

APPENDIX 1 – SCOPE OF SERVICES / SPECIFICATIONS

1. **INTRODUCTION AND BACKGROUND**

Sarawak Energy Resources Sdn. Bhd. (SER) is the majority shareholder in the joint venture Balingian Energy Minerals Sdn. Bhd. (BEM) which owns and operates the Balingian Coal mine in the Balingian region in central Sarawak. The operation commenced on Q4 2018 and the coal mined from the coal licences under the BEM JV are supplying to the neighbouring Balingian Coal Fired Power Plant.

SER is also the holder of the Mining Lease (ML) named A North immediately to the north of the Balingian coal mine and is progressing the potential development of the A North Mine following a successful exploration program.

The expected A North Mine will be commencing operations in Q3 2020 and the coal mined from the A North Mine is planned to supplement supply to the Balingian Coal Power Plant in Q1 2021.

SER is currently building the capability to manage the growing coal exploration, resource assessment, mine development and mine operations requirements of the portfolio of coal assets. Through this process SER has relied on assistance from professional consulting experts in the fields of coal exploration and geological modelling, coal resource assessment and mine planning as well as project development and execution.

SER requires assistance from a mining professional consultancy to provide Mining Engineering Services for mining reserves update and life of mine (LOM) update for the A North Mine.

2. **PROJECT DESCRIPTION**

Evaluation, design and planning for the continued development of the local coal deposits to continue to feed the Balingian coal power plant with approximately 3,200,000 tonnes of coal per annum. The BEM Coal Mine will contribute 1,600,000 tonnes per annum, while the A North Mine and other mines will supply the remaining capacity. The estimated coal supply required from A North Mine is 1,000,000 tonnes per annum.

2.1 **Location and Project Access**

The site is located in central Sarawak, in East Malaysia. The location comprises of Balingian Coal Fired Power Plant at the mouth of the mine. The mine can be accessed through the Pan Borneo Highway and is approximately 150 km from Sibu and 70km from Mukah.

2.2 **Terrain**

Lowland with palm oil plantation, peat and river environment.

2.3 Deposit

Current mine resources estimate in 2018 is greater than 50 Million tonnes of Coal.

2.4 Current Status of the Project

The mining operation is estimated to start in Q3 2020 and ROM coal is expected to be delivered from the mine by January 2021. The mine geological model has been updated as per August 2018 with additional borehole and structural information. SER is internally running pit optimization to confirm A North coal mine is feasible.

2.5 Collaboration

The successful consultant will be required to work closely with the BEM management team, SER's representatives in Kuching and the mining contractor and operational personal.

3. SCOPE OF WORK

3.1 Preliminary and Project Review

Specific requirements for this section include:

- Receipt of updated A North geological model
- Review and check the integrity of the resource model input data (database and geological interpretation) for suitability as inputs to the resource model
- Review the resource model (seam interpretation, quality estimation, density determination, and resource classification) for analysis of fatal flaws. Modification of existing model if required.

3.2 Pit Optimization

The study will include an initial compilation and review of pit optimisation input parameters, including pit slope parameters and other mine modifying factors.

Key aspects of the pit optimisation include the following:

- Review previous studies and project information, including economic and geotechnical criteria, to identify the combination of parameters that maximise project value
- Review pit optimisation scenarios, including sensitivities, and discuss opportunities with Stakeholders
- Develop strategic schedules to identify the most appropriate pit development sequence and as a guide for mine scheduling
- Recommend ultimate pit envelopes, inclusive of interim pit envelopes, considering key development criteria. The criteria may include Mineral Resource confidence where available as well as coal quality distribution, processing and product strategies, coal and waste material handling and backfilling pit requirements.
- Involvement of SER Mining Technical Services team in the process of review and optimization is compulsory and the work should be carried out in SER Head Office Kuching.

3.3 Mine Design

Detailed mine designs will include ultimate and interim pit stages and external waste dumps, inclusive of any acid rock drainage (ARD) management strategies, stockpiles, and external interim and final haulage access roads.

Key aspects of the pit design components include the following:

- Review the appropriate working section to be modelled to incorporate dilution and coal loss during mining
- Review and update current pit design, waste dump design and haulage design as per update geological and last geotechnical study
- Estimate the quantity of mineable coal according to the proposed detailed pit designs and development sequence
- Involvement of SER Mining Technical Services team in the process of mine design is compulsory and the works should be done in SER Head office in Kuching.

3.4 Coal Reserve Estimation

Determine a Coal Reserve estimate in line with the Coal Resource classification within the pit design.

Key components of the Coal Reserve estimate will include the following:

- Determine a Coal Reserve classification under industry practices standard (such as JORC)
- All input costs and coal pricing scenario's will be provided by Sarawak Energy Resources
- Review mine infrastructure requirements in conjunction with mine development
- Involvement of SER Mining Technical Services team in the process of Coal Reserve estimation is compulsory and the work should be carried out in the SER Head office in Kuching.
- To supply a Coal Reserves statement from a competent person.

3.5 Peer Review of Life of Mine Schedule

SER Mining Technical Services will generate a Life of Mine (LOM) schedule and will require the consultant to conduct peer review of this mine schedule;

Peer review for A North LOM schedule will cover key components:

- Scheduling input parameters and assumptions check such as time usage model etc.
- Life of Mine Schedule practicalities, constraints, local conditions etc.
- Mining Equipment fleet numbers
- Mine closure scheduled appropriately

Provide recommendation to the following item:

- Additional infrastructure requirements
- Mine closure requirements
- Risk assessment
- Identify any additional geological work required prior to mine development

3.6 Consultant's Qualification

Consultant shall provide experienced and competent mining engineer and geologist to this project. The consultant must have experience in coal mine feasibility studies and also experience in Coal Reserve estimation under JORC or equivalent code.

As the default mining software used by SER are Deswik and SPRY, the mining engineer and geologist are recommended to use the software for the project.

4. SCHEDULE AND REPORTING

4.1 Project Schedule

The project requires completion of the review of all work done by SER to date as a priority, and then move immediately on to finalising the Coal Reserve estimate and peer reviewing the life-of-mine plan (LOM).

All work is to be carried out in SER's Kuching office, all transport and accommodation for the consultant in Kuching will be provided by SER. All airfares in relation to this project should be clearly outlined in the proposal and will be covered by SER.

The duration of the project is 10 weeks from the commencement date.

Completion schedule is provided in the diagram below:

A North Mining Engineering Services 2019	Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10
Handover Geological Model & Review										
Pit Optimisation										
Mine Design										
Mine Reserve Estimate										
Peer Review of Life of Mine Schedule										
Reporting & Documentation										

4.2 Reporting

The Consultant shall provide professional final report format guides and templates for all contracted items in line with SER's reporting requirements.