GULF MANGANESE CORPORATION LIMITED

78 Mill Point Road
South Perth WA 6151
Ph: +61 8 9367 9228
Fx: +61 8 9367 9229
Em: info@gulfmanganese.com
www.gulfmanganese.com
ACN: 059 954 317

ASX Announcement
13 October 2015

Gulf Manganese Update – Manganese Ore Supply

Gulf Manganese Corporation Limited (ASX:GMC) is pleased to advise shareholders of a **Review of Manganese Prospects and Deposits in Indonesia** study conducted for the company by the world renowned SRK Geological Consulting group.

The study was a geological assessment of manganese (Mn) deposits in Indonesia that could supply ores matching the specific requirements of the proposed ferromanganese alloy smelter business of the company at Kupang, West Timor, Indonesia.

It was undertaken as a desktop review, using publicly available data, SRK's in-house project database and subscription based mineral industry databases, and covers key criteria including geology, deposit style and potential grade and tonnage (although the work is restricted due to the limited public domain data in respect to grade and tonnage information).

SRK concluded that there is a potential extractable Mn mineralisation of 29 Mt for production IUPs and 114 Mt for exploration and production IUPs combined as follows:

Total Tonnage of prospective (Mn) stratigraphy (covered by IUPs*), West Timor

Parameter	Mine/Production	Exploration	Total
Total Area of IUPs (m^2)	374,000,0000	1,140,000,000	1,514,000,000
No. of IUPs Intersecting Formation	47	135	182
Average Area of IUP (m^2)	7,960,000	8,440,000	8,320,000
Average Strike length (m)	2,116	2,179	2,163
Total Productive Strike Length (m)	99,437	294,226	393,695
Prospectivity in IUPs (m^3)	8,929,288	26,480,311	35,432,550
Total Tonnage (million tonnes)	29	85	114

*IUP (izin usaha pertambangan) mining/exploration licence

Deputy Chairman and Exploration Director, Dr Peter Williams, commented…..

"Over a 10 year period the total manganese ore requirement will be some 3.6 million tonnes which means based on the SRK report the manganese endowment of West Timor alone more than provides many years of production feed requirements.

These tonnage values do not take into account other Indonesian locations such as Romang, Flores, Rote, Sumbawa, Sulawesi and Kalimantan islands nor the possibility of drawing ore from Northern Australia due to the closeness of proximity"

The parameters and assumptions for the estimation referred to in West Timor are set out in the attached executive summary, and it is important for the reader to review that summary to understand the limits of the review and the sources relied on.

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The review also discusses the general lack of information on the likely resource grade of the Timor ores, accordingly SRK recommends that further investigations be carried out in developing relationships with the owners of mine/production IUPs to facilitate an information exchange and upside synergies for the proposed smelter.

The report also discusses the level of confidence attributable to the deposits (including the parameters and assumptions for their calculations) and current nature of the tenements and their status. In general terms, some of the information dates back to 2011, and certain of that information and more recent information relates to tenement licences that are no longer valid (although there is a significant number of granted exploration and production concessions current as at 2015).

It should also be noted that in respect of the more recent information and location of prospects, a number of those identified included possibly planned smelters, although there is no certainty that any planned smelter will proceed and to date apart from Gulf's application there has been no other applications to build a smelter.

The full SRK Consulting report – Review of Manganese Prospects and Deposits in Indonesia may be found on the Gulf website www.gulfmanganese.com.

For further information please contact:

Peter Williams,
Exploration Director
Gulf Manganese Corporation Limited
M: +61 409 779 042
E: p.r.williams@bigpond.com

Rod North,
Managing Director
Bourse Communications Pty Ltd
M: +61 408 670 706
E: rod@boursecommunications.com.au

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About Gulf Manganese Corporation Limited

Gulf Manganese Corporation Limited is an Australian registered company (ACN 059 954 317) listed on the Australian Securities Exchange (ASX: GMC) with its head office in Perth, Western Australia.

The company is developing an ASEAN focused manganese alloy producer. The facilities based in the West Timor capital Kupang will take advantage of the low cost of ore, labour and power being the majority of operating costs. Production will be a premium quality 78% ferromanganese alloy resulting from the unique qualities of the Indonesian high-grade low impurities manganese ore.

It is proposed to build 8 furnaces over a 5 year period for a total capital cost of US$66m funded by an IPO on the Catalist board of the Singapore Stock Exchange raising $US25m, modest project debt and operational cashflow.

The first furnace aims to come online July 2016, with a further two furnaces each year, 2017, 2018, 2019 and a final one in 2020. Each furnace has a capacity of 20,000 tonnes alloy production per year and on today's alloy prices producing US $22m revenue.

The financial analysis of the redrafted Study shows that the project has the potential to return an **EBITDA of US $374.7 million** over a 10 year period supporting an estimated **Net Present Value of US $160.6 million** using an 8% discount factor.

The project requires a modest start up **capital investment of US $66 million**, which is staged over 5 years and provides estimated returns supporting an **internal rate of return of 55.6%.**

Value adding ores is strongly encouraged by the Indonesian Government to enrich the country's mineral endowment thereby enhancing the economy and creating employment. GMC will benefit from the Government's Financial Incentives Programme which effectively will result in a 10 year tax holiday, together with other tax exemptions.

Ore Processing Tapping Alloy

Developing Premium Indonesian Manganese Alloys

Review of Manganese Prospects and Deposits in Indonesia

Report Prepared for

Gulf Manganese Corporation

Report Prepared by

PT. SRK Consulting Indonesia

GMC001

August 2015

Executive Summary

Gulf Manganese Corporation (GMC), an ASX listed company, is at an advanced stage of planning a ferromanganese alloy smelter business at Kupang, Timor, NTT Province, Indonesia. GMC approached PT. SRK Consulting Indonesia (SRK) and requested a proposal to provide a geological assessment of manganese (Mn) deposits in Indonesia that could supply ores matching the specific requirements of the smelter.

This project is a desktop review of Mn projects in Indonesia utilising publicly available data, SRK's in-house project database, and subscription-based mineral industry databases. The review covers key criteria including geology, deposit style, and potential grade and tonnage.

The work was restricted, however, due to limited public domain data in respect to grade and tonnage information.

Results

Manganese deposits are most prolific in eastern Indonesia and typically are associated with (1) Mn nodules in deep-sea (pelagic) sediments, (2) stratabound ore deposits in mostly red calcareous shales within limestone-dolomite masses, and (3) hydrothermal replacement of limestone in Volcanic Massive Sulphide (VMS) systems.

Several sources were used to identify the location of Mn prospects across Indonesia and particularly the Banda Arc system, and several Mn prospects were identified from the databases of the Ministry of Energy and Mineral Resources of the Republic of Indonesia (ESDM) and the SNL subscription database. However, the ESDM information is from 2011 and is out of date. Similarly, the SNL/ Intierra database provided more recent information and locations of prospects, but again, a number of those identified including planned smelters in Timor and tenement ownerships are no longer valid.

Exploration for Mn mineralisation within the Indonesian Archipelago is extensive. Currently, there are 277 exploration concessions (527,180 ha) and 172 mine/ production concessions (145,504 ha). The majority of Mn concessions are located on the island of Timor. As of 1 February 2015, there are 171 exploration and 49 mining/ production IUPs on West Timor respectively (IUP = Izin Usaha Pertambangan or "permit to conduct a mining business").

Despite these numbers, only one deposit on the island of Romang (held by Robust Resources Limited) has a mineral resource reported in accordance with JORC Code (2012) guidelines.

Romang

A Mn mineral resource estimate for the Lakuwahi Project is reported. The project is located on Romang Island, situated approximately 500 km northeast of Kupang.

Surficial Mn occurs as replacement within thick limestone and normally in the form of Mn oxides that are closely associated with polymetallic mineralisation.

ES Table 1 shows the breakdown in the Mn resource estimate with 56% categorised as Indicated and the remaining 44% as Inferred.

ES Table 1: Mn mineral resource estimate – Lakuwahi Project

Deposit	Category	Total Tonnage	Mn (%)	Metal tonnage
Manganese Valley	Indicated	413,000	41.6	172,000
	Inferred	274,000	39.5	108,000
Batu Hitam West	Inferred	51,000	45.7	23,000
Total		**738,000**	**41.1**	**304,000**

Timor Island

The occurrence of Mn on Timor Island is well known from publicly available digital geology and previous observations by SRK. Mn is primarily hosted in beds of red mudstone ascribed to the Nakfunu Formation, and interbedded red shales and limestone of the Bobonaro Complex.

Generally, the Mn mineralisation in Timor occurs as follows:

- Nodules and concretions of Mn occur within olistostromes and turbidite deposits of the Bobonaro Complex;
- Mudstones of the Bobonaro complex sometimes contain layered stratiform Mn and is often related to mud diapirs and mud volcanoes;
- Nodules and concretions of Mn are sometimes developed in and within Cretaceous-aged deep-water sedimentary rocks of the Wai Bua and Nakfuna Formations (but inferior in abundance to those of the Bobonaro Complex);
- Layered Mn is sometimes linked to structurally controlled hydrothermal pathways that may also have developed in the Wai Bua and Nakfunu Formations, as well as higher up in the statigraphy, in the deep-water sedimentary rocks of the Kolbano megaseqeunce (mainly in the Eocene);
- Mn also can occur as replacement and infilling of fault breccias; and
- Occasional Mn nodules occur within Pleistocene aged Bacu (vuggy) limestone and as filler in cracks and pores.

Despite the lack of verifiable Mn resources and data in the public domain, it is clear that West Timor has substantial Mn prospectivity. This is borne out in the academic literature, subscription databases, and from SRK's in-house project database.

The Bobonaro Complex is the dominant host of Mn mineralisation. However, measurements of stratigraphic thicknesses and representative sampling of Mn grade is limited. Despite this lack of empirical measurements, some orders of magnitude are estimated from general observation of known Mn mineralisation.

SRK has used the IUPs currently granted to estimate the Mn prospectivity, as it may be assumed that all of the IUPs have some indication that Mn mineralisation is present at surface, and therefore accessible. This method assesses prospectivity by considering the percentage of area of the Bobonaro Complex within the IUPs. For example, if the Bobonaro Complex does not occur within an IUP, then that IUP is disregarded in the estimation.

The following parameters and assumptions for the estimation are used:

- Mn ore zone thickness of 3 m (e.g. based on field observations around Kefa);
- Productive strike length of the IUPs calculated as 75% of the average length of the IUP;
- Mine depth of 30 m;
- Bulk density of 3.2; and
- Relatively flat-lying stratigraphy

Based on this, there is potential extractable Mn mineralisation of 29 Mt for production IUPs and 114 Mt for exploration and production IUPs (ES Table 2).

ES Table 2: Total Tonnage of prospective (Mn) stratigraphy (covered by IUPs), West Timor

Parameter	Mine / Production	Exploration	Total
Total Area of IUPs (m^2)	374,000,0000	1,140,000,000	1,514,000,000
*No. of IUPs Intersecting Formation	47	135	182
Average Area of IUP (m^2)	7,960,000	8,440,000	8,320,000
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Total Tonnage (million tonnes)	29	85	114

* Only those IUPs where rocks of the Bobonaro Complex are present, are included.

There is a dearth of information on the likely resource grade of the Timor ores. Individual layers and nodules commonly contain from 48% up to 56% Mn mineralisation. However, ore from a 1 m mining width, for example, may comprise thinner bands of Mn ore and nodules diluted by host rock, and replacement ores will have variable gangue mineral proportions. SRK considers that future resource grades estimated using a resource cut-off of about 20% - 30% will generate ore at between 35% and 45% Mn. Based on this assumption, SRK is suggesting the resource grade range for the tonnes in the prospectivity estimate can be expected as between 35% and 45% Mn.

Rote and Sawu Islands

Mn mineralisation on Rote and Sawu islands is of similar quality and style to Timor. To date, stratiform Mn has been identified. Similar orders of magnitude calculations have been estimated for seven and two exploration IUPs on Rote and Sawu islands respectively, giving a potential extractable Mn mineralisation of 8 Mt.

Smelter Mn Ore Feed

Combining the IUP method estimates for West Timor, Rote and Sawu islands, and using the quantity of Mn ore feed requirements for the smelter, it is clear that the ore discovery potential far exceeds the feed requirements for a single smelter operation.

Flores Island

The Flores Island forms part of the Banda and Eastern Sunda Arc – a Cenzoic volcanic belt, which is still active. The area is being uplifted due to north-directed convergence between the Timor Island arc and the Australian continental crust.

At present, there are 12 mining/ production Mn IUPs in northern Flores and two small mining operations.

Mn mineralisation has been the major commodity explored and mined in the Manggarai District of Flores. Much of the Mn is being exploited from small artisanal mining operations within the northern limestone basin and proximal to volcanic rocks. Exploration work indicates potentially mineable deposits of Mn. However, the deposits are erratically distributed, have discontinuous ore horizons, and are more than 15 m below the surface. The mineralisation occurs as ferruginous veins in volcanic rocks and as float, with assays returning up to 45.5% Mn.

Pyrolusite is the dominant Mn ore, and forms high-quality Mn, which is extensively disrupted and broken. These manganese deposits occur within a Bobonaro-type melange. Several pod-like accumulations of manganese sit above the main deposit, and are encased by intensely deformed carbonate sequences.

Other Sites

There are a number of Mn mining/ production IUPs scattered over the other major islands of Indonesia (ES Table 3). There are also several Mining/ Production IUPs located in Central Java and South and Central Sumatra.

ES Table 3: Number of other Mn Mining and Production IUPs

Location	Mining / Production IUPs
Halmahera	1
Kalimantan	6
Sulawesi	6
Sumbawa	5

Recommendations

Based on the desktop study conducted by SRK, the Lakuwahi Project is considered the most advanced. At Lakuwahi, an Indicated and Inferred Mn resource is reported, while there is additional prospectivity to the east.

The second major area of interest is West Timor. SRK recommends an evaluation of the status of Mn projects with the Mining/ Production licenses. A proximity analysis indicated seven exploration licenses in Roti as priority targets for further work.

The third area of interest is Flores, with active Mn mining. SRK's data search did not reveal production figures or resource/ reserve estimates for the two mines. SRK recommends approaching the owners and arranging site visits to these mines for evaluation. The SRK study did show that Mn mineralisation on Flores tends to be of lower grade compared to Timor, and at greater depth below surface.

Action Points

- Given the clear lack of available data of manganese mineralisation, SRK recommends further investigation be carried out, focusing initially on West Timor; in particular, developing relationships with owners of mine/ production IUPs may facilitate information exchange and potential upside synergies for the smelter.
- There is less information available about Mn mineralisation activities in East Timor, and GMC should consider a reconnaissance fact-finding mission to evaluate the potential mineralisation and the stage of development of projects.
- GMC may consider more direct involvement with third parties, where deposits are very close to progressing to either a mineral resource estimate and/or pre-feasibility stage. This can include providing advice with respect to best practices for drilling, quality control/ quality checks, sampling protocols, metallurgy, and development of mineralisation models.
- SRK also recommends compiling an informal register of artisanal workers who may be able to stockpile and supply GMC with Mn ore. However, this would be fraught with difficulty, including health and safety, taxation etc. It may also require GMC to invest in the artisanal mining, by way of additional capital equipment.