€M	368
Capex LOM (ex-sustaining capex)	€M	576
C1*	€/t	82
C3	€/t	150
<b>Production</b>		
Plant feed average - Phase 1	Mtpa	3.2
Plant feed average - Phase 2	Mtpa	6.0
Production potash K60 granular average - Phase 1	Mtpa	0.5
Production potash K60 granular average – Phase 2	Mtpa	1.03
K Recovery	%	94
Head grade K <sub>2</sub> O	%	10.7%
LOM	years	30
Vacuum salt production	ktpa	507
De-icing salt production	ktpa	380
<b>Financials:</b>		
IRR	%	25%
NPV <sub>8</sub> post-tax	€M	1,970
EBITDA in first full year Phase 2	€M	300
Potash price years 1-15	€/t	339
Potash price years 16-30	€/t	508
Euro : USD		1.09
Tax rate Navarra	%	28%

Source: Company. All numbers real terms. \*C1 includes sustaining capex and excludes transport.

## GEOLOGY

### Shallow mineralisation and no aquifer

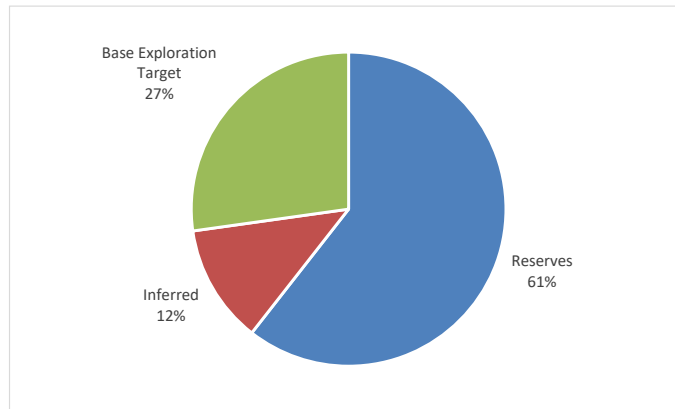
- Muga is simple potash sylvinitic deposit with no aquifer present. Depth to mineralisation is relatively shallow: between 100m and 750m, and amenable to access by decline. Potash occurs in six principal beds (P0, PA, PB, P1, P2, and P4) ranging in depth from 100m to >1,500m, interbedded with halite. Average bed thickness ranges from 1.3m to 5.0m, and average K<sub>2</sub>O from 9.8% to 13.7%. Seams PA and PB are the most continuous, and generally thicker and higher grade.

## MINING INVENTORY

### Reserves for first 19 years

- The DFS for Muga is underpinned by mining an inventory in sequential order comprising 61% JORC Reserves, 12% Inferred Resources and 26% a base Exploration Target by ore to provide a 30 year LOM. Reserves underpin the first 19 years of mine life, with Measured and Indicated Resources and the Exploration Target the last 11 years.

**Figure 7: Muga DFS Mining Inventory**



Source: Company.

**JORC Resource**

- Muga’s JORC Resource is 267Mt at 12.4% K<sub>2</sub>O, with Measured and Indicated 235Mt at 12.3% K<sub>2</sub>O, approximately 88% of total. JORC Reserves are 109Mt at 10.2% K<sub>2</sub>O, being 41% of total Resource ore or 33% of Resource contained K<sub>2</sub>O.

**Figure 8: Muga JORC Resources and Reserves**

Category	Ore (Mt)	K <sub>2</sub> O grade	Cont K <sub>2</sub> O (Mt)	Na <sub>2</sub> O grade
Measured	92	12.4%	11.4	26.3%
Indicated	143	12.2%	17.4	27.2%
Inferred	33	12.9%	4.2	26.8%
<b>Total</b>	<b>267</b>	<b>12.4%</b>	<b>33.2</b>	<b>27.0%</b>
<b>Reserves</b>	<b>109</b>	<b>10.2%</b>	<b>11.1</b>	

Source: Company. Resources inclusive of Reserves.

- The Resource has cut/off grade of 8% overall K<sub>2</sub>O and minimum true bed thickness of 1.5m (Reserves 2.1m). Beds thinner than 1.5m were included where grade-thickness exceeded 12.0% K<sub>2</sub>O. This is consistent with reasonable prospects for economic extraction by conventional and/or solution mining methods. The Resource assumes extracting KCl from sylvinite only, and excludes KCl in carnallite, the latter unlikely to be recoverable. The extent of the resource occurs between 180m and 1,400m below surface.

**Exploration Target**

- The Muga Resource remains open at depth, to the south and to the west. HFR’s Vipasca permit abuts the western end of the Muga Resource and covers 27km<sup>2</sup>. Vipasca has an Exploration Target of 127 to 255Mt of sylvite ranging in grade between 12% and 16% K<sub>2</sub>O for the north-western extension of Muga mine project area. The target is based on drilling at Vipasca and Muga, which identifies the former as a natural extension of Muga. The Exploration Target includes only two seams (P1 and P2). Drilling in 2020 confirms Vipasca remains open to the west.

**Figure 9: Vipasca Exploration Target**

Low	Ore Mt		Low	K <sub>2</sub> O grade %	
	Base	High		Base	High
1,276	191	255	12%	14%	16%

Source: Company.





## MINING

### Shallow depth and no aquifer simplifies mining

- Given the shallow nature of Muga and absence of aquifer, ore will be extracted by conventional underground mining employing declines, as opposed to shafts which are higher capex and have slower ramp-up. Room and pillar mining will be employed, more advantageous than longwall due to lower upfront capex and infrastructure that can be progressively constructed.
- Mining will be undertaken with roadheaders and continuous miners. Mining will commence at 350m depth and ore accessed via twin 2.6km straight declines, 25m apart and connected by crosscuts, each accessing the same mining horizon at two different points. Ore is taken to surface via a conveyor belt. Declines will be developed by a bolt miner and roadheaders. Each decline will deliver 50% of the LOM average 6.0Mtpa ROM schedule. The rationale for twin – as opposed to single - declines is to take advantage of high grade mining areas and reduce project risk. Declines have been used by ICL at its former and current Spanish mines (Sallent and Suria) in the same basin.

### Flat and continuous seams also positive

- Five seams will be mined (P0, PB, PA, P1, and P2), ranging in thickness from 1.8m to over 3m. The upper seams will be mined in a continuous sequence, given there is little interburden between them. The seams are generally horizontal and continuous with minimal faulting and dipping, and of sufficient height which all engenders low cost mining.

## PROCESSING

### Salt also to be produced, minimising waste and increasing revenue

- The Muga process plant will produce 0.5Mtpa of granular MoP in Phase 1 and 1.0Mtpa in Phase 2. The proposed plant is a hybrid of two conventional processes for sylvinitic ores – flotation (used at the nearby historic Navarra and Subiza mines) and leaching/recrystallization, preceded by two-stage crushing. Flotation is applied to the coarse fraction to produce high grade MoP concentrate, while both fines and coarse flotation rejects are conventionally leached at low temperature (25-35°C) and selectively crystallised to produce both MoP and salt (NaCl).
- The greatest change between the original and most recent DFS in terms of operation has been in processing. The current combination has yielded two advantages. First it optimises recovery, with weighted average recovery estimated at 94%, well above the 80% used to calculate the cut-off grade for the Reserve. Secondly and importantly, the leach and recrystallisation not only produces MoP, but also a high purity vacuum salt as a by-product, increasing revenue and critically reducing waste. Experienced German engineering specialists undertook detailed testwork and design on the process plant. HFR will be owner-operator of mine and plant.

### Tailings used to backfill voids

- Tailings, mostly insolubles and residual NaCl, will be used to paste backfill voids in the mine. This has two advantages – increases extraction ratio as tailings provide additional geotech support for mined areas; and 2) reduces negative above ground environmental impacts. All salt will either be sold or placed underground, with zero on surface at end of mine -life.
- Following processing the product will be dried, compacted, and glazed to granulated minimum K60 MoP. Phases 1 and 2 will produce both vacuum and de-icing salt.



### Salt products and markets

- Roskill forecasts global salt demand to rise to 424Mt in 2028 from 352Mt in 2018, equivalent to 1.9% CAGR, fuelled by population and industrialisation growth. Four major uses of salt account for 80% of demand: chloralkali production (38%), soda ash production (21%), road de-icing (13%), and food and food processing (10%).
- Due to broad applications vacuum salt has a large geographic market. De-icing salt is lower value due to its high impurities and major markets are North America, UK, and Scandinavia. Salt is also produced at ICL's Suria potash mine in Spain.

### INFRASTRUCTURE

#### Nearby access to ports, road, labour, and power

- Muga is located only 7km from a dual national highway, allowing trucking of product to domestic or regional customers in Spain or France, or alternatively to an Atlantic port for export. HFR has an MoU with the Port of Pasajes, 150kms north-west by road from Muga, for handling 440ktpa of product. Pasajes had available capacity of 1Mtpa. An MoU was also signed with the Port of Bilbao, located 220km by road from project. ICL already exports 1Mtpa potash from the Port of Barcelona.
- The Muga plant will be located within 19kms of electricity, water, and gas. Process water will be a combination of rainwater, ground water and water taken from utility canal in vicinity of site. On-site water treatment will produce potable water.
- Power will be from a mix of natural gas and electricity, the majority from the latter. In September 2020 HFR was granted administrative authorisation for construction of key sections of high voltage line to the mine from Sanguesa, subject to grant of mining concession.
- HFR envisions no need for camp accommodation, instead accessing skilled workforce in close proximity, mostly from the regions of Navarra and Aragon.

### PERMITTING

#### Mining concession drawing nearer

- The permitting process for Muga has been protracted, with numerous cycles of consultations involving both the Central Government in Madrid and the regional Navarra and Aragon Governments, submissions by various communities and authorities, and a number of request for responses from HFR. Additionally it has been interrupted along the way by disparate events such as a temporary caretaker government and COVID.
- Initial submissions for both environmental approval (ESIA) and the mining concession were made in 2014 to the Navarra and Aragon regions, and Madrid in 2015. First community consultation concerning the ESIA, including HFR's responses, concluded in 2015. Further consultations between governments with various authorities resulted in more public exposition and requests for responses from HFR over the last several years. A particular focus was detail concerning seismicity, subsidence, and the handling of salt, which HFR has since addressed.
- HFR finally received environmental permit (DIA) for Muga in June 2019 from the Ministry for Ecological Transition (MITECO). The focus is now on receiving the Mining Concession (CE), as well as construction and building permits including for power and roads, the latter progressing in parallel with the CE. HFR submitted CE documentation in March 2020, and applications for

water and power permits in December 2019. The public exposition on the CE concluded in September 2020, to which HFR has responded and identified no new material matters raised.

- While noting the Government is not following any time-bound process, HFR is confident of receiving the CE, especially after securing the DIA. It is negotiating long lead items, and in September this year signed a contract and placed a deposit with Komatsu for the bolter miner.

**CAPEX**

**At least 50% lower capital intensity vs peers**

- Capex is deployed over two phases. Pre-production capex for Phase 1 production (0.5Mtpa) is €368M, with a construction period of 24 months from start to commissioning. Phase 2 capex is €208M (1Mtpa production), which expands underground and plant capacity.

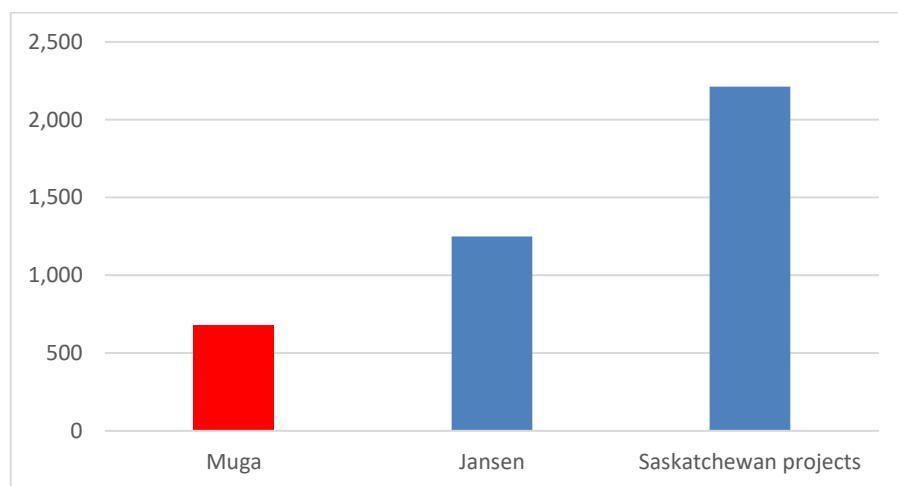
**Figure 10: Muga Capex**

Item	€M
Underground development & machinery	83
Process plant	194
Utilities and logistics	13
Tailings	17
Indirect costs	61
<b>Phase 1 sub-total</b>	<b>368</b>
Phase 2 sub-total	208
<b>Total</b>	<b>576</b>

Source: Company. Excludes sustaining capex.

- Muga’s capital intensity (capex/annual production) equates to US\$680/t of MoP. This is at least 50% lower than larger potash projects that are supposed to have economy of scale advantages. BHP figures for Jansen imply US\$1,250/t, while Nutrien’s estimates imply Saskatchewan projects are US\$1,900/t-US\$2,500/t.

**Figure 11: Selected Capital Intensity of Potash Projects (US\$/t)**



Source: Companies; Foster Stockbroking estimates. Muga from HFR DFS; Jansen from BHP 14<sup>th</sup> May 2019 ASX Release; Saskatchewan projects from Nutrien 2020 Factbook. Assumes C\$=US\$0.75 and €:US\$ of 1.18.

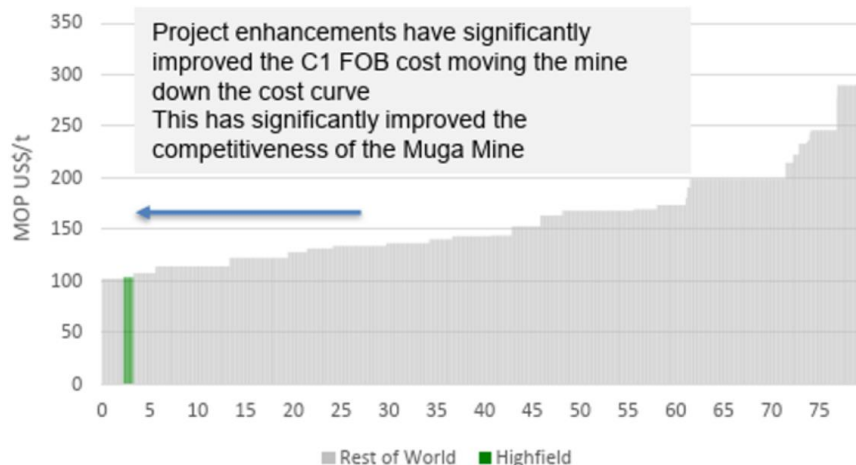
- HFR has an MoU with Acciona Infraestructuras SA., one of Spain’s and the world’s largest construction companies for mine construction. While HFR will purchase equipment, Acciona will be responsible for most managing of construction and coordinating labour and materials. HFR will establish an owner’s team to supervise construction. HFR has already awarded the bulk of engineering work, including for conveyors, earthworks, and expects to issue engineering documentation to Acciona by end CY2020.

## OPERATING COSTS

### Lowest cost quartile producer

- The optimised DFS shows Muga to have C1 cash costs of US\$95/t and AISC US\$104/t. Argus FMB was also commissioned by a European bank syndicate considering financing Muga to do an independent report. Argus determined that Muga would be the highest margin producer globally and likely be the lowest cost producer, residing in the first quartile of its forecast 2024 cash cost curve, on a delivered customer basis to Europe, Brazil, and USA.

Figure 12: 2024 MoP Cost Curve, real 2018 US\$



Source: Company; Argus.

Figure 13: Cost breakdown

Unit FOB costs per MoP	US\$/t	€/t
Mining	37	34
Processing	65	60
G&A	11	10
Salt by-product credit	-33	-30
Transport to port/domestic customer average	14	13
<b>C1</b>	<b>95</b>	<b>87</b>
Royalties	0	0
Sustaining capex	9	8
<b>AISC</b>	<b>104</b>	<b>95</b>

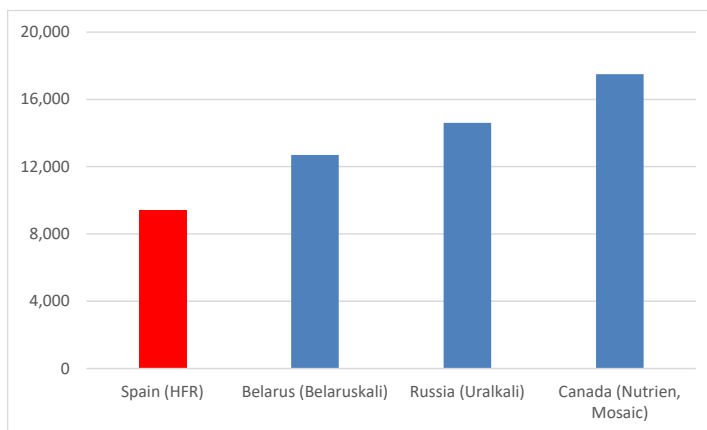
Source: Company; Foster Stockbroking estimates. Assumes €:US\$ of 1.09 as per DFS.

### What places Muga at the bottom of the cost curve?

- Five key attributes contribute to Muga's cost position:
  - Shallow mineralisation depth;
  - Mining of flat, thick, and continuous seams;
  - Local workforce;
  - Low distance to port and domestic customers; and
  - Nil royalties
- Muga's low cost position benefits from a relatively short transport distance and cost to port, enabling high netback on price, whether delivering to domestic and regional customers (Spain or France) or export market.

- Canadian, suppliers typically receive the lowest netback on deliveries to Europe, US, and Brazil when compared to Western European suppliers – K+S from Germany and ICL in Spain– due to the latter’s smaller shipping distances from mine to customer. Russia and Belarus also typically have lower netback than European supply to these regions, albeit higher than the Canadians.
- Figure 13 illustrates the difference in shipping distances to Brazil, comparing HFR with major suppliers. Depending on currency rates, Muga’s mine-to-customer freight advantage can vary from US\$10/t vs Russian/Belarus supply, to as high US\$90/t vs Canadian supply.
- In 2019 Spain’s largest potash export markets was the USA, and Germany’s was Brazil, highlighting the competitiveness of European potash in these markets. Major European export markets for Spain and Germany were Netherlands, France, and Poland.

**Figure 14: Shipping distance from Mine to Brazil (kms)**



Source: Company; Foster Stockbroking estimates.

**Fiscal terms**

- Spain has no mining royalties and corporate tax is 28%.

**OFFTAKE**

**Greater than Phase 1 production under MoUs**

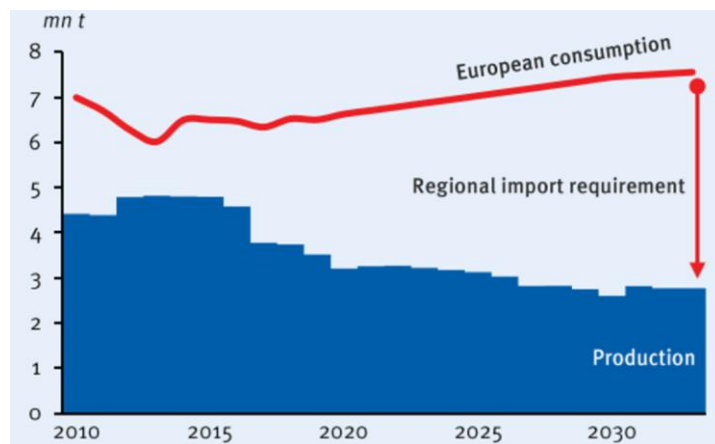
- HFR has a number of non-binding MoUs for its Muga potash which combined, account for more than Phase 1 production (0.5Mtpa) of MoP.
- **Ameropa – up to 250ktpa MoP.** In 2019 HFR signed a non-binding MoU with Ameropa for up to 250ktpa MoP. Product will be a combination of both standard (75ktpa) and granular (175ktpa), with HFR having option to increase offtake to 300ktpa. Ameropa is a Swiss global trader focussing on fertilisers and grains, with distribution across 31 countries, and is also involved in production, logistics, and marketing.
- **Keytrade AG - up to 300ktpa MoP.** A non-binding MoU was signed with Keytrade AG in 2020 for up to 300ktpa MoP (250ktpa granular and 50ktpa standard). Keytrade is a Swiss agri trader which deals with suppliers, distributors, retailers, and end-users in fertiliser products in more than 115 countries. Historically has sold potash in European, South East Asian, Brazilian, and African markets.

- **Trammo** – amount not disclosed. HFR signed a non-binding MoU with Trammo in 2016. Headquartered in US and Switzerland, Trammo is a trader with markets including USA, Europe, Brazil, China, South East Asia, and former Soviet nations.
- HFR has on-going discussions with additional parties in Europe and North African markets, including wholesale customers and global trading partners, for balance of Muga production (Phase 2).

**Western Europe market in deficit**

- Given forecast expanding deficit of potash in Western Europe to -5Mt from -3Mt over the next decade (Figure 15), we believe HFR is well positioned to eventually sell all of its Phase 2 production.

**Figure 15: Western Europe potash market**



Source: Argus

**Salt offtake**

- HFR has two non-binding MoUs for its salt by-product:
- **Cargill Inc – 1Mtpa de-icing salt.** For the USA market, subject to assessing commercial viability.
- **Maxisalt-Pardira Premium SL (Maxisalt) - 400ktpa vacuum salt, 100ktpa de-icing salt.** In 2020 HFR signed a non-binding MoU with Maxisalt, a Spanish based global salt distributor, with a focus on Spain and France. It distributes rock, solar, and vacuum salts to the water treatment, animal feed, and industrial markets.

**FINANCING**

**Likely European bank syndicate for debt financing**

- In 2015 HFR stated project finance mandate agreed with four major European banks, and that the bank syndicate received internal approvals for finance facilities up to €185M on a debt to equity ratio of 65%. The syndicate comprised BNP Paribas, ING Bank, Societe Generale, and Banco Santander. An 8-year term facility was considered. HFR has continued to update the project finance facility during the extended permitting process.



## OTHER PROJECTS

- While understandably the current focus is to bring Muga into production, HFR's other projects enable it to have future growth options for growing its Spanish potash production long-term. Some of the permitting work conducted on Muga can also be transferred to the other three projects.

### PINTANO (HFR 100%)

#### Potential extension to Muga

- Pintano is contiguous to Muga and Vipasca, with depths to mineralisation ranging from 100m to 1,200m, and covering an area of 65km<sup>2</sup>. Pintano is dominated by sylvinite, halite and minimal carnallite and has a JORC Resource of 71Mt. The potash occurs in three sylvinite beds (A, B, and 1), the same as Muga to the west. Pintano could be potentially mined at some later stage as part of Muga mine.

Figure 16: Pintano JORC Resource

Category	Ore Mt	Grade K <sub>2</sub> O %	Cont K <sub>2</sub> O Mt
Measured & Indicated	0	0.0%	0.0
Inferred	71	11.9%	8.4
<b>Total</b>	<b>71</b>	<b>11.9%</b>	<b>8.4</b>

Source: Company.

### SIERRA DEL PERDON (HFR 100%)

- Less than 40km from Muga and 10km from Pamplona, Sierra del Perdon covers about 123km<sup>2</sup>. It contains two former operating mines that extracted 54Mt of sylvinite and carnallite ore between 1963 and 1996 and produced over 10Mt of potash.

#### Scoping study

- HFR completed a scoping study on Sierra del Perdon in 2015, with the following key metrics:
  - NPV<sub>10</sub> post-tax US\$527M, IRR 38.5%;
  - EBITDA in first full year of production US\$120M;
  - 20 year LOM at 3.15Mtpa ore feed rate;
  - Capex US\$233M; C1 and C3 costs of US\$155/t and US\$177/t;
  - Average steady state 520ktpa granular K60 potash; and
  - MoP 2017 Vancouver fob US\$315/t.
- The study was based on JORC Resources an Exploration Target comprising 39.4Mt of sylvinite at 14% K<sub>2</sub>O and 52.5Mt carnallite at 10% K<sub>2</sub>O and extraction ratios of 80% and 60%. Given the modifications to the Muga DFS since 2015, we would expect there may be material refinements to the mining of Sierra del Perdon in future studies.

#### JORC Resource

- Potash mineralisation at Sierra del Perdon ranges from 250m to 1,200m depth. The evaporite consists of three beds – upper carnallite, lower carnallite, and sylvinite. JORC Resource is 82.1Mt at 10.6% K<sub>2</sub>O. Additionally there is an Exploration Target of 50 to 100Mt sylvinite at 10%-14% K<sub>2</sub>O and 100Mt to 250Mt of carnallite at 9% to 13% K<sub>2</sub>O. Depth range of the exploration target is 100 to 1,400m.



**Figure 17: Sierra del Perdon JORC Resource**

Breakdown	Ore Mt	Grade K <sub>2</sub> O %	Cont K <sub>2</sub> O Mt
<b>Category type:</b>			
Indicated	42	10.7%	4.5
Inferred	40	10.5%	4.2
<b>Seam type:</b>			
Carnallite	66	9.8%	6.5
Sylvinite	16	14.1%	2.2
<b>Total</b>	<b>82</b>	<b>10.6%</b>	<b>8.7</b>

Source: Company.

**Figure 18: Sierra del Perdon Exploration Target**

Seam	Ore Mt		K <sub>2</sub> O grade %	
	Low	High	Low	High
Sylvinite	50	100	10%	14%
Carnallite	100	250	9%	13%
<b>Total</b>	<b>150</b>	<b>350</b>	<b>9%</b>	<b>13%</b>

Source: Company.

### Mining and processing

- The scoping study envisaged ore accessed by a 1.8km decline and extracted by conventional underground room and pillar, and hauled to surface with conveyor belt. Both carnallite and sylvinite will be mined and processed in a ratio of 1:1. Initial depth from surface is 250m.
- Flotation will process both sylvinite and carnallite in two stages. A carnallite decomposition circuit – removing magnesium chloride (MgCl) - is followed by flotation producing K60 MoP. The carnallite is decomposed via addition of water and the KCl crystallises out of solution in a series of reactor tanks. 10% of production will be compacted to granular product required for Brazil and other markets. Recovery of 83% is assumed.

### By-products

- No by-products were considered in the study, implying upside exists from potential sales of sodium chloride and /or magnesium by product if feasible. This would also reduce management of waste and tailings, as is the case for the Muga project. The initial 12 months production of tailings will be stored above ground and backfilled into mined voids. This has an environmental advantage, as well as for production by increasing extraction ratios.

### MUGA SOP OPTION

- HFR stated in 2016 that it would consider converting some of its MoP to SoP. SoP enjoys a significant premium to MoP, especially in the USA market. While SoP has a lower K<sub>2</sub>O content than MoP (ca. 50% vs 60%) it has a higher sulfur content and nil chloride. It is used for higher value chlorine intolerant crops such as fruits, vegetables, turf, and tobacco.
- A scoping study was completed in 2016 on a 500ktpa SoP operation converting 40% of Muga MoP (430ktpa) into SoP. This required capex of US\$147M, with pre-production less than US\$100M for Phase 1 of 250ktpa SoP. AISC estimated were US\$370/t fob assuming MoP input price of US\$287/t fob. A long-term SoP premium of US\$250/t to MoP was assumed. No NPV or earnings were disclosed.
- The widely adopted Mannheim process was selected for producing SoP from combining sulfuric acid with MoP. HFR believed it could access low cost sulfuric acid and natural gas, and nearby limestone. Non-binding MoUs were signed at the time of the study for port sites, sulfuric acid, limestone, HCl sales, and calcium chloride by-product offtake.

**COMMODITY ASSUMPTIONS**

- Our potash price forecasts are shown in Figure 19. We believe these to be largely line with general consensus estimates.

**Figure 19: Commodity assumptions**

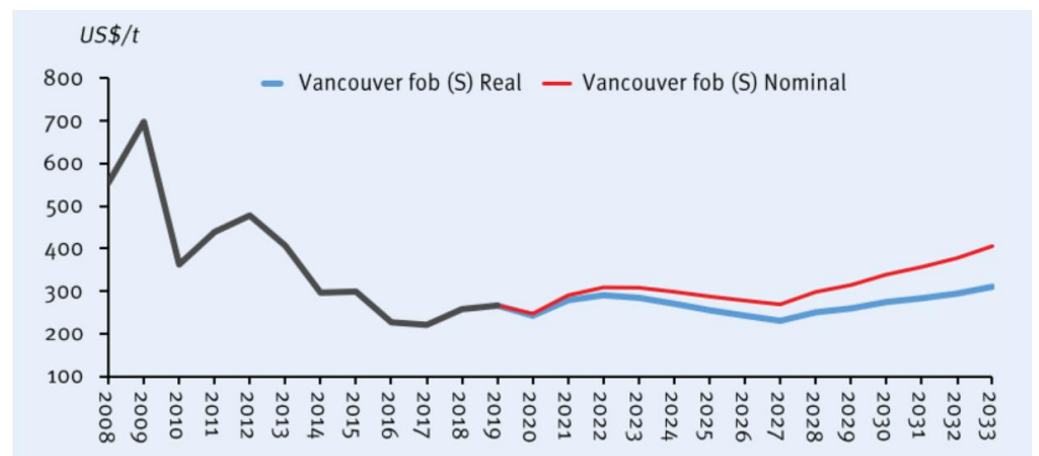
Commodity/FX	Unit	CY2019	CY2020e	CY2021e	CY2022e	CY2023e	LT
MoP, NW Europe FOB	US\$/t	304	257	280	288	295	299
Salt ave. de-icing & vacuum	US\$/t	37	35	33	33	34	35
A\$	US\$	0.70	0.71	0.73	0.75	0.75	0.75
Euro	US\$	1.10	1.14	1.17	1.18	1.18	1.18

Source: Foster Stockbroking estimates.

**Potash price recovers**

- US\$220/t CFR for MoP was settled between major China users and BPC (Belarus Potash Corp) in May 2020, down from US\$290/t in 2018, and the lowest since 2016. The fall in price was due to China’s high stockpiles. However industry sources such as CRU and Argus expect demand to increase over remainder of 2020 and into 2021, especially from major consumers Brazil, USA, and South East Asia.
- Canadian, Belarus, and Russian supply have exhibited a disciplined supply response during times of weak demand, which has supported price and prevented it collapsing below US\$200/t. The Canadians cut about 2Mtpa of supply over the past 12 months, while another 2Mtpa was reduced mostly from former Soviet nations. Examples were Belaruskali (delaying Petrikov), Mosaic (idling Colonsay), and Nutrien (Nanscoy shutdown).
- High barriers to entry to potash supply exist mostly due to deep nature of deposits necessitating high capital requirement, and a highly concentrated market providing supplier some relative degree of price influence and customers relationships. Argus believes US\$320/t real is the long term marginal cost to justify potash mine investment, and that US\$207/t fob Vancouver is where K+S’s German operations become loss making. Nutrien however believes it holds most of the marginal supply, because Canada has the highest production costs plus highest freight to China, Brazil and USA vs say Europe. For example some of Nutrien’s mines are 1,800km from Vancouver port.

**Figure 20: Potash prices**



Source: Argus.



### EARNINGS FORECASTS

- Our forecast HFR earnings until first full year of Phase 2 production are shown in Figure 21. We expect award of the mining concession end CY2020, construction to begin mid-CY2021, and commissioning of Phase 1 in mid-CY2023. CY2025 is the first full year of Phase 1 production (0.5Mtpa). We expect Phase 2 commissioning CY2025 and its first full year of production in CY2027.

Figure 21: HFR earnings Forecasts

Y/e Dec	2020e	2021e	2022e	Phase 1 starts		1 <sup>st</sup> full yr Phase 1	1 <sup>st</sup> full yr Phase 2	
				2023e	2024e	2025e	2026e	2027e
<b>Muga revenue</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>63</b>	<b>204</b>	<b>281</b>	<b>362</b>	<b>447</b>
Muga	0	0	0	36	95	124	150	179
Corporate	7	7	8	9	9	9	10	10
Operating costs	7	7	8	45	104	134	160	189
Muga	0	0	0	27	109	157	211	268
Corporate	-7	-7	-8	-9	-9	-9	-10	-10
<b>EBITDA</b>	<b>-7</b>	<b>-7</b>	<b>-8</b>	<b>18</b>	<b>100</b>	<b>148</b>	<b>202</b>	<b>258</b>
D&A	0	0	0	72	127	95	71	34
Muga	0	0	0	-45	-18	21	69	180
Corporate	-7	-7	-8	-9	-9	-9	-10	-10
EBIT	-7	-7	-8	-54	-27	53	131	224
Net interest exp	0	0	-4	18	24	26	27	23
PBT	-7	-7	-4	-72	-51	27	104	201
Tax	0	0	0	0	0	0	0	6
<b>NPAT underlying</b>	<b>-7</b>	<b>-7</b>	<b>-4</b>	<b>-72</b>	<b>-51</b>	<b>27</b>	<b>104</b>	<b>195</b>

Source: Foster Stockbroking estimates.

### VALUATION

- We value HFR at \$1.34/share risked, based on NPV<sub>10</sub> on nominal cash flows. A sum of parts is shown in Figure 22.

Figure 22: HFR Valuation

Segment	Unrisked		Risked		Risk Factor
	A\$M	A\$/share	A\$M	A\$/share	
Muga	871	\$0.99	697	\$0.79	80%
Sierra del Perdon	363	\$0.41	182	\$0.21	50%
Pintano	50	\$0.06	15	\$0.02	30%
Corporate	-75	-\$0.09	-60	-\$0.07	80%
Future equity	364	\$0.42	292	\$0.33	80%
Options in-money-at val'n	35	\$0.04	28	\$0.03	80%
Net cash	25	\$0.03	25	\$0.03	100%
<b>Total</b>	<b>1,634</b>	<b>\$1.86</b>	<b>1,178</b>	<b>\$1.34</b>	<b>72%</b>
Shares now M	330				
Future equity M	513				
Options-in-money at val'n M	34				
<b>Fully diluted shares M</b>	<b>877</b>				

Source: Foster Stockbroking estimates.



- Major assumptions underpinning our valuation are:

- **Production.** ROM and MOP production profile as per DFS.
- **Costs.** Capital and operating cost parameters as per DFS.
- **Pricing – lower than DFS.** Potash LT NW Europe FOB pricing of US\$299/t, inflated 2.0% p.a. This is the major difference between our Muga valuation vs that of the DFS which used higher potash price assumptions. It results in our Muga valuation being A\$871M unrisks, markedly less than the DFS' €1,970M or A\$3,099M (assuming A\$=US\$0.75 and EUR =1.18)
- **Timing.** Two-year construction beginning mid-CY2021. Commissioning of Phase 1 mid-CY2023, and commissioning Phase 2 mid-CY2025, with first full year Phase 2 production CY2027.
- **Funding.** 50:50 debt:equity financing of A\$587M Phase 1 capex, assuming equity raise at current share price. Phase 2 capex of A\$327M is funded partly by Phase 1 cash flow (A\$177M), debt (A\$75M) and equity (A\$75M).
- **Pintano and Sierra del Perdon.** We assume Pintano will be mined at the end of Muga's life, and Sierra del Perdon to be developed in ten year's time. These have been risks.

#### Multiple analysis more than supports NPV valuation thesis

- Potash producers are trading 19x forward PE. If we discount HFR's first full years of earnings by 10% p.a. back six years, we derive a valuation of A\$2,100M – well above our unrisks NPV of \$1,600M.

#### Sensitivity

- We estimate every US\$10/t increase in potash prices increase our risks valuation of HFR by \$0-08/share, or unrisks by \$0.12/share.

## RECOMMENDATION

### Initiate with Buy, \$1.34/share 12-month PT

- We initiate with a Buy recommendation on HFR with a 12-month price target of \$1.34/share based on our risks valuation.
- We envisage major catalysts for the share price being 1) Grant of mining concession; 2) Binding offtake agreements; 3) Financing closure and 4) Commencement of construction.



## DIRECTORS

- **Mr Richard Crookes. Non-Executive Chairman.** *BSc (Geology); Grad Dip Applied Finance.* Appointed 2019. Previously Non-Executive Director and Acting CEO. Over 30 years' experience in resources and investment sectors.
- **Ms Pauline Carr. Non-Executive Director.** *BEcon; MBA; FAICD FCIS FGIA.* Over 30 years' experience in management, corporate governance, compliance, mergers and acquisitions, and investor relations.
- **Mr Roger Davey. Non-Executive Director.** *ACSM; MSc; CEng; Eur.Ing; MIMMM.* Currently Non-Executive Director of a number of junior mining companies. Chartered Mining Engineer with over 45 years' experience.
- **Mr Jim Dietz. Non-Executive Director.** *B.Eng (Chem); M.Eng (Chem).* Over 42 years' experience in fertiliser, chemical, and petroleum industries. From 2000 to 2010 was COO of Potash Corporation of Saskatchewan (now Nutrien), the world's largest fertiliser company.
- **Mr Brian Jamieson. Non-Executive Director.** *FCA; FAICD.* Over 40 years' experience in advisory, manufacturing, resources, and technology. Presently Non-Executive Director of Sigma Healthcare.
- **Mr Isaac Querub. Non-Executive Director.** *Master of Law and Business Administration.* Extensive experience in the primary sector. Previously CEO of Glencore Espana, Member of Asturiana De Zinc Council, and CEO of Emed Mining (now Atalaya Mining).

## CEO

- **Mr Ignacio Salazar. Masters of Law and Economics.** Appointed 2020. Experienced CEO in resources with over 30 years' experience, most recently with AIM and TSX listed Orosur Mining for 12 years, and prior with Royal Dutch Shell for 18 years. He was born and educated in Spain.

## RISKS

The following risks may negatively impact the HFR share price:

- **Sovereign risk.** Any change in government, policy, legislation, or fiscal policy of Spain or Australia may markedly impact the ownership, financing, permitting, or economics of the company's projects.
- **Commodity price risk.** Declines, in potash prices may negatively impact the economics and ability to develop HFR's projects, reduce the company's earnings potential.
- **Development risk.** Problems may occur preventing HFR from developing its projects, including issues impacting permitting, financing, offtake, construction, or commissioning.
- **Financing risk.** To fund its projects the company may raise equity which may dilute shareholders, and/or borrow debt which it may not be able to service.
- **Economic and market risk.** Should global economic growth decline or share markets fall, this may reduce the appetite for both HFR's commodity exposure and its shares.
- **Permitting risk.** HFR has not yet received its mining concession. Any unexpected delays in its approval may negatively impact the shareprice.



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