Draft Non Technical Summary: UHG Phase II

Energy Resources LLC
Ulaanbaatar, Mongolia

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Energy Resources LLC

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1.0 INTRODUCTION

Energy Resources LLC (ER) and its subsidiary Energy Resources Rail LLC (ERR) are proposing to develop Phase II of the Ukhaa Khudag (UHG) Project (hereafter, "the Project'). The Project will build on the current Phase I mining operations to include:

- expansion of the existing UHG coal mine (from 2 million tonnes per annum [Mtpa] to 15Mtpa) and related infrastructure (pipelines, internal roads, fencing, workshops, ancillaries);
- a coal handling and preparation plant (CHPP);
- a coal export railway to China (225 kilometres [km] in length, plus a 10km loading loop at the mine);
- coal-fired power generation facilities, constructed across two stages (12 Megawatts [MW] and 100MW) to support UHG operations;
- a ground water abstraction field (including a bore field and water supply pipeline for mining and mine support facilities);
- an airstrip; and
- expansion (to a total capacity of 1,250 persons) of worker accommodation facilities.

The Project construction and operations will be conducted in accordance with Mongolian law as well as international agreements, regulatory requirements, and best practice guidelines such as those of the International Finance Corporation and World Bank. Additionally, the Project will comply with the Performance Requirements of the European Bank for Reconstruction and Development (EBRD).

2.0 PROJECT LOCATION

The UHG mine is located in Tsagaan-Ovoo bagh of Tsogttsetsii soum in Umnogovi aimag (South Gobi region) of Mongolia. It is located approximately 4km to the north of the undeveloped Tavan Tolgoi coal deposit, approximately 90km east of Dalanzadgad (the provincial capital), approximately 220km from the Mongolia-China border, approximately 150km from Ivanhoe Mines' Oyu Tolgoi copper-gold deposit, and approximately 540km from Ulaanbaatar (the national capital) (Figure 1, end of document).

The UHG mine license area comprises a total of 2,962 hectares (ha), of which 1,050ha is proposed to be mined in an expanded open pit over approximately 20 years (Figure 2, end of document).

Tsogttsetsii soum has a population of approximately 2,245. The Tsogttsetsii soum centre is located approximately 1km northeast of the mine camp and contains basic administrative and social infrastructure including a hospital, secondary school, dormitory, culture centre, stores and a post office. This soum centre has comparatively well developed mobile communications, a 24-hour power service and connection to the aimag centre, Dalanzadgad, with an unpaved road.

The proposed Project railway will be located entirely within Umnogovi aimag, originating near the mine in Tsogttsetsii soum and passing through Bayan Ovoo and Khanbogd soums (which have populations of 1,500 and 3,000, respectively).

3.0 PROJECT DESCRIPTION

An overview of the Project components is presented below:

Mine Expansion

There are four primary seams considered for mining in the UHG coal field. Of these, two are best developed, thickest and most continuous, and contain the majority of the coking coal resources. These two seams are currently being mined as part of Phase I "Fast Track Mining" for production of an unwashed coal product that is being trucked in raw form to Chinese markets.

The UHG mine expansion component of the Project will focus on extracting high quality metallurgical (coking) coal and thermal coal from a Permian age coal-bearing basin that includes coal seams that have been folded and faulted to a great extent in many areas. The UHG mine area contains multiple seams of widely varying washing characteristics and likely end uses. Some seams have the potential to produce premium hard coking coals while other seams may be classified as either semi-soft/hard coking and/or thermal coals.

The UHG mine development plan includes the mining of the UHG deposit over approximately 20 years through the progressive expansion of the existing mine pit (which is located in the northeastern extent of the resource). From the current Phase I open pit, mining will advance to the west and south to form the Main Pit. A separate pit, the West Pit, will be used to mine the most western extent of the resource. The mine is proposed to be expanded over a five-year period to a full production capability of 15Mtpa run-of-mine (ROM) coking coal, equivalent to about 10Mtpa of washed product.

Coal Handling and Preparation Plant (CHPP)

The Project will include a CHPP that will wash coal in order to produce a variety of high value coking coal and thermal coal products. The plan for the CHPP facility is to achieve a 2,500 tonnes per hour feed rate through a four-stage development and construction process.

Railway

The railway will extend for a distance of approximately 225km between the UHG mine and the Mongolia-China border crossing of Gashuun Sukhait. The Project is proposing to develop and operate Class 1, standard gauge (1435mm), single-track, supporting diesel-electric powered locomotives with a maximum loaded speed of 80 kilometres per hour (km/h) and a maximum unloaded speed of 100km/h. The railway will be constructed on an elevated layer of ballast and subgrade, and a number of culvert crossings will be installed beneath the railway along its entire length to facilitate crossing by people, livestock and wild animals and to maintain surface water flow patterns.

Power Generation Facilities

The Project will require a significant power supply, and the required power will increase commensurate with an increase in coal production. Electricity for existing operations is supplied by diesel generators. However, an increased power supply (beyond the capacity of the diesel generators) will be needed to support the Project as mining operations expand and power demand for construction and operation of the CHPP increases.

Initially, a 12 MW coal-fired power plant will be constructed to meet short-term electricity demand at the mine and for Tsogttsetsii soum centre. Once this is completed (within the first two years of the Project), construction will begin for a 100MW coal-fired power plant. It is estimated that this power plant will be capable of powering the full-scale planned mining operations, the full-scale CHPP, associated infrastructure, expanded mine camp facilities, the railway, and the nearby Tsogttsetsii soum centre.

Water Supply

Water requirements for the mine expansion, CHPP, power station, and mine camp expansion will be sourced from a combination of the open pit mine groundwater inflow, water returned from the CHPP tailings storage facility (TSF) and make-up water provided from the Naimant Depression aquifer area, where a bore field will be established to access the deep water reservoirs (which are not currently used by local herders).

Additional construction water demand for the railway will be temporary and limited to the proposed 7-month construction period over two summers. Construction water will be required for various purposes including compaction/conditioning of fill material, dust suppression, and water supply to construction camps. Ongoing operation of the railway will create an additional permanent water demand for various purposes including supply for workshops and stations.

Airstrip

The Civil Aviation Authority of Mongolia and the Ministry of Tourism and Transportation have granted the Project permission to construct an airstrip in the vicinity of the UHG mine site. The airstrip will be used to transport workers to and from Ulaanbaatar for rotational work rosters. ER will engage a local air charter service company to operate flights on a regular weekly or bi-weekly basis. The airstrip will be located in the valley north of Tsagaan Ovoo bagh, approximately 6km from Tsogttsetsii, and will cover an area of approximately 115ha.

The airstrip is proposed to be developed in two stages. The first stage involves constructing a gravel airstrip and the associated infrastructure. The second phase, once flight numbers increase and the operation expands, involves sealing

the airstrip with bitumen. Extra parking area and additional airplane storage sites may be constructed as part of the second expansion phase.

Expanded Mine Camp

The expanded mine camp complex includes the following components:

- 150 room units, accommodating a total of 650 workers;
- canteen;
- recreation area;
- central atrium; and
- mine offices.

In addition to housing facilities, the expanded mine camp will also include:

- garage for small vehicles;
- power and heating plant (expanded from existing facilities);
- potable water treatment plant;
- security check points; and
- laundry and washroom.

The total area proposed for the expanded mine camp is 2.5ha, in addition to the current camp coverage of approximately 3.5ha.

4.0 ANALYSIS OF ALTERNATIVES

The alternatives considered are those key options with the greatest potential to influence the environmental and/or social impacts of the Project. These alternatives relate to: options for disposal or re-use of CHPP tailings effluent; power generation options; consideration of various water supplies; consideration of rail transport against road transport for product export; and options for accommodation and transport of workers.

Of these alternatives, one of the more significant alternatives considered was whether or not to build the railway to China (as an alternative to continued and increased truck haulage along the existing coal road). Based on the scale of ecological and social impacts from continued and expanded trucking, as well as economic factors, construction of a railway (and cessation of truck haulage) was selected as the preferred alternative.

5.0 ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION

The Project will have a variety of environmental and social (including health) impacts, which include some considerable positive effects as well as a number of potential adverse impacts. The ESIA prepared for the Project describes in detail each of the potential impacts identified, structured in terms of Project attainment of EBRD Performance Requirements, as well as measures focused on developing enhancements for positive impacts and mitigations for negative impacts.

A summary of the impact assessment findings and mitigation commitments is presented below:

Landscape and Geology

The most significant permanent impact to the landscape and geology in the area of influence will occur within the mine, as a result of the creation of two mine voids, a waste rock dump up to 80m in height and a tailings storage facility. These impacts are localised to the mine area itself; however, the features will be highly visible in contrast to the mostly flat surrounding landscape.

The railway, although not of a height comparable to the mine features, will cross through areas with virtually no signs of prior development or human disturbance.

These impacts will be mitigated with management techniques that focus on site restoration and rehabilitation measures, where practical.

Greenhouse Gases

The largest sources of direct greenhouse gas emissions for the Project will be the combustion of diesel during mining, combustion of diesel through transport of coal by rail, and the combustion of coal at the on-site coal fired power plants.

A number of features have been incorporated in the design of the Project to reduce the greenhouse gas emissions from Project operations to the extent practicable; these include the use of an efficient coal-fired power station, and the use of a railway (in lieu of trucks) to transport the coal to market.

Air Quality

The Project will impact air quality through both construction-phase and operations-phase emissions of pollutants such as particulate matter, sulphur dioxide, and nitrogen oxides. A combination of qualitative and quantitative analysis was used to predict air quality impacts, including air dispersion modeling for operations phase impacts. The results of this analysis indicated that the most significant sources of predicted impacts to ambient air quality in the vicinity of Project operations are particulate matter emissions for mining

operations and sulphur dioxide and nitrogen oxide emissions from operation of the power plants and CHPP.

In the case of particulate matter emissions from mining operations, modeling predicted that maximum annual-average ambient concentrations resulting from Project operations would exceed Mongolian National Standards for Urban Air Quality, but that these exceedances would be confined to within 5km of the mine, and would not reach the Tsogttsetsii soum centre. However, modeling predicted that maximum 24-hour average ambient concentrations in excess of Mongolian National Standards for Urban Air Quality would extend up to 30km of the mine.

It is important to note that the maximum concentrations discussed above are directly associated with the high wind speed episodes that occur in the region. It is understood that the (natural) particulate matter concentrations experienced during these high wind episodes can be orders of magnitude above the relevant Mongolian air quality standard, and as such the contribution of Project-related TSP to the environment is likely to be less significant than the prediction suggests. Moreover, the high-wind speed episodes will in many cases necessitate cessation of all mining operations due to health of safety considerations, and as such, the predicted impacts are likely to be a significant over-estimation of particulate matter emission impacts.

In the case of sulphur dioxide and nitrogen oxide emissions from operation of the power plants and CHPP, modeling predicted that maximum ambient concentrations resulting from Project operations would exceed Mongolian National Standards for Urban Air Quality, but that these exceedances would be confined to within 3km or less (depending on the pollutant and averaging period) of the mine, and would not reach the Tsogttsetsii soum centre.

In terms of mitigation, particulate emissions from mining operations (as well as for construction activities) may be effectively controlled through the adoption of a range of good management practices, proactive controls to prevent dust propagation and effective housekeeping. In the case of sulphur dioxide and nitrogen oxide emissions, the power station and CHPP will be operated in accordance with industry best practice, including suitable commissioning trials and compliance tests to demonstrate that process emissions to air are minimized to the extent practicable.

Water Resources

The potential impacts of the Project on surface water and groundwater resources stem from the reduction of the availability of water resources, the potential for contamination of water resources from Project activities and diversion or interception of natural surface water flows in Project-developed areas.

The abstraction of groundwater from the Naimant Depression will result in permanent localised drawdown of water levels in the deep aquifer resource. The impact of this drawdown is limited by the absence of other users of these deep water resources; however, it should be noted that these deep aquifer sources are non-replenishable. In addition, the open mine pits will create a sink for groundwater within the mine area, with both shallow and deep groundwater surrounding the pits draining towards the pit voids.

Reduced groundwater availability has been partially mitigated through the development of new water resources for local herder families who previously used groundwater from the mine vicinity. The new wells were developed beyond the area of influence of the mine pit and are accessed seasonally by a number of families who use pasture in the mine vicinity.

In addition to these measures, ER will implement appropriate management plans, including a groundwater management plan which is designed to protect the availability and quality of groundwater resources in the vicinity of the Naimant Depression. A part of this is to ensure that the water availability of the region is considered in the engineering design of all associated projects regarding water use and water recovery.

Groundwater quality within the mine area, in particular beneath the TSF, will be at risk of contamination from ground placement of acid-forming mine and CHPP wastes and this impact will be addressed through specific management measures to minimise acid generation and prevent the mobilisation of contaminants within waste disposal structures.

Potential surface water contamination issues (principally as a result of unintended spills or discharges to natural surface water courses) will be managed through the implementation of appropriate management planning, including a surface water management plan, hydrocarbon management plan and waste management plan.

The Project will result in a number of features (principally the mine, TSF and railway) that have the potential to divert or intercept surface water flows from their normal courses. The design and construction of mine-related infrastructure will consider surface water regimes and where possible attempt to maintain natural flow patterns. In those situations where intercepting surface water drainage is unavoidable, measures will be implemented with the primary objectives of preventing flow from entering the mine and maintaining sufficient flow downstream of the mine disturbance area, thereby preventing secondary impacts such as contamination and vegetation loss.

Soil

Although the soils within the mine area are generally poorly developed and eroded, the shallow surface topsoils are important to plant growth and moisture retention and are therefore an essential component for sustainable pasture

management and ecological function. The major impacts on soil resources will result from the disturbance associated with mining, waste placement and construction of infrastructure. Soil contamination from windblown coal dust may also impact soils surrounding the mine area. Key components of mitigation of impacts on soils will include topsoil stripping and temporary stockpiling (for use in future rehabilitation), land restoration and minimising disturbance.

Noise

Noise emissions from the Project will occur during as a result of both construction and operation activities; the principal sources of Project noise will include the following:

- operation of the mine fleet and earthmoving equipment;
- blasting within the open pit (planned at depths greater than 15m);
- construction and operation of the CHPP;
- construction and operation of the power plants;
- construction and operation of the airstrip;
- operation of coal trucks prior to start-up of the railway; and
- construction and operation of the railway, including quarrying for railway ballast and subgrade.

Mongolian standards currently establish a maximum environmental noise goal for residential receptors of 60 decibels (A-weighted) (dB(A)) during the daytime and 45dB(A) during the night time.

Taking into account the attenuation of noise levels over the 7km distance to the Tsogttsetsii soum centre, sound levels from the mine operation (assuming a total sound level of 140 dB(A)) would be reduced to a level on the order of 55dBA at the soum centre; this is below the maximum Mongolian residential daytime standard. It is further noted that the barriers provided by the waste rock dump will decrease noise levels even further, as will the fact that mine equipment will also operate predominantly in-pit (i.e., surrounding below ground surface), providing an additional barrier to sound movement.

For railway construction activities, noise modelling produced a recommended offset distance of 550m from the track centreline to meet the noise criteria of 55dB $LA_{eq,1hr}$ for the daytime period and an offset distance of 1,500m from the track centreline to meet the noise criteria of 45dB $LA_{eq,1hr}$ for the nighttime period, should night-time construction be required.

For transportation of raw materials along haulage routes to the construction area along the railway alignment from nearby quarries and borrow pits, modelling produced a recommended offset distance of 30m from the haul route centreline to meet the noise criteria of 55dB $LA_{eq,1hr}$ for the daytime period and an offset

distance of 100m from the haul route centreline to meet the noise criteria of 45dB $LA_{eq,1hr}$ for the night time period, should night-time construction be required.

For railway operations, noise modelling produced a recommended offset distance of 15m from the track centreline to meet the noise criteria of 55dB $LA_{eq, 1hr}$ for the daytime period and an offset distance of 65m from the track centreline to meet the noise criteria of 45dB $LA_{eq, 1hr}$ for the nighttime period.

Proposed mitigation measures are aimed at ensuring equipment design minimises noise emissions, implementation of appropriate occupational health and safety measures for workers in high noise environments, and verification that residential receptors are not located within areas that will be subjected to noise levels above Mongolian or international standards.

Waste Management

The primary waste streams that will be generated by the Project include, but are not limited to mine waste rock; CHPP coarse reject; CHPP tailings; power plant ash; waste oil; and mine camp and temporary construction camp wastes. Limited quantities of hazardous wastes may be generated for the Project, including medical wastes, minor quantities of hazardous chemical containers from water treatment and cleaning chemicals, used batteries, and solvents from workshops.

Waste rock with high pyrite occurrence identified during operational testing will be managed to ensure that oxidation rates are minimized through burial within non acid forming material. The specific placement of acid forming waste rock within the non acid forming material will minimize the potential for leachate within the wastes to be in contact with acidic material. Acid forming CHPP waste will be blended with crushed limestone prior to disposal in the waste rock dump, and covered with a compacted inert waste cover during operations to minimize oxidation and potential for acid leachate.

The ash, fly ash and bottom ash from the power plants and boilers will be disposed of in the waste rock dump area. It is envisaged that after 10 years of power plant operation, a significant portion of the fly ash generated will be used in local industries such as brick making processes, cement industries and internal plant road construction. The bed ash will continued to be disposed of to the waste rock stockpile, or alternatively, sieved to material size and reused as bed material makeup for the CFB boilers.

A wastewater treatment plant will be constructed to process the wastewater generated from the mine camp.

The potential impacts associated with the disposal of wastes will primarily be managed through reducing wastes disposed of to landfill. Waste reduction will occur through the development and implementation of a detailed waste management plan for construction and operations.

Where non hazardous wastes are unable to be recycled or suitable markets for re-use are unavailable, then disposal to the Tsogttsetsii landfill will be necessary. The mine operations will need to support the soum administration of this landfill site to ensure that waste landfill operations do not pose an ongoing risk to groundwater from contamination.

Hazardous waste materials will be collected within a central waste handling facility for packaging and transport to dedicated and approved hazardous waste facilities off site.

Traffic

The coal haul road is in a very poor state of repair due to the level of traffic, which is currently between 200 and 500 trucks per day. Although the ultimate Project plan will be to initiate coal shipments via railway, thus virtually eliminating truck haulage of coal, there will be interim impacts of truck traffic as a result of the increasing production output from the UHG mine prior to railway commissioning.

As the coal haul road is used primarily (though not exclusively) by coal trucks, the direct impacts to traffic flow are expected to be negligible. Instead, the principal impacts associated with this increased coal truck traffic relate to specific impacts to resources/receptors (i.e. air quality, ecology and noise) other than non-Project drivers. The principal mitigation measure to address impacts of truck haulage of coal is the construction of the railway, which will virtually eliminate truck haulage by the Project.

Fauna

Project activities have the potential to impact wildlife in the following ways:

- displacement, disturbance, and mortality due to clearance of approximately 700ha of natural habitats;
- direct wildlife injury or mortality caused by vehicular traffic, construction machinery, and workers;
- creation of a barrier to migration (the railway) and associated reduced connectivity of fauna populations, and/or isolation of local animal populations and habitats;
- interruption or modification of surface water features effecting water and foraging sources; and
- habitat degradation as a result of construction noise, vibration, dust, and lighting from work camps.

The impacts associated with wildlife displacement are expected to be minor during the railway construction period, given that the construction activities will be short-term in nature, moving from one end of the corridor to the other.

Current Mongolian law dictates that the entire railway corridor be surrounded by animal proof fencing to minimise impacts to domesticated and wild animals. Without extensive mitigation measures, fencing of the entire rail corridor has the potential to restrict the dispersal and migration of some species. The Project is currently engaging with Mongolian legislators to determine if an exemption may be granted on the grounds that the mandatory fencing will impede the movement of migratory animals. The preferred option is an unfenced rail corridor for these reasons. However, as the current law dictates the corridor must be fenced, the Project design, potential impacts, and mitigation measures assume a fenced rail corridor.

Four migratory ungulate species, the Asiatic wild ass, goitered gazelle, Mongolian gazelle, and argali, inhabit the Project area and conduct seasonal migrations through the area. These species are considered Rare or Endangered in Mongolia, as per the Mongolia Red Book and Mongolia Red List of Mammals.

The railway design has taken into consideration the need to facilitate animal movement and migration across the area traversed by the railway. In consultations with the design team, the original design was augmented from the initially proposed 20 randomly placed culverts of various sizes to nearly 100 strategically-placed culverts, located and sized in accordance with best practice standards. The design allows for culverts, migratory and hydrological, to be located at an interval of approximately every 2 km along the railway. In areas of significant migratory activity, specifically the southern 20km of the railway, culvert spacing is maximised to one migratory culvert per kilometre. The proposed locations of migratory culverts take into account field verified natural migratory corridors along topographic relief, dry creek and lake beds, and vegetated areas. This strategic placement will follow natural animal movement pathways and facilitate animal access to traditional sources of food and water. Additionally, the revised design provides a multitude of migration corridors across a variety of ecotones to enhance the success of migration across the railway corridor. While there will be an adaptation period before animals begin to regularly use the migratory culverts along the railway, it is expected based on other studies that animals will begin using the culverts as soon as construction activities and high levels of human activity cease.

To improve the likelihood of the success of the designed-in and supplemental mitigation measures outlined above, the Project has agreed to conduct construction and post-construction monitoring of the migratory fauna of the Railway Project Area. This monitoring will focus on assessing the success of the designed-in mitigations and aiding in the design and location of supplemental mitigation measures, if they are deemed necessary.

With regard to the proposed expansion of the UHG mining operations and associated infrastructure, the assessment of potential fauna impacts associated with the development of the Project considered the likely impact on abundance, geographic distribution and productivity of fauna at the species and ecosystem level. The assessment concluded that there would be no major impacts to fauna

identified with any component of the mine expansion aspects of the Project. However, the disturbance associated with the mine and associated infrastructure footprint will result in moderate permanent impacts to local fauna due to habitat loss. Mitigation measures in this sense are focused on minimizing disturbance and ensuring that restoration measures include objectives to maintain ecological function.

Flora

The mine expansion impact on flora is largely due to the disturbance of approximately 3,500ha required for the mine expansion and mine related infrastructure. Although this loss of vegetation is locally significant, the disturbance required for mine development does not significantly reduce the extent or distribution of the vegetation communities which are represented widely across the south Gobi region.

Similarly, because the vegetation communities within the railway corridor are common and contain no unique characteristics that are not found elsewhere in the region, the impact of vegetation loss associated with this component of the Project are expected to be minor.

Four very rare and 11 rare species protected by the Mongolian Law on Natural Vegetation are known to occur in the region crossed by the railway; three species of conservation significance are known to occur in the area impacted by the mine expansion.

The primary mitigation measures for flora impacts include minimising removal or disturbance of vegetation or replanting of native vegetation; implementing education programs for construction and operational personnel; and implementing an exotic and invasive species monitoring program will help mitigate impacts to flora. These measures will be revised and updated on an annual basis in order to deliver continuous improvement in environmental performance.

Ecological Protected Areas

The railway corridor crosses a portion of the Small Gobi Strictly Protected Area (SGSPA) and the Galba Gobi Important Bird Area. The SGSPA is a key habitat for migratory ungulates of the region. Impacts of the Project on the viability of the ecological protected areas will be minor and largely positive because the railroad, once operational, will significantly reduce the ongoing impacts associated with the unconfined roads currently being used in the region.

The Project design (i.e., inclusion of animal migration culverts) and the mitigation measures proposed for fauna and flora have been developed to minimise impacts on fauna and flora and, in turn, the ecological integrity of the SGSPA and the Galba Gobi Important Bird Area. These measures will be revised and updated on an annual basis in order to deliver continuous improvement in

environmental performance and minimise long-term impacts to the protected areas traversed by the Project.

Employment

Employment generated from Phase II activities will create a large number of jobs for the Umnogovi region. In addition to direct employment, indirect jobs will be created by businesses drawn to the region because of economic activity associated with the mine.

Anticipated employment related impacts include:

- numerous temporary construction jobs during the first 2-3 years of the Project;
- long-term, high-quality jobs created for the life of mine and for railway operations;
- indirect job creation from service and supply jobs to meet demands from resident workforce and the mine itself; and
- risks of unmet community expectations for jobs due to a lack of suitability of local candidates, during construction and during the transition from construction to operations.

Whilst predicting exact figures for job creation (and overall population influx) is difficult, it can be assured that the Project will create a large number of jobs indirectly. This will have positive local economic impacts as well as positive regional employment effects. However, there are also possible negative impacts, especially related to social infrastructure provision to support the increased population in the Project area.

Mitigation measures in this regard will include clear communication regarding employment estimates, timeframes and skills; investment in skills training; and implementation of a local hiring plan.

Labour and Working Conditions

By providing labour conditions and worker rights that adhere to Mongolian laws and international standards, and providing added value investment in training, employee housing and healthcare, the Project has the potential to show leadership at a local, regional and national level which could impact the quality of life for workers and their families nationally.

Potential impacts identified relate to the large number of construction and operational employees and the associated risk of unsafe and/or non-compliant worker accommodations, and a lack of rights to collective bargaining and dispute resolution.

Mitigation measures include clear communication to contractors regarding standards, laws and regulations; establishing compliance assurance procedures

for camps (e.g. audits, sanitary standards, etc.); contractor performance evaluations on worker welfare and establishing penalties for non-compliance.

Economy

The Project will create a significant source of direct revenue for the region and the nation. Direct sources of revenue will include salaries paid to Mongolian workers, capital expenditures, royalties, import taxes, and other taxes, tariffs, and fees. The magnitude of these direct revenues will be considerable, and will be augmented by the indirect revenues which will be derived over the course of the Project life.

In order to minimise the Project's potential negative economic impacts (particularly on local residents and herders) and to maximise its positive macro-economic impacts, the following mitigation measures will be adopted:

- Community relations and public consultation activities will address the livelihood concerns of local herders and soum residents including identifying options for local economic development;
- Local sourcing and procurement opportunities will be considered to promote sustainable small business development;
- Long-term job training will be established to ensure that local residents are able to hold a significant share of Project-related jobs (i.e. Mongolian-born residents are more likely to spend money in Mongolia); and
- Local government capacity building initiatives will be supported.

Social Infrastructure

The Project will have broadly positive impacts on the social infrastructure of the region in the long-term. This will include improved hospitals, more schools and enhanced access to social and other services in an area which currently suffers from acute difficulties in accessing social services. The benefits of the Project will stem from direct investments made in health provision (which occurred in Phase I and will be expanded in Phase II), as well as from the increased tax payments that will be made at all levels of government, which will allow the government to invest in expanded health services.

There are, however, potential negative impacts to social infrastructure, with population influx placing an additional strain on the current medical and educational facilities. This strain is currently evident in Khanbogd soum, where the population influx (unrelated to the UHG Project) has placed pressure on existing school, hospital and electricity supplies. Adverse effects will manifest primarily during and shortly after the construction phase.

To help mitigate risks and enhance positive outcomes, ER has commenced planning and construction of a 'mine town' in Tsogttsetsii soum centre to accommodate UHG workers and their families, and to meet added educational and medical needs. The development of this mine town for permanent

employees will allow resident UHG employees to have their medical and other needs met, without impinging on existing services. However, this medical facility will explicitly be available to all soum residents, not restricted to only Project employees.

Community, Health, and Security

Recognising that the Project will bring considerable benefits to the surrounding soums and communities, there remains the risk that community health, safety and security will be negatively impacted as a result of Project activities. Potential positive and negative impacts of the mine expansion and railway development were identified by integrating information collected during the baseline studies and stakeholder interviews. The impact assessment considered the various activities that may occur during the different but overlapping phases of construction and operations.

The ESIA has identified and evaluated potential impacts and mitigation measures to existing health, safety and security conditions and emerging public health and safety challenges in Tsogttsetsii, Bayan-ovoo and Khanbogd soums, in relation to an increase in mining and associated activities.

Land Acquisition, Involuntary Displacement, and Economic Displacement

As a result of Project construction and operation, it is anticipated that 30-40 herder households will be physically or economically displaced by the railway, and 5-10 herder households will be economically displaced by the mine expansion. The railway-affected households are those assumed to have either a summer or winter dwelling (or both) within 5km of the railway alignment. These households will need to be compensated for permanent impacts on the siting of their winter dwellings and/or loss of access to grazing areas. Mine affected households include those living with 5km of mine facilities (currently 3-5 families) as well as a facility for compensating for other households who are unduly affected by mine activities outside of the 5km exclusion zone, such as the bore field, which may impinge on herder livelihoods.

Mitigation measures include conducting voluntary physical displacement in accordance with internationally recognised standards; compensation at fair market value; minimising impacts of construction activities; and detailed and regular communication with local communities.

Cultural Heritage

The railway construction will involve soil movement from areas along the railway route. This activity poses a risk to tangible cultural heritage such as ovoos (shamanistic cairns), stupas and other sites of cultural interest. Mine expansions will occur within an area that has already been subject to a detailed archaeological investigation and no additional impacts are expected.

To reduce the risk of affecting cultural heritage, the Project has conducted pre-construction surveys to assess any areas of cultural sensitivity along the railway route. Archaeological surveys were conducted by The Mongolian Academy of Sciences, Institute of Archaeology in July 2009 to identify any potential historical sites along the railway route. Identified high value sites will be excavated by the Mongolian Academy of Sciences to prevent damage.

To mitigate the potential impacts on tangible and intangible cultural heritage, mitigation measures will include implementation of chance find procedures; stakeholder engagement activities used to monitor community concerns; policies to minimise impact of camp workers; and cultural heritage training for staff and contractors.

6.0 CUMULATIVE IMPACT ASSESSMENT

The cumulative, or incremental, impacts of mining in the South Gobi will likely be significant over the next 20 years. If planned mining developments proceed, ten large projects could be producing an annual 70Mtpa of coal and over 2Mtpa tonnes of copper concentrate, generating US$5.2 billion in annual revenues[1]. These developments will occur in an area with low population density, high ecological sensitivity, and which lacks much of the infrastructure required to meet the needs of a mining development of this magnitude.

Mining Developments in the South Gobi

The Southern Gobi region (including Umnogovi, Govisumber and Dornogovi aimags) is host to several world-class mineral reserves, of which the UHG deposit is but one resource. Although some projects, most notably the Oyu Tolgoi copper-gold deposit, have experienced delays in starting operations, at some point in the near future a number of large mines are likely to commence production. These new or expanded mines include Oyu Tolgoi, Tavan Tolgoi, Nariin Sukhait, Ovoot Tolgoi, Baruun Naran, Tsagaan Tolgoi, and Shivee Ovoo.

Cumulative Social Impacts

The anticipated cumulative social impacts include: housing and social infrastructure, community health safety and security, livelihood transformation and 'Dutch disease' economic impacts. The scale of mining developments expected in the region will have a transformative impact on the Southern Gobi and the nation of Mongolia. The extent to which this transformation is a positive one, adding opportunities without diminishing current cultural practices and disrupting communities, will depend to a great extent on how these mines are managed. The potential for negative impacts, if issues are poorly managed, is high. In this regard, the Project can only be responsible for developments within its own sphere of influence. However, because of the magnitude of potential change and the Project's role as an 'early starter', it will be important that the Project continues to show leadership in the management and mitigation of social impacts.

Cumulative Environmental Impacts

The anticipated cumulative environmental impacts include: water availability; dust creation; waste management; and pasture degradation. The scale of these impacts will invariably depend on how other mining operators manage their environmental impacts. However, with the scale of developments planned in the region, some adverse cumulative impacts are inevitable.

[1] Warlters, Michael (2009). World Bank: Southern Gobi Infrastructure Strategy. http://go.worldbank.org/E27XPUIBN0

7.0 MITIGATION AND MANAGEMENT

ESAP Organisation

Acknowledging that the Project will have impacts on the local environment and society, as set out in this document, ER is committed to mitigating negative impacts and enhancing positive impacts (i.e., benefits), through implementation of an Environmental and Social Action Plan (ESAP).

The purpose of an ESAP is to detail the objectives, schedule of activities and responsibilities to manage, limit and mitigate negative impacts (and enhance positive impacts) from the Project and set verifiable indicators against which Project (and Contractor) performance can be measured. A Final ESAP for Phase II of the Project will be submitted along with a final version of this ESIA, and the final version will incorporate outcomes from community consultation activities, especially feedback on proposed mitigation and enhancement strategies.

The ESAP follows the general design philosophy and approach of the Phase I ESAP previously prepared for the management of impacts associated with the initial "fast track" stage of mining. However, the construction of the railway component of the Phase II Project is recognised as having a specific set of potential impacts associated with the activities of Contractors; for this reason, Contractors selected for railway construction will, prior to initiating construction activities, be required to prepare and have approved a suite of Environmental and Social Management Plans (ESMPs). To establish a basis for preparation of these ESMPs, a specific set of 'Performance Expectations' have been specified, and provided to the railway bidders, and these are reproduced herein.

During design, construction, start up and operation, Project staff and Contractors will be accountable for executing work in a way that is compliant with the expectations set out in this ESAP. The ESAP is designed to ensure compliance with Mongolian permitting requirements and legislation, the mitigation commitments made in this ESIA, and the terms of the EBRD project approval.

The ESAP will be revised and updated on an annual basis in order to deliver continuous improvement in environmental and social performance. The annual review of the ESAP will incorporate feedback from community consultation as well as lessons learned.

Health and Safety

ER is committed to a goal of zero accidents for all employees and contractors working on site. To achieve this goal, ER will implement a Health and Safety (H&S) policy that sets out standard operating procedures, approaches to risk minimisation and reporting of all incidents (and near misses).

Visitors to the UHG mine site are briefed on H&S plans and go through an induction training that includes risk identification. Policies are in place to

facilitate subcontractor compliance with the overall mine H&S plan. All Contractors are required to meet ER's H&S standards and policies and to report all incidents and near-misses. The H&S policies of ER are consistent with industry standard best practices and are compliant with Mongolian laws.

FIGURE 1: Project Location

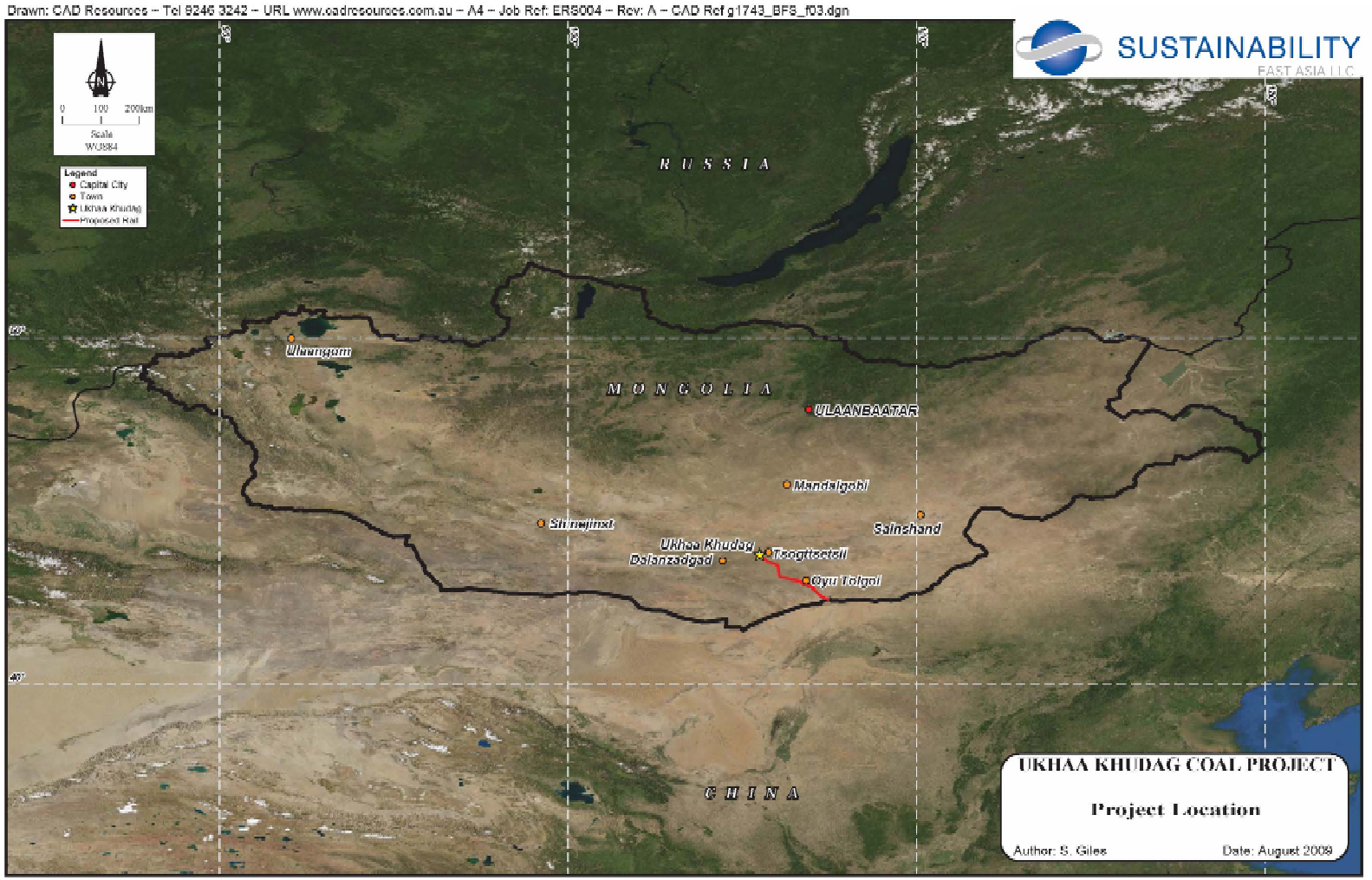

FIGURE 2: Project Layout