Scope of work Radhikapur West Coal Mine Feasibility Study

Vedanta Aluminium & Power Business is India's largest primary aluminium producer having an installed smelting capacity of ~2.2 MTPA. It operates a 1.6 MTPA aluminium smelter and 3615 MW thermal power generation facility at Jharsuguda, in Odisha. The company has been declared as the preferred bidder of Radhikapur West Coal Block in Angul, Odisha, whose peak rated capacity is estimated at 6 million tonnes per annum (MTPA). Vedanta invites Expression of Interest (EOI) from competent partners with relevant global experience to undertake a feasibility study for exploring capacity enhancement of the coal block with best-in-class technology.

The coal block has geological reserve of **222 MT** with extractable reserve of **114-150 MT and** Vedanta intends to develop this mine at its full potential i.e. **6-10 MTPA**. For this Vedanta wants to conduct high level feasibility study from Global mining consultants.

1. Scope of Work

Vedanta wants to develop the mine on complete outsource model including fixed infrastructure such as CHP, conveying system etc. Vedanta is looking for business partner who can conceptualize the mine for increasing the extractable reserves, peak rated capacity, designing the mine with minimum stripping ratio etc. The scope of work of feasibility study includes

A. Reserves and Resources:-

- The optimum production capacity from the Radhikapur West coal block;
- Maximizing the extractable reserves
- Maximizing the peak rates capacity

B. Operations:-

- To evaluate, if 10Mtpa RoM coal production is the optimum capacity achievable, else if production is to be pushed to meet a target of 10Mtpa of RoM, what enabling design conditions are required and what are the constraints in achieving such
- Develop a fast-track Geological Model (3-D computerised) using available exploration data;
- Determine the Ultimate Open pit geometry and the maximum Recoverable Coal within the Ultimate pit boundary;
- Determine the mining rate from opencast mining; the mining rate represents the amount of coal and waste materials extracted from the mine; the estimation of this rate is closely related to the selection of the optimum exploitation rhythms. The mining rate must be enough, not only to supply the coal as required but also to allow the extraction of the waste that overlay (and interlay) the coal seams;
- Evaluate, albeit at a high-level, the likely schemes for exploitation from opencast; schemes of exploitation depend not only on the characteristics of the mining benches but also on the characteristics of the equipment;
- Bidder to suggest HEMM equipment deployment with techno commercial comparison.
- Bidder to plan mining with best in class technology equipped with Artificial Intelligence, IoT etc.

- Bidder to benchmark the mine with world class coal mines and provide the details of best practices followed.
- Year on year production schedule with optimization in stripping ratio, re-handling
- Preparing mine plan
- Geotechnical and hydrogeological study
- Accordingly, finalising the Coal Handling System, the evacuation and outbound logistics;
- Appropriately detailed assessments of applicable Modifying Factors together with any other operational factors and detailed financial analysis
- Suggesting best in class digital technology/AI for minimizing the GCV losses/dilution and quantity of coal
- Evaluating of mining equipment options (*as justified*) for the technical and economic viability of the project;

C. <u>Infrastructure Requirement:-</u>

- Surface Plan with an outline of location of support infrastructure and other facilities (Infrastructure plot plan to be provided)
- Any required diversions of road, nalla / water stream or existing powerline is to be brought out
- Year wise land requirement to be arrived based on the area required for stage wise pit, dump and infrastructure
- Coal handling arrangement for coal from OC and UG with flow sheet for CHP including handling and storage facility for coal
- Requirement of utilities
  - Sourcing of the power, drawing power line, substation and power feeding arrangement to the mine. A line diagram of layout would be included in the report
  - Water requirement for industrial and potable use and possible source of water would be studied
- Service Buildings and residential arrangement to be developed conceptually and included in the report
- Requirement of the land to be accessed and complete mapping of the land.
- Mining shall de done considering minimum land acquisition, avoiding forest and private land upto the maximum extent.
- Study and assess the outbound logistics and applicable mode (s) of transport; cost of options, merits and de-merits of option (s);
- Complete infrastructure requirement from pit to outbound loading point

D. <u>Techno Commercial Solution:-</u>

- Provide an estimate of cost+-10% accuracy (s). Bidder to provide opex, and capex on both outsourcing model and departmental model
- Techno commercial analysis of different mining (such as surface mine/truck shovel) options.

E. <u>Commencement Plan:-</u>

- Provide commencement plan by 1st week of Feb’20.

- prepare response to any technical query asked by MOC in process of approving Commencement Plan. All the queries shall be answered within 3 days.

F. <u>Statutory / HSE</u>

- Enumerate various statutory permits required along with a possible timeline
- Environment management plan incorporating the provisions of EIA/EMP study report and conditions stipulated in Environmental clearance. In case, if EC is not available by then, conditions are to be assumed based on references from similar mine.
- Progressive and final mine closure in line with the existing statutory norms

2. Timeline:- Max 3 months from date of PO