6.4.2 Reserves Statement

A summary of the reserve estimate is reported in Table 6.4 (see Appendix A for complete reserve estimate).

Table 6.4 Summary of Coal Reserve Estimate (May 31, 2010)

	Total Reserves*		Marketable Reserves**	
	Proven	**Probable**	**Proven**	**Probable**
Mtonnes	191	95	122	61
Total***.	**286**		**182**	

* *Excludes 0.4Mt from mine plan within Inferred resource category*

** *Includes primary washed product and secondary product*

*** *Rounded*

7. POTENTIAL FOR DEFINING ADDITIONAL MINERAL RESOURCES AND RESERVES

7.1 Two Year Drilling Plan

A drilling program is planned by ER over the course of the next two years that would effectively increase the drilling density across the entire UHG property to a 500m by 500m spacing. The objective of the program is to tighten the control and accuracy of the UHG geologic model for detailed mine planning purposes and to confirm indications that the Russian drill hole data (and by extension, the current model used as the basis of this report) reflects a higher ash content than is actually encountered during mining. Additionally, seams other than the four traditional coking seams (Seams 3, 4, 8, and 9) will be investigated for potential inclusion as a metallurgical grade resource.

Drilling to date has shown that Seams 5 and 10 have the potential, where occurring with a low to moderate ash content, to be classified as a coking coal. A property-wide program as proposed would identify those areas using slim gauge core samples, and provide target areas for more thorough investigations of their metallurgical properties.

The program would also serve to tighten the drill hole spacing in the far west portion of the property where the uppermost seams occur. Past drilling campaigns have only one or two core samples of Seams 11 and 12 and little is currently known of the coking potential for these seams. While not of great areal extent they could still contribute to the overall coking coal resource at UHG.

7.2 Potential for Additional Mineral Resources

The UHG reserve contains several coal seams that may present upside resource value relative to the reporting in the Bankable Feasibility Study. Seams that Norwest believes merit further examination include the 0A/0B group, Seam 5 and Seam 10.

7.2.1 Seam Group 0A/0B

The 0A/0B seam group has some indication that it may be possible to blend these with the other hard coking coal prior to washing. If this were to work without significantly degrading the key coking properties of the HCC product, then the overall value of this seam group would like increase.

For this reason, Norwest has recommended that Seam 0B be sampled again from large diameter (LD) cores. Preferably, several locations are drilled to better understand the character of 0B (and 0A) and if there is any variability to this major resource. Norwest understands that ER is planning to undertake these recommendations in the summer of 2010.

7.2.2 Seam 5 and 10

Seams 5 and 10 will likely be better defined after the two year drilling program has thoroughly sampled them with slim gauge coring. As with Seams 0A and 0B, areas showing positive coking characteristics should be submitted to a similar LD bulk sampling and testing program. A thorough understanding of the sizing, washability and coking properties of these seams may lead to their classification as some level of metallurgical reserve.

7.2.3 Underground Mining Resource

Norwest has identified a coal resource at UHG lying below 300m in depth that is categorized as an "underground" deposit type, meaning that the probable extraction method would be through underground mining techniques. Norwest has used JORC criteria to estimate coal resources occurring between 300m and 800m according to the criteria shown in Table 7.1. These resources are considered for future rather than immediate exploitation and were not considered in the scope of the BFS.

Table 7.1 Resource Limiting Criteria

Minimum depth from surface	300m
Maximum depth from surface[7]	800m
Minimum apparent seam thickness	1.5m
Maximum mineable parting thickness	0.5m
Main seams below 300m surface	8B, 4C, 4B, 4A, 3C, 3B, 3A, 0C, 0B, 0A

[7] Maximum seam depth for the deposit is 712m from surface for Seam 0A

The total in-place resources below 300m (i.e., underground mineable resources) are summarized in Table 7.2, with an estimated break-out of relative quantities of coal suitable for coking and thermal products, as indicated from bulk sample testing. Whilst the coal resources below 300m represent a significant addition to the overall UHG resources it must be noted that a reserve estimate has not been made.

Table 7.2 Underground Mineable Resources with Coking and Thermal Product Potential (in-place)

	Indicated		Inferred		Total	
Seam	Coking Tonnes (Mt[1])	Thermal Tonnes (Mt[1])	Coking Tonnes (Mt[1])	Thermal Tonnes (Mt[1])	Coking Tonnes (Mt[1])	Thermal Tonnes (Mt[1])
8B	5.6	–	0.4	–	6.0	–
4C	10.2	–	7.3	–	17.5	–
4B	4.3	–	12.2	–	16.5	–
4A	3.9	–	1.7	–	5.6	–
3C	0.9	–	0.0	–	0.9	–
3B	0.4	–	1.7	–	2.1	–
3A	6.0	–	5.4	–	11.4	–
0C	19.4	–	13.5	–	32.9	–
0B	–	16.0	–	14.5	–	30.5
0A	–	21.9	–	12.6	–	34.5
Total	**50.7**	**37.9**	**42.2**	**27.1**	**92.9**	**65.0**

Notes: 1. Mt = Million metric tonnes (air dried-ad)

An additional objective of the Two Year Drilling Plan (500m x 500m) is to target coal occurrences below 300m in depth and further delineate potentially mineable underground resources. Current plans call for these holes to penetrate up to 600m below ground surface and subject retrieved coal samples to a comprehensive analytical suite including washability a metallurgical characterization. This will serve to increase the level of geologic assurance for JORC compliant reporting of potential underground resources as well as increase the limiting lower depth of current estimates. Underground resources were restricted to 600m below surface as existing drilling does not support seam continuity or quality beyond this depth. Practical underground mining does occur at greater depths and the quantity of underground resource would likely increase with greater geologic assurance and with conservative extrapolation beyond the 600m depth limit.

8. MINE OPERATIONS

8.1 Overview

8.1.1 Background

Currently, the mining operations at UHG are managed by Leighton under a relationship style contract with ER. Leighton were also contracted during the recent BFS to complete a LOM mine plan and associated mining cost estimate for the UHG Coal Project.

As part of the BFS, Norwest reviewed the work performed by Leighton with the purpose of determining the integrity of the technical work and cost estimation. Following review, Leighton's work was used the basis of the BFS.

8.1.2 Proposed Life-of-Mine Operations

Coal will be mined using hydraulic excavators and rear dump trucks. Initially, lower-ash coking coal will be mined and transported by truck directly to the Chinese border for sale to customers in China. Coal will washed to produce a coking coal product, as and when the coal washing plant comes on-line.

A coal washing plant is currently being constructed in three 5Mtpa stages of ROM coal to reach a total capacity of 15Mtpa at the beginning of 2013. Waste material will be stripped using large hydraulic excavators and shovels and will be transported to ex-pit and/or in-pit waste dumps.

Figure 8.1 generally illustrates site plan.

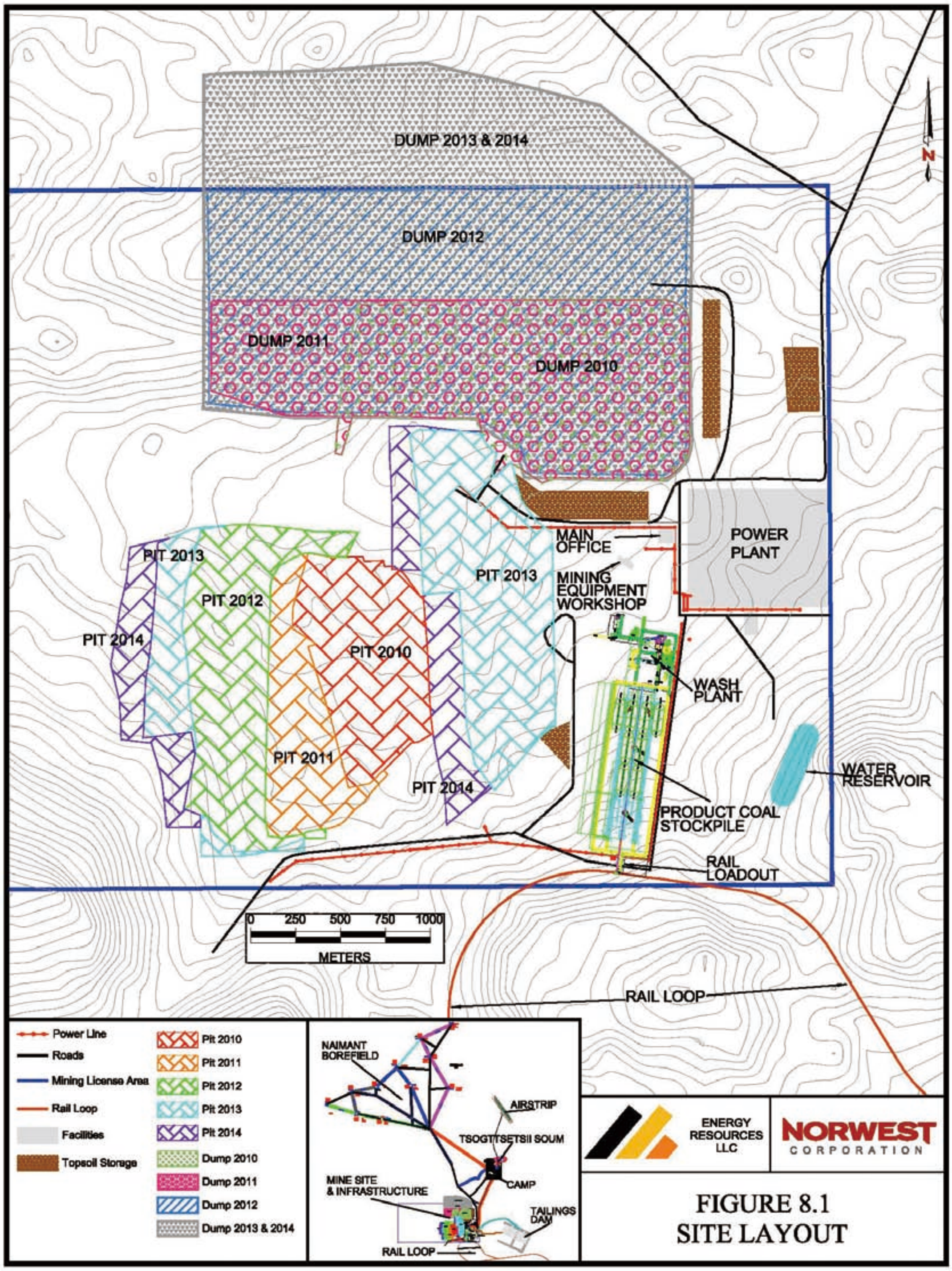
8.2 Current Mining Operations

From March, 2009 through May, 2010, Leighton have removed 12.6Mbcm of waste material, and have produced 3.0Mt of ROM coal. Waste is currently being hauled and dumped in out-of-pit waste dumps.

Waste is stripped with a variety of hydraulic shovels and mining equipment, with appropriate support equipment, including:

- Liebherr R996 hydraulic shovel (34m^3) (one unit)
- Liebherr R984 hydraulic shovel (7.7m^3) (one unit)
- Liebherr R9250 hydraulic shovel (15m^3) (two units)
- Cat 785C mining trucks (150 tonne capacity) (nine units)
- Cat 793 mining trucks (240 tonne capacity) (four units)
- Cat D10 tractor dozer (three units)
- Cat 16G motor grader (one unit).

Figure 8.1 Site Layout



A low-ash coking coal that does not require washing (3 and 4 seams) is selectively mined and blended through ROM stockpiles. There is currently no coal handling, processing or beneficiation of the ROM coal. Coal is currently loaded into transport trucks for third-party delivery to markets across the Chinese border.

Photo 8.1 shows recent mining operations at UHG.

Photo 8.1 Surface Mining Operation at UHG

8.3 Production Schedule

Mine planning has been executed in order to achieve the production schedule required by ER. Several optimization scenarios were run, using the 'Whittle' software package, to fully understand the impact of unwashed and washed product coal on pit shells. The final optimization model was broken into two parts; unwashed and washed product coal and adjusted to achieve a LOM schedule.

8.3.1 Project Ramp-Up

Mine planning was performed in order to generate an optimized mine plan for the 'ramp-up' period to achieve a 'steady-state' production of 15Mtpa. This is considered to be a sensitive and critical period of the Project. The ability to achieve higher production levels will depend in many factors including availability of equipment and labour. The 'ramp-up' schedule required by ER in order to make sales targets is as follows:

- 2010 – 3.8 Mt ROM coal
- 2011 – 7.0 Mt ROM coal
- 2012 – 10.7 Mt ROM coal
- 2013 – 14.7 Mt ROM coal
- 2014 – 15.2 Mt ROM coal

The ramp-up schedule initially targets low-ash coking coal that is beneficiated by the customers at their own facilities in China (after 2011, all coal is to be beneficiated in ER's CHPP). This allows time for:

- Construction of the CHPP. The modular design of the CHPP allows a gradual phasing-in of CHPP capacity until a steady-state production of 15Mtpa at the start of 2013. The 5Mtpa phase of the CHPP will be operational by the beginning of 2011, and the 10Mtpa phase by September 1, 2011.

- Training of mine equipment operators. ER now has a $1M equipment simulator on site which is being used to train equipment operators in the correct and safe methods of operating equipment.

- Developing the mine infrastructure.

- Pre-marketing acceptance of the UHG coking coal products by end users (the ROM coal is being washed at washplants in Inner Mongolia and the product coking coal is then being used to produce coke for a number of steel mills).

Table 8.1 summarizes the coal production schedule and stripping requirements for the LOM.

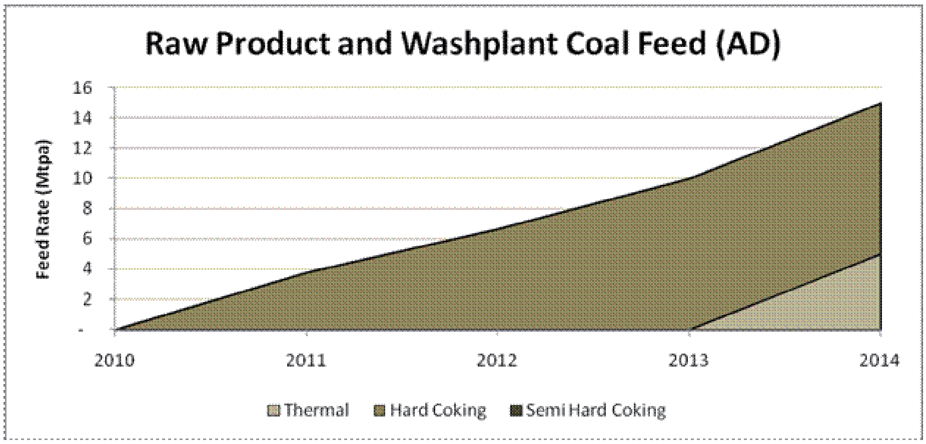
Table 8.1 Material Movement Schedule

Total Material Movement Quantities

Period	Thermal Seams 0A, 0B & 0D (Mt ROM)	Coking Seams 0C, 3 & 4 (Mt ROM)	Coking Seams 8 & 9 (Mt ROM)	Total Mined (Mtpa ROM)	Volume Waste (Mbcm)	Destination: Inpit (Mlcm)	Destination: Expit (Mlcm)	S/R (bcm/t ROM)
2010	–	3.8	–	3.8	20.9	–	26.1	5.5
2011	–	7.0	–	7.0	28.8	–	36.0	4.1
2012	0.8	9.9	–	10.7	58.8	–	73.5	5.5
2013	5.0	9.7	–	14.7	59.0	–	73.7	4.0
2014	5.5	9.7	–	15.2	63.2	3.9	75.1	4.2
Totals	**11.3**	**40.2**	**NA**	**51.4**	**230.7**	**3.9**	**284.4**	**4.5**

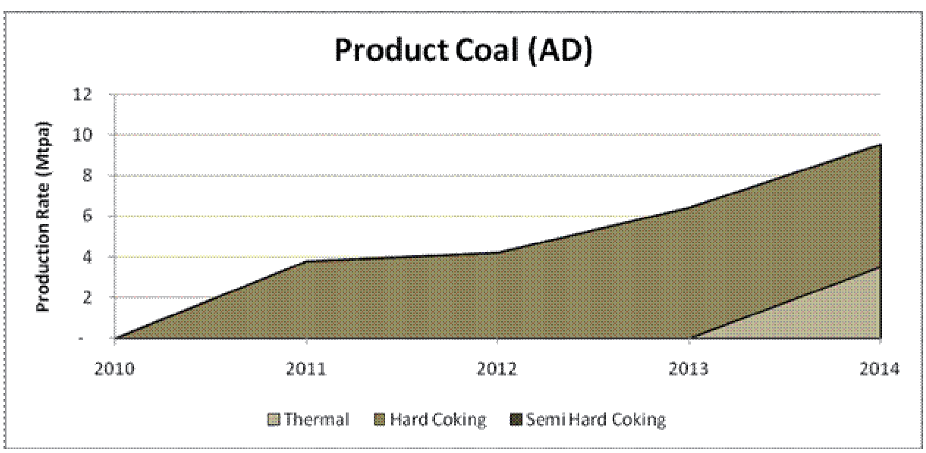
The make-up of wash plant feed, by product type, is shown on Figure 8.2.

Figure 8.2 Raw Product and Wash Plant Feed by Coal Type



The quantity of coal produced, by product type, either through direct sales (through 2010) or after coal washing (post-2010) is shown on Figure 8.3.

Figure 8.3 Coal Product Tonnes by Coal Type



8.3.2 'Steady-State' Production

The Project reaches a 'steady-state' production rate of 15Mtpa in 2013 and maintains that level throughout the LOM.

8.4 Mining Contract

Leighton is currently under contract with ER to perform contract mining services at the UHG mine. The contract term is for 70 months, and will continue through the 'ramp-up' period until UHG reaches a steady state production of 15Mtpa. In fact, the contract is renewed, or 're-set' every time Leighton is obliged to make a major capital investment in mining equipment, and so the contract is likely to be renewed several times over the current give year 'ramp-up' period, and Leighton will almost certainly continue to perform contract mining services.

8.5 Mine Equipment

A brief review of the most appropriate combination of loaders was conducted for this study including the following:

- Electric rope shovels
- Front end loaders (FEL)
- Hydraulic shovels (with either electric or diesel power)
- Diesel over hydraulic excavators (backhoes).

Draglines were not considered due to the dipping multiple seams that will be encountered in this operation. In addition, draglines are not widely used in Mongolia[8] or in neighboring China. Rope shovels were deemed to be unsuitable due to their high capital costs and relative lack of mobility. The following combination of hydraulic shovels and hydraulic excavators was selected.

8.5.1 Coal Mining Fleets

- 100t class diesel-powered hydraulic excavators with 6.7m^3 buckets loading 150t capacity rear dump trucks with standard body configuration (90m^3 capacity).
- 250t class diesel-powered hydraulic excavators with 19m^3 buckets loading 150t capacity rear dump trucks with oversized coal body configuration (115m^3 capacity).

8.5.2 Waste Mining Fleets

- 250t class diesel-powered hydraulic excavators with 15m^3 buckets loading 150t capacity mechanical drive rear dump trucks with standard body configuration (90m^3 capacity).
- 600t class diesel-powered hydraulic shovels with 34m^3 buckets loading 240t capacity mechanical drive rear dump trucks with standard body configuration.

8.5.3 Support Fleets

In addition to the primary earthmoving equipment, there is also support equipment including:

- 425kW-class tractor dozers (Cat D10)

8 Draglines are used at the Baganuur mine.

- 152-229mm rotary drill (Driltech D45KS)
- 600kW-class front end loader (Cat 992)
- 350kW-class front end loader (Cat 988)
- 235kW-class rubber-tired dozer (Cat 824)
- Water trucks (Cat 785 and 773 chassis)
- Motor graders (Cat 16G and 14G)
- 50 tonne-class rejects trucks (Cat 773)
- Other ancillary equipment including light plants, service trucks, compressors, light excavators, cranes, etc.

Productivity was calculated for each fleet, taking into account factors such as downtime, reasonable annual equipment operating hours, meter hours, truck haul profiles, etc.

By applying equipment productivities to the volumes of material to be handled, fleet sizes were estimated.

8.6 Personnel

By applying total equipment hours required to hours available per year, by employee, the total number of operators may be estimated. Support staff was then estimated based on reasonable estimates of what would be appropriate for a project such as UHG.

Tables 8.2 and 8.3 summarize the projected total mining-related employment during the life of the mine for the operating/support workforce and administrative staff, respectively.

Operating, maintenance and general labour have been estimated and include allowances for training; absenteeism and paid non-operating time to ensure maximize equipment utilization. Training requirements during start-up and completion of the production build-up will be higher than the balance of the mine life. Training allowances start at 5% of total operating labour and decrease to 3% once full peak production levels are achieved.

Table 8.2 Workforce and Contractors Employment Summary

Year	ROM Production, Mt	Geology & Lab.	Maintenance	Operations	Total
2010	3.8	44	52	193	289
2011	7.0	65	110	367	542
2012	10.7	72	135	492	699
2013	14.7	75	147	528	750
2014	15.2	77	152	536	765

Table 8.3 Administrative Employment Summary

Years	Administrative	Expatriates	Total
2010	19	9	28
2011	41	9	50
2012	55	9	64
2013	61	9	70
2014	63	9	72

8.6.1 Training

Suitable and sufficient training will be critical to the long term success and safety of the UHG operation. To that end a training program is in development and is currently being implemented. A training manager will oversee all aspects of the training program to ensure that it meets both ER's needs as well as statutory obligations.

One example of the commitment of ER and Leighton to ensure adequate training of personnel is the computer simulator currently in-use at the mine site. The facility is contained within an enclosed 15m storage container, and has been designed to exactly simulate working equipment in a variety of conditions. It does this through visualization via a monitor, and hydraulically controlled physical feedback, similar to an aircraft simulator.

8.7 Mine Infrastructure

Development mine infrastructure specific for direct support of the mining operations will be provided in two phases as summarized below.

The current infrastructure and facilities for the UHG project include:

- A permanent 'mine camp' including accommodation, recreation, dining and administrative facilities
- Permanent maintenance work shop (see below)
- Transportable office facilities

- Some ger-style training and meeting rooms
- An outdoor storage area for larger items
- A coal assay laboratory
- A ger camp to accommodate additional site personnel.

The current infrastructure has been expanded to include a new workshop complex with an approximate area of 2,300m^2 which is now completed and operational. The expanded workshop includes adequate provision for the following major functions:

- Truck maintenance/repair of the Caterpillar 785/793 trucks
- Light vehicle maintenance/repair
- Welding
- Equipment washing
- Training
- Warehousing
- Office facilities for the maintenance personnel.

Other key facilities[9] include the following:

- Explosives storage area, managed by explosive suppliers.
- Fuel storage, managed by the leading Mongolian fuel suppliers.
- Miscellaneous facilities such as field lunch rooms, ablution facilities, a medical facility, security facilities and fencing.

8.7.1 Second Phase

The workshop complex currently under construction will be expanded in about 2 years to accommodate the larger fleets of mining equipment which will be purchased to meet the higher production rates and stripping ratios.

[9] The Office Complex is described under the chapter "Site Infrastructure"

8.8 Water Supply

Several regional and site specific hydrogeological investigations were completed to develop a comprehensive water supply plan for the operation.

The primary water supply is designed to provide the make-up project water requirement, less dust suppression which is estimated to be reliably produced from pit dewatering. A final pit dewatering assessment is ongoing through 2010. It is anticipated that advance dewatering and in-pit sumps will contribute to the overall supply, although the quantities available from dewatering cannot be confirmed at this stage due to ongoing exploration works.

The primary groundwater resource target is the Naimant Depression, approximately 20 km from the mine. The Naimant Depression was investigated using standard geological, geophysical, and hydrogeological techniques, with results demonstrating that the supply and quality will meet project needs up to 117 L/s. A license has been granted for the start-up supply of 51 L/s and additional permissions required for 117 L/s supply are currently being processed with formal approval expected in July 2010.

The start-up water supply design (51 L/s) consists of a network of five existing groundwater wells equipped with standard submersible pumps supplying a transfer station through polyethylene pipelines, which in turn is pumped to a constructed storage pond above the mine containing about 6.5 days water supply. The transfer station consists of a collector tank and booster pump thereby reducing the maximum operating pressure so that lower pressure rated polyethylene pipe can be used for water delivery. Initially, the system will be powered by a diesel generator with conversion to line supply later in the project.

To account for the increased production targets, a ‘start-up’ borefield (capable of delivering 51 L/s) is to be commissioned in late 2010, with a ramp-up to full production from 12 test production bores (117 L/s) by late 2011. It is expected that additional water will be required, and to that end the nearby Naimdain Khundii basin is currently being explored (approx 40km north of UHG). A preliminary 2009 study established that 100-150 L/s may be available from Naimdain Khundii, which would provide ample excess water supply capacity for expanded UHG operations. Exploration works across Naimdain Khundii are ongoing through 2010 to confirm supply potential and secure formal abstraction rights. A preliminary concept engineering design has been completed for conveyance of water supply from Naimdain Khundii to UHG.

8.9 Geotechnical Assessment

Norwest prepared a slope stability assessment and pit slope design guidelines for the UHG coal mine. The document presents slope stability assessment results and design guidelines for the ultimate pit walls and provides recommendations for operations, maintenance and surveillance. The findings of that Geotechnical assessment, as well as of a follow-up memorandum also prepared by Norwest can, are summarized here.

8.9.1 Approach

Norwest made site inspections and researched all available data including:

- Geologic model and interpretations
- Proposed pit shell models
- Geotechnical core logs
- Digital photos of core
- Laboratory test results
- Results of 2008 groundwater assessment
- Groundwater studies for other projects within the region.

This information was used to perform limit equilibrium stability analysis using specialized software. This is the basis for determining slope design parameters.

8.9.2 Pit Design Guidelines

The geotechnical report presents preliminary pit slope design guidelines for the footwalls, endwalls and highwalls of the UHG Pits in the initial years of the Project.

Footwall Slopes

Design guidelines specific to footwall slopes include the following:

- Footwall slopes are developed parallel to bedding to minimize waste extraction and prevent undercutting potentially unstable strata.
- The footwalls follow competent strata for the maximum height allowable before benching occurs. The maximum height is dependent on rock mass strength and structure. Where bedding angles do not exceed 20°, footwalls are developed fully unbenched.
- Blast designs are carried out to maintain setback distance from footwall to limit damage and maintain a continuous bedding plane. Buffer blasting or trim blasting is carried out along trim rows to limit blast damage to the rock mass.

Footwall slopes require that some natural drainage (to a depth of 5m below the footwall) occurs to achieve acceptable FOS. While shallow dipping footwall slopes (less than 15°) should not require extensive dewatering, steeper footwalls will likely require additional dewatering to drawdown groundwater to depths of 10m below the footwall.

Endwall Slopes

Depending upon bedding angles, endwalls will be developed as both benched and unbenched slopes. Where endwall bedding does not exceed 20°, design guidelines presented for footwall slopes should be used. The design guidelines presented below are provided for areas where endwall bedding exceeds 20°. Pit slope guidelines meet typical open pit performance criteria and recognize constraints imposed by the mining method and equipment size.

Table 8.4 summarizes the design guidelines which apply to pit endwalls.

Table 8.4 UHG Endwall Pit Slope Design Guidelines

Parameter	Value
Bench Height (m)	50
Bench Width (m)*	50
Bench Face Angle (degrees)**	30
Overall Slope Angle (degrees)	23

* *Bench width based upon distance to mine out the nearest underlying coal seam*

** *Bench face follows bedding angle*

Highwall Slopes

Table 8.5 summarizes the design guidelines which apply to pit highwalls.

Table 8.5 UHG Highwall Pit Slope Design Guidelines

Parameter	Value
Bench Height (m)	20
Bench Width (m)	11
Bench Face Angle (degrees)	60-65
Bench Face Angle Weathered Rock	45
Overall Slope Angle (degrees)	45

8.10 Surface Water Management

A current interim water management plan, based upon previous work by Aquaterra, presents conceptual designs for surface water management and mine dewatering/ depressurization, including preliminary cost estimates.

8.10.1 Drainage Design

Drainage design to manage surface water is developed in two stages.

Stage 1

The Stage 1 drainage plan covers the first seven years of the mine plan and includes an 8.3m diversion drain along the east side of the facilities area and overburden dump. A perimeter drain system to divert and collect surface water drainage, using natural grades where possible, is planned to encompass the 7-year mine block.

Surface water drainage from disturbed areas will be collected and routed through a sediment pond to be located north-east and down-gradient of the out of pit overburden dump.

The main sediment pond with a surface area of 9,600m^2 is planned for the location north-west of the overburden dump at the outlet of the culvert.

Stage 2

The Stage 2 drainage on the eastern and north-eastern portions of the mine and the facilities area remains the same as in Stage 1. As segments of the Stage 1 diversion drain are mined out in Stage 2 being replaced by a new diversion segment located between the mine and the overburden dump and a flood retention structure located at the topographic low point along the western edge of the Stage 2 mine pit.

Other components of the Stage 2 drainage plan include extensions of existing drains, and construction of a new perimeter drain to divert surface drainage from the mine pit and into the flood retention structure located along the western edge of the Stage 2 mine pit.

8.10.2 Depressurization Design

The depressurization system was designed to maintain appropriate hydrostatic pressures to ensure mine wall and pit floor stability needed for safe and efficient mining, and maximize water recovery for water supply and to minimize pit inflows. Additional detailed design work is required as mining progresses.

8.10.3 In-Pit Stormwater Management

Initially, stormwater will be diverted from the pit through the use of temporary diversions. Stormwater infiltrating the pit will be collected in sumps and pumped to out-of-pit sediment storage ponds.

8.10.4 Integrated Mine Water Management

Surface water runoff is an unreliable source of water supply in the South Gobi. However, in-pit water will be used to supplement the main water supply for the washplant, as well as for dust suppression. In-pit sumps function as settling ponds and will be fitted with a standpipe and pump for filling water tankers.

The water pumped from the depressurization bores, and stored at a reservoir adjacent to the mine, provides a more dependable supply that can supplement the supply from Naimant Depression wellfield for use at the coal wash plant, the power plant, and the mine facilities, including potable use. This main water supply from the Naimant wellfield will be developed as the project ramps up, and additional units of the coal wash plant come online.

9. COAL HANDLING AND PREPARATION PLANT

9.1 Introduction

UHG's coal handling and preparation plant (CHPP) is an integral part of the UHG business unit of ER. The capital cost for this facility is significant, with remaining costs approximately US$220 million (ex-VAT and contingencies). Without the CHPP, high-value saleable coking and thermal coal products would not be possible. The CHPP will ultimately support the handling and processing of 15Mtpa ROM.

9.1.1 CHPP Feasibility Study

A detailed feasibility study was conducted by Sedgman Consulting (Beijing) Co. Ltd. in 2009 and parallels the detailed design and engineering activities of the parent company, Sedgman Limited of Brisbane, Australia.

The Sedgman CHPP feasibility study documented the coal quality analyses, the selection of the processes, and the agreed plant design criteria to which the detailed design is being developed. The study also included a preliminary construction schedule with associated challenges and the basis upon which the capital and operating costs are calculated.

9.1.2 CHPP Basis of Design

Norwest developed, on behalf of ER, original technical specifications for the CHPP as well as solicitation of Request for Proposal (RFP) documents The RFP required, at a minimum, the following basis of design:

- CHPP – comprising the CPP, coal handling systems and related infrastructure.
- Ultimate production scale of 15Mtpa of ROM to be constructed in 5Mtpa increments to allow for orderly expansion.

- Primary products to be a variety of premium HCC and SHCC for export with 8% to 10% ash as well as potential thermal coal for either export or domestic use and secondary product thermal coal.

- Be developed in four phases of construction to match the expansion of the mine to coincide with the arrival of the railroad and match market demand, as required, to preserve cash flow.

- Be of robust, high availability construction for minimum 6,000 hours per annum operation, i.e., coal-on processing (availabilities of 7,000+ hours per annum are reported for similar CHPP systems in Australia).

- Process design required accounting for the high value of the intended coal product(s); hence, the design must maximize coking coal recovery.

Significant weighting was placed on the last two bulleted items.

9.1.3 Contractor Qualifications

The CHPP feasibility study contractor, Sedgman Consulting (Beijing) Co Ltd, is a subsidiary company of Sedgman Limited, the EPCM contractor on the UHG project. Sedgman has a significant history in the successful development, design, construction, operation and maintenance of CHPPs and associated infrastructure.

9.2 Process Selection

Perhaps the most important element of the CHPP is the Coal Preparation Plant (CPP), i.e., the actual coal washing process that is required to upgrade the raw mined coal into a saleable product. Trade-off studies identified that a two-stage dense media cyclone (DMC)-spirals-flotation circuit would maximize the recovery of the hard coking using proven, robust, commercially available coal processing equipment.

Process simulations for each seam further indicated a significant amount of secondary product can also be recovered. While these do not have suitable coking properties, the secondary products from UHG have very good thermal properties for power generation.

9.2.1 Saleable Products

Based on the data to date, it is anticipated that the following products may be produced during the five year period 2010 through 2014. Coal quality and yield are indicative only at this stage, and actual values will depend on further testing and marketing studies.

- Hard coking coal, according to the specific seam being mined.

- Thermal product will be produced from the seams that are unsuitable for the production of coking coal, and from the secondary product DMC product.

9.3 CHPP Phased Development

By any standards the proposed UHG plant will be one of the world's largest coking coal facilities. The planned expansion of the UHG CHPP facility involves four distinct phases.

- Initial 5Mtpa Phase – Coal Handling & Preparation Plant

- 10Mpta Phase – 2nd CPP module and expansion of Rejects Handling and ROM CHP

- Rail Integration Phase – Product coal handling and train load out facilities of CHP (15Mtpa capacity)

- 15Mpta Phase – 3rd CPP module allowing full mine expansion to 15Mtpa (ad).

It is suggested that the reader refer to the attached series of material handling flowsheets for the follow phase descriptions (Figures 9.1 through 9.4.).

9.4 Potential Increased Capacity

As noted above, the original design criteria required a minimum annual operating run time of 6,000 hours. This was purposely conservative factoring challenges of operating a large industrial facility in the remote and sparsely populated Gobi. However, Norwest believes the current CHPP design is readily and mechanically capable of achieving 6,500 run hours per annum provided and the operating contract for the CHPP will be based on the operator achieving a minimum of 6,500 operating hours per year.

9.5 Staffing and Contract Operations Management

The labour staffing estimates for the operation of the UHG CHPP are based on 12 hour shifts with a three panel roster. The work pattern per roster consists of seven (7) days, seven (7) nights and seven (7) days off. Table 9.1 details the proposed management and administration staff for the four phases.

Table 9.1 CPP Labour Staffing Requirements

Position	5Mtpa Phase	10Mtpa Phase	Rail Integration Phase	15Mtpa Phase
Management/Admin	13	13	13	13
Operators	24 (8 per shift)	30 (10 per shift)	42 (14 per shift)	54 (18 per shift)
Lab Technicians	6 (2 per shift)	6 (2 per shift)	6 (2 per shift)	6 (2 per shift)
Artisans	21 (7 per shift)	27 (9 per shift)	33 (11 per shift)	42 (14 per shift)
Total Day Shift	**30**	**34**	**40**	**47**
Total Night Shift	**17**	**21**	**27**	**34**
Total Personnel	**64**	**76**	**94**	**115**

ER has a contract with Sedgman to provide operation readiness training and to provide contract operations management for the CHPP.

The operations readiness includes training of key workers in Australia (currently underway) prior to commissioning as well as setting up systems for:

- Logistics supply chains and spares requirements
- Management plans (HSE, Operations, Laboratory)
- Maintenance systems, procedures, and inspection requirements
- Implementation of training packages
- Implementation of recruitment strategy.

9.6 Project Implementation

The main challenges for the UHG CHPP design and construction are focused around the site remoteness, climatic conditions and the availability of a skilled construction workforce. A number of strategies have been proposed to mitigate these risks, namely:

- Use of Chinese design contractors experienced in cold weather design for the coal handling section of the plant.

- Use of experienced Chinese construction contractors to supplement the Mongolian work force.

- The first phase is now under construction. Most of the civil earthmoving tasks as well as concrete foundations for the CPP were completed late 2009. During June 2010, structural elements of the CHP (first phase) were completed (see Photo 9.1). As can be seen, structural steel erection has commenced.

Photo 9.1 CPP Construction

Figure 9.1 CHPP 5Mtpa Phase Materials Handling Flowsheet

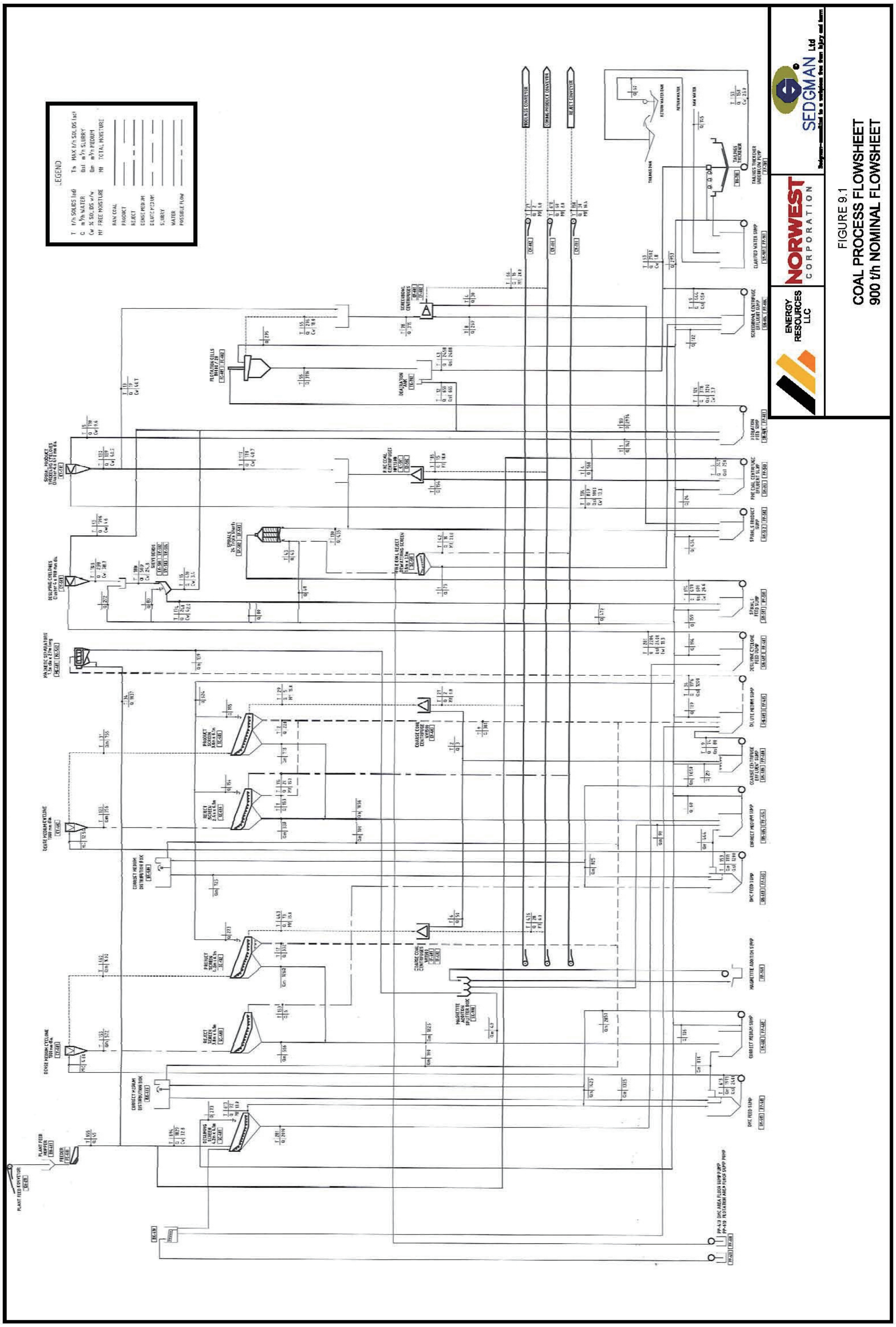


Figure 9.2 CHPP 10Mtpa Phase Materials Handling Flowsheet

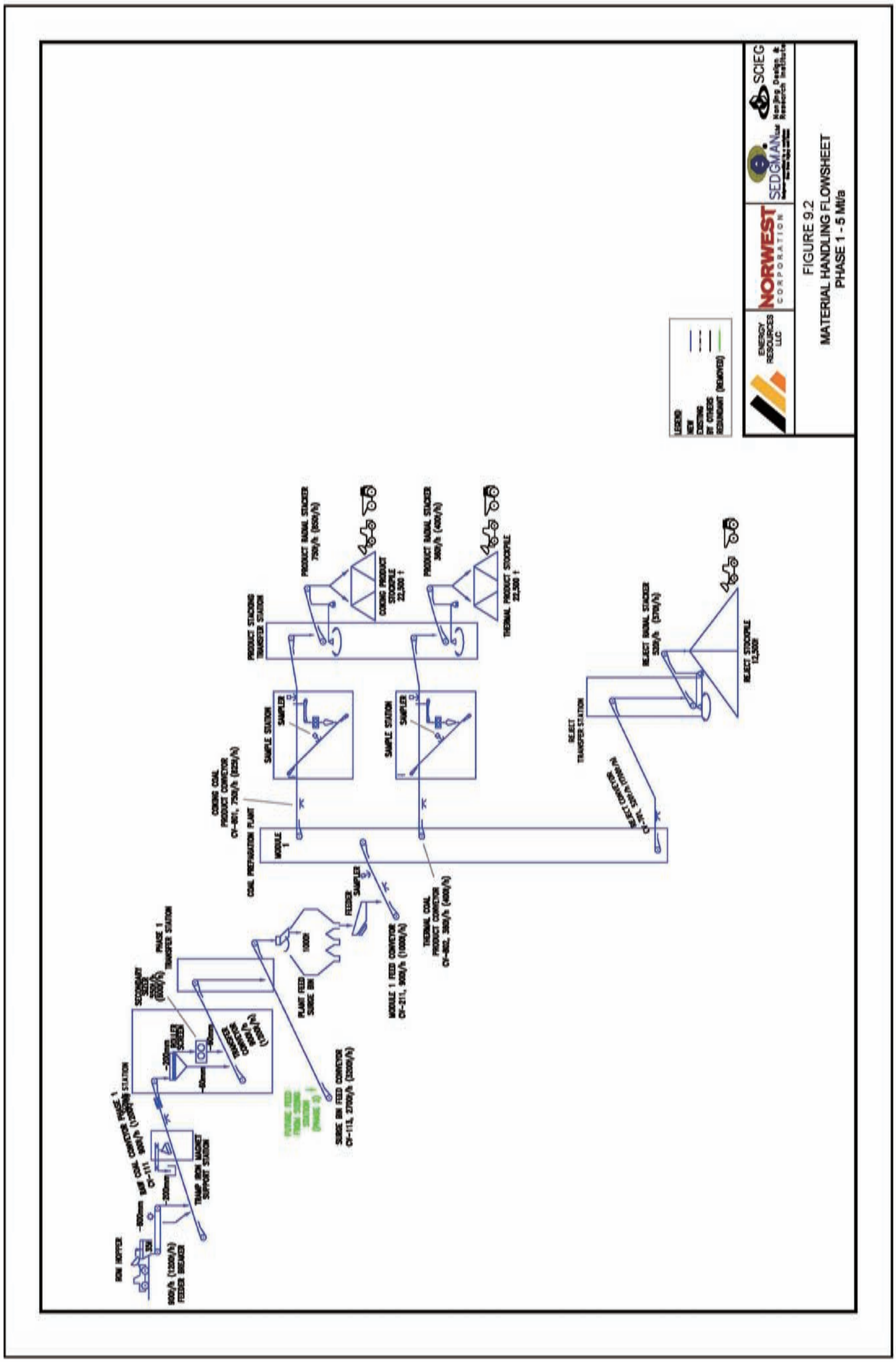


Figure 9.3 CHPP Rail Integration Phase Materials Handling Flowsheet

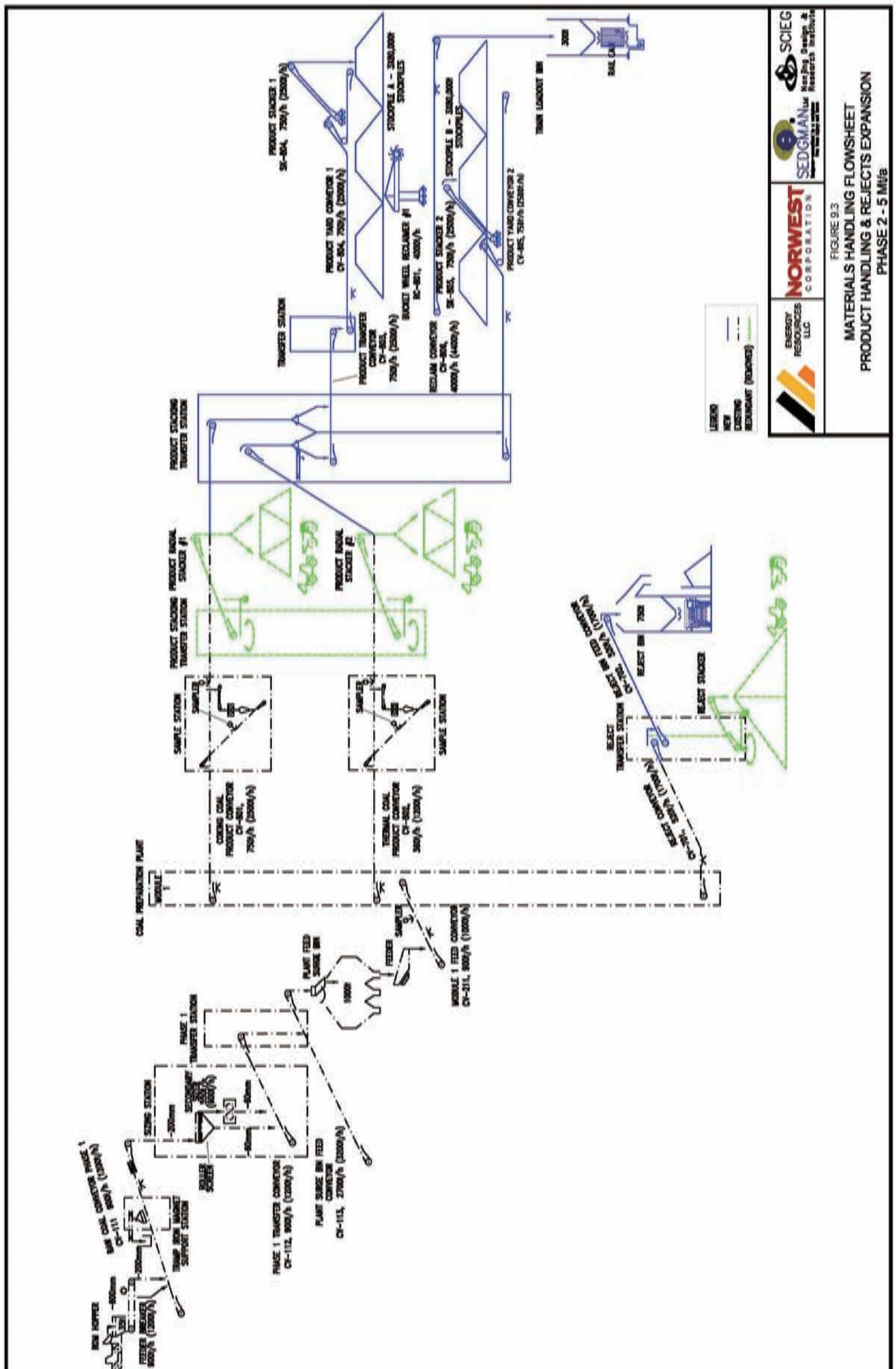
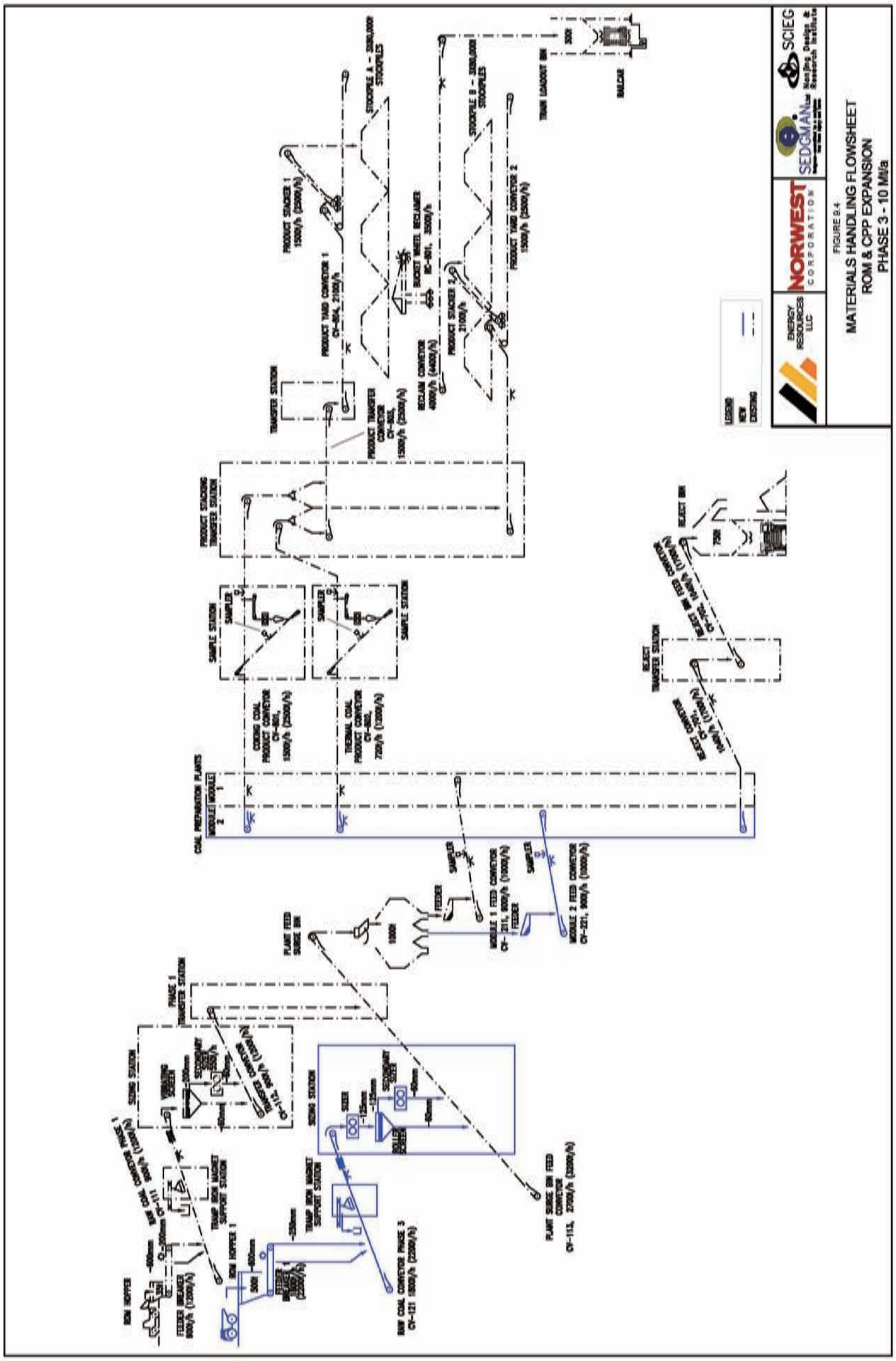


Figure 9.4 CHPP 15Mtpa Phase Materials Handling Flowsheet



9.7 Tailings Storage Facility

9.7.1 Introduction

ER appointed Golder Associates to prepare a study for a facility to store tailings and coarse rejects from the coal washing plant (a tailings storage facility (TSF)).

Golder developed a scoping design to accomplish the following:

- Provide sufficient storage capacity for the LOM tailings output.
- Be simple to operate.
- Maximize water return.
- Capable of operating under the extreme weather conditions at the site.

Information provided by Sedgman stated that the coal yield would be about 72%, and about 25% of the reject would be tailings. The tailings would be pumped to the TSF in the form of a slurry with a solids content of around 30% while the coarse rejects would be trucked by the mining contractor. The amount of material to be stored in the TSF is indicated in Table 9.5.

Table 9.2 Amount of Material to be Stored in the TSF

Tailings tonnes	27,033,588
Coarse Reject tonnes	73,189,642
Total Reject Tonnes	**100,223,230**

ER have identified a site for a valley dam TSF about 3km to the east of the CHPP. The engineering design for the TSF is currently being prepared by Golder.

9.7.2 Design Criteria

The UHG site is extremely cold for 6 months of the year and quite warm for the balance of the year. Expected yearly rainfall is about 58mm; therefore runoff is not a major concern. Evaporation from the decant pond during summer and possibly in winter is expected to be as high as 2,588mm. Ice will form on the decant pond for much of the winter.

9.7.3 Storage Requirement

While no settling tests have been performed to-date on the tailings, the required total storage capacity was estimated to be about 49Mm^3.

9.7.4 Water Balance

The amount of water available for re-use from the tailings as it first settles, as supernatant, is estimated to be about 38% of the incoming slurry water volume[10]. After considering evaporation during all climatic seasons, it is estimated the net potential water return would be 36.5%.

9.7.5 Foundation Conditions

A geotechnical assessment has been undertaken for the proposed TSF site by Soil Trade LLC and is being used by Golder to develop the scoping TSF design.

9.7.6 Slurry Transportation

The slurry will be pumped to the TSF for decantation. For operational and maintenance reasons it is preferable that the slurry pipeline be located on the surface. Based on experience with tailings pipelines in the cold north of Canada it was decided to locate the pipeline on the surface.

9.7.7 Celled Operation

The TSF footprint is to be divided into two sections, with each section further divided into a series of cells. Smaller cells are to be operated during the winter and a large cell to be operated during the summer. The cells are developed using waste rock to build the internal dividing walls, while there is an engineered outer containment wall which will also use mainly waste rock.

9.7.8 Environmental Issues

- **Acid Rock Drainage (ARD)** – If the tailings contain sufficient reactive pyrite to generate ARD conditions, the tailings deposition operation will need to address ways of minimizing ARD generation.

- **Seepage** – Generally seepage from coal tailings TSFs are not a significant environmental issue.

- **Dust** – The site is very windy and dust storms are frequent through the year. As a result the TSF may generate some fugitive dust during these conditions.

- **Closure** – Sand/dust storms are persistent through this region, with about 20 days of dust storms at the site per year. Golder suggests that the best closure option would be to place a layer of rejects covered with waste rock over the surface of the TSF at closure.

[10] No allowance for water harvesting from rainfall has been allowed.

10. TRANSPORTATION

10.1 Roadway Transportation

The UHG coal mine has already commenced production at a rate of about 2.5Mtpa of (unwashed) coal which is being transported by truck to the Chinese border at Gashuun Sukhait (see Photo 10.1). Transportation is currently along an unpaved road, first constructed in 2008. While ROM coal from UHG will increase to 3.8Mt this year, the majority of coal sold in 2011 will be washed coal. Transportation of coal by truck will continue until the railway is commissioned. Commissioning of the railway is expected to occur in 2013.

The current road has deteriorated since production began at UHG, and is not expected to be adequate for the upcoming increases in production. Hence, a new paved road is already under construction and will be completed by September, 2011. It is expected to be substantially complete by the start of 2011, and sections will be used as and when they are ready. It will have sufficient capacity for transporting volumes from UHG's target plateau capacity of 15.0Mtpa of ROM production, and will serve the operation needs until a rail link is established (proposed beginning of 2013). The paved road will also transport third party volumes for a commercial tariff. Once the rail link is established, the road will be released to the government for public use. A feasibility-level study and report on the proposed haulroad has been prepared by Leighton, with assistance from Snowy Mountains Engineering Corporation (SMEC) and others (see *Feasibility Study Report (Draft), M1006 – UHG Coal Haul Road Project: Ukhaa Khudag to Gashuun Sukhait,* May, 2010).

Two haul road designs have been proposed. The 'base case' plan features a road pavement design to standards typical of the Mongolian Highway Standards. This design will likely require extensive maintenance in order to withstand the anticipated traffic volume. An alternate design is also proposed that features a more robust pavement surface, assuming that axle loads are reduced to 17-18t through the use of double trailer 'road train' vehicles. The alternate design features a relatively high up-front capital costs for construction, but lower maintenance costs over the life of the road. The 'base case' design was assumed for the purposes of this report, subject to enhanced capital. Other advantages to the use of a permanent haul road include a reduction in the amount of fugitive dust produced, as well as obviating the need for trucks to create destructive "alternative" tracks in order to avoid damaged, and unproductive, road surfaces.

Photo 10.1 UHG Coal Transportation Trucks

10.2 Railway Transportation

The new mine and associated facilities will allow the UHG mine to progressively expand the mine production rate in increments of 5Mtpa to 15Mtpa. ERR will construct a railway about 236km in length and with a capacity of 30.0Mtpa to transport coal and other mineral commodities into China via Gashuun Sukhait. From Gashuun Sukhait the trains will move on Chinese railway infrastructure either to their ultimate destinations within China or to Chinese seaports for export to third countries.

An alignment based upon engineering and environmental considerations was developed to serve the Tavan Tolgoi coalfield as well the Ivanhoe Mines/Rio Tinto Oyu Tolgoi copper mine, also located in the region. In addition to UHG, several other companies are interested in using the new railway to haul coal and other commodities to market centers. According to ERR, the projected traffic over the UHG railway to Gashuun Sukhait is estimated at approximately 25Mtpa by 2016.

UHG mine development is supported by infrastructure development projects such as paved road and railway construction.

10.3 Railway Infrastructure and Equipment

UHG, at its design capacity of about 9Mtpa (air dried basis) of coal sales, will load about 4.5 trains per day while other mines will increase loading to approximately 12 trains daily. The only interface of UHG-Gashuun Sukhait with other railways will be with the national railway of China at the border crossing of Gashuun Sukhait. ERR will be responsible for all tracks and facilities on Mongolian territory.

Railway infrastructure will include:

- Maintenance Facilities and Operations Control Center
- Terminal Stations
- Border Station at Gashuun Sukhait
- Ganqimaodu Border Terminal
- Intermediate Stations.

10.4 Rolling Stock

10.4.1 Introduction

The amount of rolling stock, i.e. the number of wagons and locomotives is defined by the transport volume, the locations and distances to the delivery points, the speed achieved by loaded and empty trains, the turnaround time and the headway.

10.4.2 Diesel Locomotives

Based upon elevation changes and load, the most powerful locomotives have been chosen and double heading is required. The locomotive taken into consideration for the running time calculations is the type ES44ACi diesel locomotive by General Electric, with a maximum power rating of 3,356kW.

10.4.3 Wagons

Based upon availability and capacity, the current design calls for aluminum-sided wagons that can carry a net load of 73.4 tonnes (10,000 gross tones/train) while meeting Chinese standards.

10.4.4 Number of Wagons

The number of wagons is based on the transport volume, the net load of the trains, the number of trains to be operated, the required headways and the turnaround times to the individual destinations.

The duration of the border crossing procedures has a major impact on the turnaround times. The estimated number of wagons required to transport 28Mtpa is listed below in Table 10.1.

Table 10.1 Estimated Numbers of Wagons Required

		Number of Wagons Required				
Loading Station		**2012**	**2013**	**2014**	**2015**	**2016**
UHG (million net tonnes)		5.85	8.66	8.73	8.42	8.18
UHG to Batou	ERR-owned	89	212	212	212	212
UHG to Ganqimaodao	Leased	246	280	286	266	258
Reserves		54	54	54	54	54
Total number of wagons		389	546	552	532	524

11. OPERATING COSTS

11.1 Introduction

Cash operating cost estimates were made by the various contributors for the different aspects of the Project. These are summarized in Table 11.1 (does not include road or rail transportation cost or SG&A costs).

Table 11.1 Mining and Processing Cash Operating Cost Summary (Cash Basis)

	2010	**2011**	**2012**	**2013**	**2014**
ROM Coal (000 tonnes, adb)	3,782	7,003	10,729	14,722	15,247
Mining & Operations					
Mining	$20.90	$24.85	$ 28.82	$ 21.32	$ 21.28
Coal Processing/Handling*	$ 1.13	$ 3.60	$ 3.74	$ 3.00	$ 3.52
Total ($/ROM t)	**$22.03**	**$28.45**	**$ 32.56**	**$ 24.32**	**$ 24.80**

* *Includes all processing, handling, water and power supply, and distribution costs.*

Table 11.2 Total Cash Operating Cost Summary (Cash Basis) ($000)

	2010	2011	2012	2013	2014
Workforce employment	16,040	25,569	28,704	29,916	30,042
Equipment and consumables	38,986	96,707	191,654	201,864	223,452
Fuel, electricity, water and other services	18,202	43,986	81,202	82,269	85,158
On- and off-site administration	16,070	36,288	40,659	42,060	42,106
Environmental protection and monitoring	1,500	2,000	2,000	2,000	2,000
Transportation of workforce	2,470	1,030	1,030	1,150	1,150
Product marketing and transport	67,718	105,910	137,754	130,470	128,334
Non-income taxes, royalties and other governmental charges	23,355	47,303	76,046	97,844	95,886
Others^	14,265	31,396	44,797	39,533	34,851
Total	**198,605**	**390,190**	**603,847**	**627,107**	**642,980**

^ *Others include contractor fees*

For illustrative purpose, the following table summarizes all of our estimated cash operating costs per ROM tonne:

Table 11.3 Total Cash Operating Cost Summary (Cash per ROM tonne basis)($/ROM t)

	2010	2011	2012	2013	2014
Workforce employment	4.24	3.65	2.68	2.03	1.97
Equipment and consumables	10.31	13.81	17.86	13.71	14.66
Fuel, electricity, water and other services	4.81	6.28	7.57	5.59	5.59
On and off-site administration	4.25	5.18	3.79	2.86	2.76
Environmental protection and monitoring	0.40	0.29	0.19	0.14	0.13
Transportation of workforce	0.65	0.15	0.10	0.08	0.08
Product marketing and transport	17.90	15.12	12.84	8.86	8.42
Non-income taxes, royalties and other governmental charge	6.17	6.75	7.09	6.65	6.29
Others^	3.77	4.48	4.18	2.69	2.29
Total	**52.51**	**55.72**	**56.28**	**42.60**	**42.17**

^ *Others include contractor fees*

It is noted that there is a significant increase in unit cash operating costs over 2011 and 2012. This is due to several factors including a relatively high depreciation and related contractor charges over that period due to the large up-front purchase of mining equipment.

It is noted that since publication of the BFS, various cash operating and capital cost estimates have been revised. In the case of mining costs, estimates have been revised to reflect the expected continued use of Leighton as a contract-miner through the first six years of the

Project. CHPP costs have been revised to reflect a re-design of the coal handling facilities, as well to account for actual costs incurred during the 5Mtpa phase of the CHPP construction schedule. Cost estimates for water supply, and rail and road transportation, are based on revised design work and assumptions about implementation.

All cash operating costs are reported in US$, exclusive of VAT, on a 2010 constant-dollar, un-inflated and un-escalated basis. Therefore, cash operating costs reported here do not include depreciation.

11.2 Proposed Operating Costs: Mining

11.2.1 Introduction

As part of their mine planning efforts, Leighton prepared capital and operating cost estimates. As previously described, the BFS assumed that the mine would be operated by ER, and not by the contractor, Leighton, from Year 2 onwards. However, it is currently expected that Leighton will continue to operate the mine through the first six years of the LOM, and costs have been adjusted accordingly to reflect this cost structure.

In reporting a "contract miner" cost structure instead of an "owner operator" scenario (as used in the BFS), the following were taken into account:

- Updated and revised mine plan.
- Capital depreciation and financing charges were added.
- Operating costs adjusted to reflect no Maintenance and Repair Contract (MARC).
- Equipment operating lives adjusted to reflect no maintenance under typical MARC approach, as opposed to "contractor miner" approach, affecting capital purchase and replacement schedule.

Capital and operating costs were determined through a combination of quoted costs or adjusted cost estimates (e.g., factored historical costs) for major and minor equipment, respectively.

11.2.2 Direct Operating Cost Estimate

Leighton uses an in-house software and database system referred to as CATS (Computer Aided Tendering System). CATS was used to estimate costs by major activities, including:

- Drill and Blasting
- Stripping, loading and hauling waste
- Mining, loading and hauling coal

- Ancillary and support operations
- Coal ROM re-handle and wash plant rejects haulage.

Direct operating costs include costs directly related to mining activities and include all labor, materials and equipment costs for drilling and blasting, waste loading and hauling, coal mining and hauling, rejects handling and all support and ancillary operations. Power costs for the project have been accounted for separately.

Workforce Labor

Labor costs have been estimated based on current or projected wages and salaries paid at the UHG operation for all expatriate and national (i.e. Mongolian) personnel. In addition, there have been allowances for offsite and overhead labor costs.

Wages and salaries have been adjusted to take into account additional burdens, i.e., they are reported on an "on-costed" basis. (i.e. including all fringe benefits and other allowances.) Factors taken into account in order to derive "on-costed" wages.

Materials Costs

The cost of materials includes the cost of all supplies and sundry items that are not directly related to equipment costs. Materials costs therefore do include incidental diesel, explosives, ground engaging tools (GET; for example, buckets), drilling products and accessories, dewatering equipment, IT and offices supplies, safety supplies, tool allowances and other miscellaneous items. However, materials costs do not include costs such as labor, or fuel and major parts for mining equipment.

Through many years of experience, Leighton has built up a network of relationships with material and supplies providers within Australia and Asia. Major materials costs based on formal quotations from those suppliers include:

- Explosives
- GET
- Drilling and blasting supplies
- Other materials (dewatering pipes, safety supplies, etc).

Costs for minor items were based on Leighton's prior experience.

Equipment Costs

Equipment costs captured in this study have been based on estimated rates including diesel usage rate, tire/track wear and consumption and other miscellaneous items. Also captured are costs of running maintenance and workshop facilities, as well as maintaining a spare parts inventory.

As the majority of mining equipment proposed runs on diesel, fuel represents a significant portion of equipment costs. A unit price of US$0.90/l (excluding VAT) has been assumed, based on current market conditions.

11.2.3 Overhead and Additional Costs

All costs not directly related to production and mining activities have been captured under "Overhead" costs. Although these may be thought of as costs that are incurred regardless of mining production, in fact it is reasonable to assume that these costs will be generally affected by the magnitude of the operations. For this reason, Leighton has estimated these costs according to a phased approach to mine development.

Recruitment, Travel and Allowances

An employee turn-over rate of 25% per annum has been assumed for the purposes of estimating recruitment costs.

Travel expenses for personnel have been made assuming regular international travel for expatriates, and rotational transport for national staff (80% assumed to return to Ulaanbaatar once/rotation, remaining transported to Dalanzadgad).

Support and General Equipment

Costs for support and ancillary equipment has been estimated under these O&A costs. The following general equipment has been included:

- Light, medium and heavy vehicles for transportation of material and people around the mine site.
- Various handlers and cranes.
- Heavy tools (compressors, welders, generators, etc.).
- Other miscellaneous items (mobile light plants, water stand-pipe, etc.).

Site and Office Services

Costs were estimated for items such as maintenance and replacement of computers and associated hardware, computer software, telecommunications and two-way radio communications, office supplies and other general site service and consumables costs.

Safety and Training

Costs were also estimated for supplies and consumables related to safety and training, as well as annual costs and direct expenses.

Fees and Insurance

Based on prior experience, indirect costs have been estimated for insurance, permitting, legal services and community welfare and inventory holding costs.

Additional Costs

Additional costs include the costs of accommodation and messing, as well as a profit component. The margin is calculated based in part on ROI and net book value of mining equipment purchased and used in the operation, as well as on Leighton's performance in meeting certain Key Performance Indicators (KPIs).

11.3 Proposed Operating Costs: CHPP

The CHPP life cycle operating costs are summarized below.

Table 11.4 UHG CHPP Life Cycle Cash Operating Cost Summary

	2010	2011	2012	2013	2014
ROM Tonnes (000t, adb)	3,782	7,003	10,729	14,722	15,247
Cash Cost ($/ROM t)	NA	$ 2.28	$ 2.09	$ 2.11	$ 2.03

The scope of the operating cost estimated is based on the following interface points:

- Underside of grizzly on the ROM coal bins
- Discharge of product coal from train load out bin
- Discharge into the tailings dam up to 3km away
- Discharge of reject coal from reject bin
- Raw water delivery into clarified water tank
- Water pumps.

The life cycle cost estimate includes all costs associated with:

- Operating labour including all allowances and relief labour
- Maintenance costs including labour
- Safety audits and consumables
- Auxiliary mobile equipment maintenance and diesel usage

- Sampling and analysis, including labour
- Operator training
- Process consumables
- Support services (FIFO Ulaanbaatar)
- Product stockpile management
- Power costs are captured outside of CHPP cost estimates.

The cost estimate excludes all costs associated with:

- Maintenance capital and strategic spares
- VAT
- Power
- Boiler Operating Costs
- ROM stockpile management
- Product haulage
- Rejects haulage
- Site water management
- Set-up costs including workshop and laboratory fit out
- Depreciation and mobile equipment ownership costs
- Local, State and Federal Government charges
- Overheads such as insurance
- Water charges
- Tailings dam construction and extension
- Reclamation and rehabilitation costs
- Accommodation for personnel

- Transport of personnel

- Taxes, royalties, license fees and escalation.

11.4 Proposed Operating Costs: Transportation

11.4.1 Road Transportation

As described previously, prior to completion of the railway by the start of 2013, coal will be transported along a paved, permanent haul road to the Chinese border. The majority of the coal will be hauled by contractor. The remaining coal will be hauled by ER's transportation company, Trans Gobi LLC (Trans Gobi). Estimated costs are as follows.

Table 11.5 Road Transportation Operating Cost Summary

	2010	2011	2012	2013	2014
ROM Tonnes (000t, adb)	3,782	7,003	10,729	14,722	15,247
ER Transportation ($/ROM t)	$ 2.85	$ 3.09	$ 2.87	$ 0.00	$ 0.00
Contractor Transportation ($/ROM t)	$13.49	$ 9.84	$ 7.88	$ 0.00	$ 0.00

Operating costs for Trans Gobi include fuel, maintenance, labour and various overhead expenses. Costs for the contractor are based on a quoted charge of $18/t, then adjusted for haul distance.

11.4.2 Railway Transportation

Based on previous feasibility-study work, direct cash as well as overhead costs for rail transportation are captured under a tariff rate, which is assumed to be levied against ER for every tonne of coal transported by rail. Rail transportation is assumed to begin at the start of 2013, under the current design using a Standard Gauge as its basis.

11.5 Proposed Operating Costs: Water Supply

Water supply operating costs will include maintenance (including labor), energy, and replacement costs. Ongoing operations and maintenance costs have been estimated using a number of sources, and are summarized in Table 11.6.

Table 11.6 Water Supply Cash Operating Cost Summary

	2010	2011	2012	2013	2014
ROM Tonnes (000t, adb)	3,782	7,003	10,729	14,722	15,247
Cash Cost ($/ROM t)	$ 0.13	$ 0.29	$ 0.19	$ 0.21	$ 0.21

The power supply will initially be provided by diesel generator, provided and maintained by ER. The power station proposed at the mine site, or power from a transmission line to be completed in mid-2012, may reduce energy costs, but has not been considered.

11.6 Proposed Operating Costs: Power Generation

11.6.1 Power Generation (3 x 6MW)

The estimated annual operating costs under for the smaller 3 x 6MW unit plant are summarized in Table 11.7.

Table 11.7 Power Generation Cash Operating Cost Summary

	2010	2011	2012*	2013	2014*
ROM Tonnes (000t, adb)	3,782	7,003	10,729	14,722	15,247
Cash Cost ($/ROM tonne)	$ 0.29	$ 0.47	$ 0.60	$ 0.22	$ 0.85

* *Includes maintenance costs, $3.2M in 2012 and $9.7M in 2014, inclusive of VAT*

Excess power will be purchased from a third party (see above for discussion on construction of a transmission line to the South Gobi region, operation mid-2012). It is understood that power would be made available for approximately $0.10/kWh (115 MNT/kWh). Excess power is not included in Table 11.6.

11.6.2 Personnel Requirements

The total required number of people to operate the 3 x 6MW during the five year period 2010-2014 is 134 people.

12. CAPITAL EXPENDITURE

12.1 Introduction

The estimated capital costs for the mining project (five year period, 2010 through 2014) are summarized in Table 12.1. These capital estimates exclude the railway which will be a separate profit center (see Table 12.6).

Table 12.1 Project Capital Cost to Reach Full Production ($000)

	2010	2011	2012	2013	2014
Mining	$ 3,975	$ 8,579	$ 3,760	$ 0	$ 0
CHPP	$101,688	$105,024	$110,278	$ 0	$ 0
Tailings Dam	$ 10,785	$ 0	$ 2,522	$ 3,079	$ 0
3 x 6MW Power Plant	$ 26,729	$ 4,474	$ 0	$ 0	$ 0
Power Distribution	$ 6,400	$ 0	$ 0	$ 0	$ 0
Water Supply/Distribution	$ 23,120	$ 4,136	$ 19,451	$ 1,040	$ 0
Coal Haulage & Transportation*	$ 33,140	$ 27,845	$ 0	$ 0	$ 0
Site Infrastructure	$ 6,910	$ 7,387	$ 8,926	$ 9,328	$ 8,926
Other	$ 4,523	$ 5,302	$ 4,951	$17,551	$ 6,211
Total CAPEX	**$217,271**	**$162,748**	**$149,888**	**$30,997**	**$15,136**

* *Includes ER's 50% share of coal haulroad costs, plus $10M for 100 coal haul trucks in 2011*

Unless otherwise specified, all costs reported here are inclusive of VAT and Mongolian duties, import duties, but exclusive of inflation, contingencies, etc. Costs are reported in US$, on a 2010 constant-dollar basis and are un-inflated and un-escalated.

12.2 Proposed Capital Costs: Mining

12.2.1 Introduction

As previously described, the BFS estimated costs under the assumption that Leighton would operate UHG, under a "contract miner" basis, for the first year of mining only; in fact, it is expected that Leighton would operate the mine through the first six years of project "ramp-up".

As before, capital costs were determined through a combination of quoted costs or adjusted cost estimates (e.g., factored historical costs) for major and minor equipment, respectively.

Capital cost estimates for major equipment were provided through Leighton's extensive vendor network, and compared with recent quotations for similar operations in the region. The Leighton group is one of the world's largest purchasers of mining equipment, and is able to realize significant savings in equipment purchase costs. Capital cost estimates are submitted on a "turn-key" basis and include factors such as sea/land freight, insurances, port charges, erection and commissioning. Equipment costs are primarily based on 1st quarter 2010 pricing with exchange rates of 1620MNT:US$ and 1.4US$:EUR applied.

12.3 Proposed Capital Costs: CHPP

The estimating procedures were based on applying supply and construction rates to an estimated quantity take-offs, i.e., bills of materials. The UHG capital cost estimate has been established against the following basis of estimate:

- Quantity take-offs were developed from a combination of preliminary designs and recent "as built" information from the Sedgman project database.
- Productivity rates, equipment prices, labor and material rates were drawn from supplier budget prices and the Sedgman cost database for current projects.
- Design, project management and project preliminaries are estimated based on previous experience.

As described previously, the CHPP will be bought online in a phased approach. Table 12.2 is a direct cost capital breakdown for the phases.

Table 12.2 Direct Cost Capital Breakdown for Four Phases[12] ($000)

	5Mtpa	10Mtpa	Rail Int.	15Mtpa
Raw Coal Handling	$ 0	$ 9,602	$ 0	$ 3,682
CPP	$ 0	$23,858	$ 0	$23,127
CPP Services	$ 0	$ 707	$ 0	$ 599
Reject Handling	$ 0	$ 3,711	$ 0	$ 71
Product Handling	$ 0	$ 4,082	$38,009	$ 8,300
Train Loadout	$ 0	$ 0	$ 1,522	$ 0
General	$ 0	$13,577	$ 1,477	$ 562
Earthworks	$ 0	$ 131	$ 5,044	$ 825
Allowances	$ 0	$19,749	$31,555	$26,035
Duties	$ 2,208	$ 1,615	$ 1,115	$ 1,230
TOTAL	**$78,325**	**$77,033**	**$78,723**	**$64,430**

Based on the proposed project implementation plan, the projected capital expenditure cashflow for the five year period is summarized in the Table 12.3.

12 Exclusive of VAT, duties and contingencies

Table 12.3 Phased Capital Cost Expenditure Cashflow Summary ($000)

	2010	2011	2012	2013	2014
5Mtpa Exp Phase	$ 73,094	$ 1,692	$ 0	$0	$0
10Mtpa Exp Phase	$ 28,593	$ 56,143	$ 0	$0	$0
Rail Int Phase	$ 0	$ 24,745	$ 61,850	$0	$0
15Mtpa Exp Phase	$ 0	$ 22,444	$ 48,428	$0	$0
TOTAL	**$101,688**	**$105,024**	**$110,278**	**$0**	**$0**

12.4 Proposed Capital Costs: Water Supply and On-Site Distribution

The total estimated capital costs to secure the water supply infrastructure (and perform all necessary exploration) are summarized in Table 12.4. This accounts for revisions to the design made since publication of the BFS, to account for additional water requirements arising from a more aggressive ramp-up schedule. Also included are exploration costs to develop the Naimdai depression, an additional source of water that will be required.

Table 12.4 Water Supply and Distribution Capital Cost Expenditure Summary ($000)

	2010	2011	2012	2013	2014
Capital Cost ($)	$23,120	$4,136	$19,451	$1,040	$0

12.4.1 Exploration Costs

The necessary future exploration costs are to account for such items as land surveying, geophysical surveying, drilling, logging and installation and analysis of exploration wells.

12.4.2 Water Supply Infrastructure

The capital costs for the water supply infrastructure (off-site water supply as well as site distribution) includes pumps, HDPE and steel pipeline, construction, power supply, a site distribution system and EPCM services.

12.5 Proposed Capital Costs: Power Generation

12.5.1 Power Generation (3 x 6MW)

The estimated capital costs are based on updated costs, as summarized in Table 12.5.

Table 12.5 Power Generation and Supply Capital Cost Expenditure Summary ($000)

	2010	2011	2012	2013	2014
12 MW Power Plant	$23,746	$ 0	$0	$0	$0
Additional 6 MW turbine	$ 2,983	$4,474	$0	$0	$0
TOTAL	**$26,729**	**$4,474**	**$0**	**$0**	**$0**

In addition, $6.4M is required in 2010 for installation of an on-site distribution line and sub-station.

12.6 Proposed Capital Costs: Rail

Capital expenditures on the railroad are scheduled to begin in 2011, in order to ensure that rail service may begin at the start of 2013. These capital costs are not included in mine project capital cost schedule. Railroad capital costs are inclusive of VAT, without contingencies, are in 2010 constant US dollars.

Table 12.6 Railway Capital Cost Expenditure Summary

	2010	2011	2012	2013	2014
ERR Capex ($M)	$0	$380	$288	$21	$8

13. ENVIRONMENTAL MANAGEMENT

There are several potential impacts from the project that must be addressed by ER, however, at this time all identified impacts are manageable with established practices used in these types of projects.

An Environmental and Social Action Plan (ESAP) has been developed by ER to mitigate the negative aspects of the project and enhance potential benefits of the project. Although not finalized, several mitigation measures of major environmental impacts discussed in this report are provided below.

13.1 Environmental Policy: General

ER is fully committed to careful environmental management in order to address some of their stated, core values, including a commitment to perform environmentally and socially, responsible mining operations. Such a management plan covers efficient use of resources, reducing the environmental footprint of the operations, controlling greenhouse gas emissions, recycling and reducing waste and accounting for all environmental aspects of mine closure,

ER have commissioned or performed over 30 individual studies since 2008, to ensure regulatory compliance and adherence to their stated core environmental values.

Legislative platforms include all applicable Mongolian regulations, as well as guiding policies from World Bank/International Finance Corporation (WB/IFC, respectively), Asian Development Bank (ADB) and the European Bank for Reconstruction and Development (EBRD).

ER's core documents include:

- Environmental and Social Impact Assessment (ESIA) for UHG Phase I and II
- Environmental Impact Assessment (EIA)
- Monitoring program documents (baseline data collection)
- UHG Social Impact Assessment
- Integrated Environmental Management Plan (IEMP (ESMP))
- Integrated Environmental Monitoring Program (IEMP)
- Environmental and Social Action Plan (ESAP)
- Mine Closure & Rehabilitation Plan (MCRP)
- Detailed Water Management Plan (DWMP)
- Public Consultation and Disclosure Plan (PCDP)
- Resettlement Action Plan (RAP)
- ESIA/ESAP/IEMP Performance Reports

13.2 Air Quality

A Dust Management Plan (DMP) has been proposed. This takes into account the fact that the Project is located in a desert environment with ambient (pre-Project) dust levels that often exceed Mongolian standards. The prime objective of the DMP is to reduce dust emissions from the Project to the extent practicable, in an effort to prevent Project activities from causing ambient dust levels to exceed Mongolian standards.

13.3 Flora and Fauna

A Flora and Fauna Management Plan (FFMP) has been developed for the project to protect the natural environment and ecosystems.

13.3.1 Flora

The Project may impact protected plants therefore protection measures need to be considered. For example, the use of rare species and the seeds of rare species in rehabilitation will be considered during reclamation.

13.3.2 *Fauna*

Eight protected species of mammals, six protected bird species, and two protected reptile species have a reasonable potential to be present within the Project area, and efforts will be made to ensure their protection in accordance with Mongolian regulations,

13.4 Water Resources

Effective water management is an essential part of ensuring the operational integrity of the Project and of limiting negative environmental impacts associated with the Project during construction and ongoing operation. A Water Resources Management Plan has been developed for the project. The objectives of this Water Management Plan are to:

- Interface with the Erosion and Sediment Control Management Plan.
- Interface with the FFMP.
- Limit Project impacts in nearby areas resulting from groundwater abstraction, particularly on any surrounding sensitive groundwater dependent ecosystems (e.g. springs) and on herder livelihoods.
- Limit impacts of the railway on water resources.
- Minimize the potential for Project impacts on alteration of natural surface water flow patterns/hydrology, including loss of catchment flows due to interception.
- Minimize the potential for Project activities to result in pollution of surface water and groundwater sources.
- Provide sufficient water for dust suppression, process water and other uses.

13.5 Water Quality

A comprehensive Waste Management Plan (WMP) has been developed for the project to reduce impacts to water quality. Key objectives of this WMP are to:

- Limit the volume of wastes generated and provide for reusing, recycling, or disposing of wastes that cannot be avoided in a manner that reduces negative impacts to human health and the environment.
- Provide for monitoring and assessment of the waste management process.

The CHPP fine and course reject material may be a source of contamination, especially if it is acid-forming material. Fly ash and bottom ash are capable of introducing trace materials into surface and groundwater if not managed properly. Therefore, an ARD Management Plan shall be developed to prevent pollution resulting from acid generation from coal mine products including wastes from processing facilities. Facilities will be established to manage mine waste such so as to control acid generation drainage during mine operations and post closure. The acid forming potential of all mine and processing wastes during operations will be quantified to verify management measures are being appropriately applied.

14. OCCUPATIONAL HEALTH & SAFETY

ER is committed to goal of zero accidents for all employees and contractors working on site as well visitors who enter, or are near to, the mine site and operations. To achieve this goal, ER has implemented an Occupational Health & Safety (OH&S) policy that sets out standard approaches to risk minimization and operating procedures for reporting of all incidents, including near misses. Visitors to the UHG mine site are briefed on OH&S procedures and receive induction training that includes risk identification. Policies are in place to facilitate subcontractor's compliance with the overall mine OH&S plan. All Contractors are required to meet ER's OH&S standards and policies and to report all incidents and near misses.

14.1 Mine Safety

Leighton is currently operating in coordination with ER to ensure that UHG activities are controlled in such a way as to provide a safe and healthy working environment whilst satisfying Mongolian legislative requirements, industry best practice and client's expectation.

A training program is in development and currently being implemented that will ensure all employees may conduct their work in a safe manner. In addition, it is a requirement of Mongolian Labour and OH&S law that all employees are to take safety and hygiene training annually. As part of the Safety Management System implementation, all staff, employees and visitors are subjected to a drug/alcohol testing program.

14.2 CHPP

This project has necessarily required a formal process risk identification and management in the CHPP design. This study included reviews during the design phase and secondly recommendations from our operations experience on design improvements.

14.3 Work Camp Health and Safety

Workers safety during construction and while living in work camps will be managed consistent with Mongolian laws. Contractors' health and safety programs will be required to meet these standards. Similar requirements will be met by ERR as they pertain to work camps associated with Railway construction.

14.4 Contractors Health and Safety

The *Contractors Base EHS Requirement Manual* shall be provided to all Contractors performing work for UHG Project. Its prime purpose is to provide basic information relating to the HSE standards and the safety behaviours expected from the Contractor while performing work at the ER project. It also references project policies, procedures and other information relevant to a contracting relationship with ER. The UHG Project management, at all levels, is dedicated to assuring that its employees and contractors are provided a safe and healthy place to work on each of its projects.

15. RISK ANALYSIS

15.1 Mining Risk

In the previous BFS study, Norwest evaluated each aspect of the mining operation and assigned a Risk Severity level to each ranging from no impact to extreme. No aspects of the mining operations were found to necessitate an extreme rating. With the mine now in operation, Norwest has updated the risk analysis with a description of the mitigating measure ER and Leighton have implemented in order to address project risk.

15.1.1 Project Predevelopment

Primary project predevelopment risk consisted of start-up delays to the project arising from delays due to securing equipment, government approvals and construction of infrastructure.

Since the initial risk analysis, the risk of start-up delay has been mitigated through effective project management and building and maintaining of relationships with contractors and vendors. In addition, ER has been responsive to the requirements of the government with respect to permitting, etc.

15.1.2 Overburden Production

Risks were initially identified that were related to the nature of the overlying waste. Specifically, these risks arose from issues such as varying physical and geotechnical properties of waste, equipment availability and groundwater issues. The risks included lower-than-expected equipment productivities, increased operating costs, incorrect equipment selection, slope stability issues, etc.

These risks are currently being mitigated in several ways. There is currently a highly detailed precise drilling program underway that consists of drilling holes on an approximate 50m by 50m pattern in the area of short and medium-term interest. This is being supplemented with a larger-scale 500m by 500m drilling program. The primary purpose of these drilling programs is to better delineate coal quality and structure; however, they will also provide useful information concerning the nature of the overlying waste. In addition, Leighton is performing detailed scheduling and mine planning in order to optimize the use of equipment according to waste material type.

15.1.3 Coal Mining

Previously identified risks relate to the variability of coal seams and problems related to marketing of coal products. This could lead to decreased or inconsistent production level, increased mining costs, increased coal dilution, etc.

As above, an aggressive drilling program (currently underway) is doing much to mitigate the risks associated with coal mining through improved understanding the of the coal deposit, quality and structure. In addition, Leighton is performing detailed mine planning and scheduling.

15.1.4 Overburden Dumps

The primary risks identified for the overburden dumps included slope failure, and Acid Rock Drainage (ARD) as well as erosion control and other environmental effects.

The risks of slope failure are being mitigated through site inspections of the dumps. Further geotechnical analysis of the waste material will be implemented in response to any slope stability problems, if/when they occur. Although the potential waste characterization testing indicates that ARD is unlikely. Although the effects of ARD at a mining operation can be serious, with the relatively low amount of rainfall in the South Gobi it is highly unlikely that ARD would be a problem at UHG. Environmental concerns due to sediment laden runoff from the overburden dumps is being addressed though the use of drainage control structures such as diversion ditches, channels and sediment storage ponds. Such structures are adequately designed to convey water without themselves being eroded, and will be maintained and cleared of accumulated sediments and other debris.

15.1.5 Rejects Disposal

There is a risk that coarse reject material, which is to be disposed of in the overburden dumps, may be subject to rapid oxidation and spontaneous combustion. This could lead to air quality and safety issues, or lead to instabilities in dumps if coarse reject materials were to be mixed with other waste.

Spontaneous combustion of coal is a common issue at coal mines, with which Leighton are familiar and experienced. Spontaneous combustion of coarse rejects is somewhat rarer and is not expected. Spontaneous combustion is easily managed by restricting exposure to air and surface moisture. Should spontaneous combustion be observed, then Leighton will mitigate the effects by exercising proven control methods such as encapsulating the rejects material in the overburden waste dumps, or inundating it with water and removing it from contact with other material that may be susceptible to spontaneous combustion.

15.1.6 Maintenance

Risks associated with maintenance include decreased availability and the skill level of maintenance personnel. While decreased equipment availability has a serious detrimental effect on equipment productivity, and therefore operating costs, it is noted that Leighton are a world-class contractor and are considered highly competent in maintaining and operating equipment. It is therefore considered highly unlikely that ineffective maintenance will be a serious issue at UHG.

Leighton have implemented a detailed and proven maintenance program on all their equipment that take into account such issues as scheduled downtimes, spares availability management, and an effective training and mentoring program in order to build and maintain the high skill level that is required. Likewise, the CHPP will be operated by Sedgman, who are also a world class contractor and considered highly competent in design, construction, operation and maintaining of CHPP and related infrastructure.

15.1.7 Equipment

Risks related to equipment include decrease or delayed production due to delays in receiving equipment, spares parts or consumable supplies. This is mitigated by ER and it's contractors through effective long range planning that allows for early negotiations and ordering of the required materials. This either ensures that equipment, parts and supplies are either on hand when needed, or that there is enough time for alternate plans to be made should orders fail.

It is noted that Leighton are among the world's biggest customers of Caterpillar and Leibherr, and therefore gain a purchasing advantage over their competitors, which translate to better costs as well as shorter lead times and other concessions. This will be to ER's advantage. In addition, Sedgman are undertaking a 'readiness study' which will analyze and the requirement for holding spare parts and will streamline the compete supply chain to ensure the highest level of parts and supplies availability.

15.1.8 Personnel

The primary risks with personnel are a decrease in production, or increase in operating costs, related shortages in personnel or decreased labour productivity. This may arise from a failure to attract quality employees, a lack of appropriate training, or high employee absenteeism or turnover.

Measures taken to mitigate this include a competitive remuneration and benefits package, with the majority of mine operators travelling from UB on a "fly-in, fly-out" basis. Whenever possible, ER also hires workers from nearby Tsogttsetsii soum, and also plans to construct employee housing at Tsogttsetsii that will house mine workers and their families. In the long term, ER will develop the local labour pool by maintaining excellent relations with the nearby communities, and assisting with the education, health and infrastructure needs of the local population. Currently, mine workers are housed in the man camp, which includes facilities for messing and recreation and ER allots workers vacation and leave, in order to spend time with their families. ER operates a “dry camp”, with a strict no-alcohol or drugs policy that is rigorously enforced, as well as a comprehensive employee health and safety program. Experience has shown that such policies lead to reduced absenteeism and turnover, as well as increased employee morale and productivity.

In addition, ER has set-up an intensive training program for its employees. Leighton operate a “virtual” training facility that reproduces the experience of operating heavy equipment. This allows safe exposure the fundamentals of equipment operation. ER also recognizes that training of the local workforce is an important component of its long term plans for the region, and plans on establishing a technical training college that will equip the local labour pool with the tools they need to compete for the highly-skilled job requirements of the Project.

15.2 Environmental and Social Risk

In the previous BFS a standard qualitative matrix was used to assess potential impacts of the project. Risk ratings for various aspects of the project were assigned based upon likelihood of occurrence and potential consequences. The majority of environmental and social impact risks identified at that time were rated “Low” or “Medium” risk. No risk was identified as being “Extreme”. At the time that the qualitative matrix was generated it was noted that all identified impacts were manageable with practises typically employed in other mining projects of the nature of UHG.

The only “environmental features” that were ranked as a “high” risk, were Air Quality, and Fauna/Habitats.

15.2.1 Analysis of Impacts: Air Quality

Project emissions that may affect air quality fall into several broad categories:

- Dust emissions from open areas of disturbance such as roads, stockpiles, waste dumps, etc.
- Particulate and gaseous emissions from spontaneous combustion of coal stockpiles.
- Point source emissions from coal fired power plants or stationary diesel generator-sets.
- Non-stationary emissions from mine equipment and vehicles.

Particulate Emissions

The South Gobi region, with its arid conditions and strong winds, is subject to naturally occurring dust storms that periodically exceed air quality standards for dust and particulate emissions. Such occurrences are likely to increase in the project site because of the increased area of disturbance from the mine and related infrastructure. Other potential sources of particulate emissions include coal dust (generated wherever coal is subject to mechanical handling) as well as fly and bottom ash from the power plant. Dust and particulate emissions can have an adverse affect on the safety of mine workers and local residents, as well as on vegetation.

The affects of particulate emissions is mitigated in several ways. One effective method, very common in the mining industry, is through the use of application of surface water to particulate-generating areas of disturbance. Water may be applied through a variety of different methods, including the use of "water trucks". Surfactant chemicals may also be used to enhance the effectiveness of water spraying.

Particulate emissions from the pit and the CHPP infrastructure will be mitigated through the use of water sprayers, covered conveyors, dust suppression at transfer points and appropriate dump height control and design. Coal ash will be stored in overhead bins at the plant, then hauled in dedicated trucks for disposal in the pit, with fugitive dust controlled with the use of covers or water suppression. Disposal of ash in the pit will be managed and carefully scheduled so that open working area is kept to a minimum. Once a burial area, or "cell" is completed, it will be covered with a layer of waste to prevent further emission.

Gaseous Emissions

Gaseous emissions of concern include CO_2, NO_x, SO_2 CO and volatile organic compounds (VOC). Given the low-level of pre-existing industrialization in the region, baseline concentration of gaseous emissions are low, and does not routinely exceed ambient air quality standards. In addition, control technology on equipment is widely available and ER has pledged to implement all measure required in order to meet or exceed standards. For these reasons, gaseous emissions are not considered to pose the level of risk that particulate emissions do. Regular testing and monitoring will be performed to ensure that compliance is met and that there are no adverse safety issues in the workplace.

15.2.2 Analysis of Impacts: Fauna/Habitats

Across the UHG mine site area there were three species of mammal listed as being under a protected status within the Mongolian Red Book. In addition, there is one species of bird listed as protected in Appendix II of the Convention on International Trade in Endangered Species (CITES).

Several steps will be taken in order mitigate or minimize the impacts of the mine site on local fauna. The original ecosystem and fauna will be considered before disturbance of any area, and again when considering reclamation. Disturbed areas will be reclaimed progressively to ensure continuation of habitats and protection of fauna. Both baseline monitoring and regular on-going monitoring of fauna will be performed in order to understand the impacts of the mining operations. Finally, fencing will be installed around holes and trenches in order to protect livestock and wild animals.