Balausa Vanadium Project

Competent Person’s Report

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Ferro Alloy Resources Limited

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Document Approval

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### NOMENCLATURE

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<td>Ammonium Metavanadate</td>
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<tr>
<td>Balausa</td>
<td>The Balausa Vanadium Project that is the subject of this report</td>
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<td>BaV$_2$O$_4$</td>
<td>Phengite</td>
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<td>DCF</td>
<td>Discounted Cash Flow</td>
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<td>DM</td>
<td>Datamine™</td>
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<td>Environment and Social Impact Assessment</td>
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<td>H$_2$O$_2$</td>
<td>Hydrogen peroxide</td>
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<td>IPD</td>
<td>Inverse Power Distance</td>
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<td>IRR</td>
<td>Internal Rate of Return</td>
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<tr>
<td>JORC</td>
<td>Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves</td>
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<td>Meta-Vanadate Crystal Slurry</td>
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SECTION 1  SUMMARY

1.1  PROJECT BACKGROUND

Ferro Alloy Resources Limited (FAR) commissioned GBM Minerals Engineering Consultants Limited (GBM) to prepare a Competent Person’s Report on the Balausa vanadium operations and development projects in the Shieli district, Kzylorda oblast, Kazakhstan. Geo Mineral Resources Limited (GMR) was engaged to produce a mineral resource report, according to acceptable international standards.

FAR’s principal operating subsidiary, TOO Firma Balausa (TFB) carries on the current processing operation and holds the development and mining rights to the Balasausqandiq vanadium deposit via a subsoil-use contract. In this report the terms “Company” or “Group” refer to FAR or TFB or both as the context requires.

The licenced area forms a large part of the Balasausqandiq vanadium deposit. This deposit is based on a geological resource which has progressively been delineated by a number of exploration phases since its discovery in 1940 by Soviet era geo-scientists. More recently, FAR have carried out further exploration drilling, trial open-pit mining operations and pilot plant optimisation studies using alternate metallurgical and mineral process treatment technologies.

Currently, the Company is operating a processing plant treating bought-in concentrates with a production capability of around 200 tonnes per annum of vanadium pentoxide in the form of ammonium metavanadate (AMV). This plant was based on the former pilot plant, suitably adapted to treat concentrates and thereby increased output to a semi-commercial level. Having reached a steady state of operations and thereby proven the operating effectiveness, the Company now plans to increase output approximately ten times by doubling the size of the building, purchasing suitable additional equipment and improving infrastructure at a total capital cost of some $12m.

In parallel, FAR intend to develop the Balasausqandiq mine and associated processing plant using a phased approach, with a 1 Mtpa processing facility being constructed initially (“Phase 1”), followed by a 4 Mtpa expansion (“Phase 2”).

This Competent Person’s Report provides an assessment of the proposed projects, including details of the current mineral resource, mining engineering, metallurgy, mineral processing, an estimation of capital and operating costs and financial analyses.

Note that within this Competent Person’s Report, the term “ore” is not used in the strict JORC definition of the term as a “mineable reserve”, but instead indicates potentially mineable material, and is used as it is a direct translation from the former Soviet-era interpretation of the word in historical documents related to the project. Similarly, the term “reserve” is not used in the JORC defined sense of the word and is instead used in the context of the Kazakh State Reserves Committee (GKZ) system of classifying mineral deposits.
1.2 GEOLOGY

There is an extensive history of geological exploration, especially during the former Soviet-era, since the vanadium was first discovered in 1940. However, as part of this project, research into the expansive complex geological processes that affected the Balasausqandiq deposit, from 1,000 million years ago to 1.5 million years ago, especially in the field of geo-tectonics, has provided a sound basis for supporting the assessment and modelling of this deposit and has allowed a much higher confidence level in the results. This deposit has geological characteristics in common with vanadium deposits in South China, when in primordial times, the Karatau mountains were juxtaposed within the same supercontinent.

The stratiform vanadium layer is associated with five very large orebodies and their surface expression can be traced for about 40 km. These orebodies are mostly confined to deep synclinal folds, where the primary carbonaceous vanadium rocks at depth are protected from weathering and oxidation processes. From historical data and from FAR's drilling results, the global grades within these orebodies are relatively similar, and this uniformity is testament to the broad stable conditions during mineralogical deposition in a marine basin some 510 million years ago (mid-Cambrian).

1.3 RESOURCES

Potentially, the primary resource is huge, as expressed by the surface continuity of the vanadium mineralisation along strike. The reflection at depth of such observable surface mineralisation has been confirmed by FAR's drilling of Ore Body 1 (OB1) and also confirmed from the more limited drilling of Ore Body 2 (OB2) and Ore Body 3 (OB3). Currently, based on the OB1 JORC resource, plus JORC-based Exploration Targets for OB2 to OB5, a total vanadium JORC resource of over 100 million tonnes is considered to be a rational prediction.

Table 1-1 provides details of the OB1 JORC resource, for both vanadium and by-products, while the Exploration Targets are summarised in Table 1-2 and Table 1-3.
### Table 1-1: Schedule of Mineral Resources

<table>
<thead>
<tr>
<th>JORC Class</th>
<th>JORC Vanadium Resource OB1</th>
<th>By-Products OB1 (primary ore only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JORC indicated</td>
<td>JORC inferred</td>
</tr>
<tr>
<td></td>
<td>C% Mean</td>
<td>Tonnes [m]</td>
</tr>
<tr>
<td>Indicated</td>
<td>0.0</td>
<td>0.67</td>
</tr>
<tr>
<td>Inferred</td>
<td>0.0</td>
<td>0.67</td>
</tr>
<tr>
<td>Combined</td>
<td>0.0</td>
<td>0.67</td>
</tr>
<tr>
<td>Oxide cap inferred</td>
<td>0.0</td>
<td>0.89</td>
</tr>
<tr>
<td>Total</td>
<td>0.0</td>
<td>0.68</td>
</tr>
</tbody>
</table>
Table 1-2: JORC Based Exploration Target (JORC 2004 Guidelines)

<table>
<thead>
<tr>
<th>Orebodies 2 to 5</th>
<th>Strike Length (km)</th>
<th>Tonnes [m]</th>
<th>$V_2O_5$ Grade Range [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Primary Zone</td>
<td>20.9</td>
<td>73</td>
<td>98</td>
</tr>
<tr>
<td>Oxide Zone</td>
<td></td>
<td>4.25</td>
<td>5.75</td>
</tr>
<tr>
<td>Combined</td>
<td></td>
<td>77.3</td>
<td>103.8</td>
</tr>
</tbody>
</table>

Table 1-3: JORC Based Exploration Target (JORC 2004 Guidelines) - By-Products applied to Ore Bodies 2 to 5 (Primary Zone Only)

<table>
<thead>
<tr>
<th>Target</th>
<th>Global Grades based on OB1</th>
<th>Grade Range ± 5 %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Carbon</td>
<td>13.58 %</td>
<td>12.9</td>
</tr>
<tr>
<td>MoO₃</td>
<td>0.030 %</td>
<td>0.029</td>
</tr>
<tr>
<td>U₃O₈</td>
<td>0.009 %</td>
<td>0.009</td>
</tr>
<tr>
<td>REM</td>
<td>335 ppm</td>
<td>318</td>
</tr>
<tr>
<td>Total Tonnes (millions)</td>
<td></td>
<td>73</td>
</tr>
</tbody>
</table>

A GKZ reserve of 70 M tonnes was confirmed in 2014 as shown in Table 1-4. This GKZ reserve is used as the basis of mine planning and financial analysis for this Competent Person’s Report except that the lower ore grade set out in the JORC resource estimate has been applied to the technical parameters and financial model.

Table 1-4: 2014 GKZ Reserve Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Reserve [1000 t]</th>
<th>Mean grade $V_2O_5$ [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>832</td>
<td>1.00</td>
</tr>
<tr>
<td>C1</td>
<td>15,649</td>
<td>0.75</td>
</tr>
<tr>
<td>C2</td>
<td>54,366</td>
<td>0.74</td>
</tr>
<tr>
<td>B+C1+C2</td>
<td>70,847</td>
<td></td>
</tr>
</tbody>
</table>

1.4 METALLURGY AND MINERAL PROCESSING

The metallurgical pilot plant installed at the project site shows that the vanadium mineralisation is amenable to conventional comminution and autoclave processing techniques to produce a suite of saleable products. The pilot plant testwork shows a mineral recovery of over 90%. The mineral process plant will use conventional industrial chemistry processes, standard equipment and machinery.
Run of mine ore will be crushed, milled and classified before thickening. The thickened material is decarbonized in an acid solution and re-thickened and filtered. The solid material is leached in autoclaves to produce a carbon silica by-product, which is then washed and dewatered.

The solution from the decarbonization stage contains the main product elements. The recovery of vanadium, uranium, molybdenum and rare earths is undertaken using three separate adsorption circuits. In each stage the target element is preferentially adsorbed onto ion-exchange resin, allowing the solution to flow on to the next stage. The target elements are desorbed from the loaded resins periodically and precipitated out of solution before drying and packaging.

The proposed operational mineral process plant will produce a suite of saleable products, including Vanadium, Carbon Black, Rare Earth Elements (“REE”) and others as defined in this report.

Following completion of the test programme, the pilot plant was adapted to treat concentrates and spent catalysts. This operation does not require several sections of the former pilot plant including the crushing and milling, autoclave leaching, and the by-product recovery sections, but the production process is otherwise similar and the output of vanadium is higher.

1.5 MINING OPERATION

Small scale mining is being carried on at a rate of 15,000 tonnes per year from open pit and the ore is currently stockpiled. Subject to demand, some of the waste from this mining is crushed and sold as gravel for road-building and construction. The future mining operations will be on a much larger scale but will use similar methods, a conventional open pit employing standard equipment for drill, blast, load and haulage of the material to the process plant from the open pit.

The equipment used will be western standard equipment augmented by regional manufacturers where appropriate. Industry standard grade control techniques will be used to ensure the grade of the material for processing is in accordance with the business plan.

1.6 INFRASTRUCTURE

The current operations and project benefit from a significant amount of regional infrastructure, including high voltage electrical lines nearby, well-made access roads, local telecommunications and a regional railway. There is also site specific infrastructure developed for the purposes of the initial trial mining and mineral processing operations.

The site has a reliable water supply, labour force accommodation block, engineering workshops, welfare facilities, an office and telecommunication facilities, which are suitable and sufficient for the
current operation and typical for the region. All facilities are in accordance with local regulatory requirements.

The proposed operations will require connection to the adjacent High Voltage 110 kV power line, enhanced electrical reticulation, a new accommodation block, new railway siding facilities in Shieli and the existing infrastructure onsite will be augmented and refurbished to a higher operational condition.

1.7 ENVIRONMENTAL

The site is situated in a plain landscape, typically desert type of raised and lowered steppe. The climate in the area is typically sharp continental, with a hot, dry and prolonged summer with temperatures commonly exceeding 40 °C. The winter is relatively short with little snow. Ground frost permeation during the winter is approximately 0.3 to 0.4 m, the coldest month being January, with an average temperature of -6.9°C, but capable of reaching as low as -25°C.

The winds in the area are strong and frequent with a prevailing north, northeast and northwest direction. Annual precipitation in the northern slopes of the Great Karatau Range total approximately 151 mm.

There no known designated habitat area nearby. The site is in full compliance with the national OVOS scheme for environmental stewardship.

1.8 LOGISTICS

The products from the operation are of high value and relatively low in volume so transport to customers is not difficult or expensive by either truck or rail. The most usual routes will be by truck to the railway at Shieli, 70 km from the plant, where there is a railway station along the main East-West road and rail transit linking the Russian Baltic, through Kyzylorda, Shymkent and Almaty, into China and on to the East coast, or by truck to the port of Riga from where it can be shipped. There is therefore good access to Europe, Russia and China as well as the local region.

Sales have been made in the past to Russia and China, but more recently to a UK customer for onward shipment to Taiwan. This latest customer has indicated its willingness to take up to 100% of output from the expanded current processing operations for use in speciality chemical production. In future, when the 1 Mtpa mine output is achieved, the majority of output will be sold in the form of ferro-vanadium to steel producers or in the form of vanadium electrolyte for use in vanadium flow batteries.
1.9 FINANCIAL ANALYSES

GBM has audited the FAR cash flow models and, discounting at a 10% discount rate and using a long term vanadium price forecast of US$6.00 per lb, the combined businesses have an NPV (post tax) of USD 1.4 billion. The business IRR (post tax, discounted) is 69%.

The main aspects of the cash flow models in US dollars are detailed in Table 1-5.

<table>
<thead>
<tr>
<th>Table 1-5: Main Aspects of Cash Flow Models</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item</strong></td>
</tr>
<tr>
<td><strong>Combined projects:</strong></td>
</tr>
<tr>
<td>Base case post tax asset IRR</td>
</tr>
<tr>
<td>Base case post tax NPV (10 %)</td>
</tr>
<tr>
<td>• NPV (10%) / IRR (processing expansion only)</td>
</tr>
<tr>
<td>• NPV (10%) /IRR (phases 1 and 2 mining and processing)</td>
</tr>
<tr>
<td><strong>Expansion of current processing operation</strong></td>
</tr>
<tr>
<td>Capital costs including working capital and contingency</td>
</tr>
<tr>
<td>Concentrate treated per annum</td>
</tr>
<tr>
<td>Annual output V2O5</td>
</tr>
<tr>
<td>Annual revenue</td>
</tr>
<tr>
<td>Annual costs</td>
</tr>
<tr>
<td>Net operating cash flow after tax</td>
</tr>
<tr>
<td><strong>Phase 1 – 1 Mtpa mining and processing</strong></td>
</tr>
<tr>
<td>Capital costs including working capital and contingency</td>
</tr>
<tr>
<td>Ore treated per annum</td>
</tr>
<tr>
<td>Annual output V2O5 (additional to above)</td>
</tr>
<tr>
<td>Annual revenue</td>
</tr>
<tr>
<td>Annual costs including royalty</td>
</tr>
<tr>
<td>Annual operating cash generation after tax</td>
</tr>
<tr>
<td><strong>Phase 2 – additional 3 Mtpa mining and processing</strong></td>
</tr>
<tr>
<td>Capital costs including working capital and contingency</td>
</tr>
<tr>
<td>Ore treated per annum (total incl. Phase 1)</td>
</tr>
<tr>
<td>Annual output V2O5 (total incl. Phase 1)</td>
</tr>
<tr>
<td>Annual revenue (total incl. Phase 1)</td>
</tr>
<tr>
<td>Annual costs including royalty (total incl. Phase 1)</td>
</tr>
<tr>
<td>Annual operating cash generation after tax (total incl. Phase 1)</td>
</tr>
</tbody>
</table>
The NPV and IRR figures assume that the expansion of current operations will be constructed in 2017 and will start up in 2018, construction of Phase 1 will start in 2018 with start-up in late 2019, and construction of Phase 2 will start in January 2021 with start-up in second half of 2022.

Within this cash flow model it is assumed that cash generated is kept within the company and used to fund the expansions to 1 Mtpa to 4 Mtpa. Funding for this programme of expansions is expected to be in three phases, approximately as follows:

<table>
<thead>
<tr>
<th>Capital costs (US$)</th>
<th>Expansion of current processing</th>
<th>Phase 1 (1Mtpa)</th>
<th>Phase 2 (4 Mtpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial equity funding 2017</td>
<td>$12m</td>
<td>$3m</td>
<td>-</td>
</tr>
<tr>
<td>Equity funding 2018</td>
<td></td>
<td>$20m</td>
<td></td>
</tr>
<tr>
<td>Debt or bond 2018</td>
<td></td>
<td>$55m</td>
<td>-</td>
</tr>
<tr>
<td>Debt or bond 2020/2021</td>
<td></td>
<td></td>
<td>$80m</td>
</tr>
<tr>
<td>Funded from retained earnings after interest</td>
<td>$22m</td>
<td>$140m</td>
<td></td>
</tr>
<tr>
<td><strong>Total capital requirement</strong></td>
<td><strong>$12m</strong></td>
<td><strong>$100m</strong></td>
<td><strong>$225m</strong></td>
</tr>
</tbody>
</table>