TECHNICAL REPORT COAL GEOLOGY, RESOURCES AND RESERVES OVOOT TOLGOI: A PRODUCTION PROPERTY. OMNOGOVI AIMAG, MONGOLIA

Submitted to:
SouthGobi Energy Resources Ltd.

October 21, 2009

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NORWEST CORPORATION

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October 21, 2009

File No. 4327

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Subject: Cover Letter to Ovoot Tolgoi Technical Report Stating Resources and Reserves

Dear Sirs:

This report summarizes the Norwest Corporation's (Norwest) findings of a pre-feasibility level study to determine coal resources and reserves at the Ovoot Tolgoi Mine, located in the Omnogovi Aimag (South Gobi province) of Mongolia. Norwest understands that this report will used as the basis of disclosure to the Toronto Stock Exchange (TSX) and the Securities Commissions of various Canadian provinces. In addition, this report will be used as part of SouthGobi Energy Resource's (SGER) efforts to place an Initial Public Offering (IPO) with the Hong Kong Exchange (HKEx).

The Technical Report "*Coal Geology, Resource and reserves, Ovoot Tolgoi; A Production Property, Omnogovi Aimag, Mongolia*" currently dated October 21, 2009, is a summary of pre-feasibility level study on the project. In conducting this work, Norwest has relied upon information gathered through various exploration programs from 2005 through 2008, some of which Norwest was directly involved with. Norwest has also relied upon its prior experience with the Ovoot Tolgoi Project, as well as its experience with similar studies on coal mines within Mongolia. In addition, Norwest Qualified Persons (QPs) have both made personal, current, inspections of the project site and have gathered relevant data. Finally, SGER has provided data used in the estimate of resources and reserves.

This Technical Report was prepared in accordance with Canada's National Instrument 43-101 *Standards of Disclosure for Mineral Projects*, and meeting the criteria set forth in Form 43-101(F1). The NPV calculations set forth in this report is used by us for the purpose of establishing mineable reserves in accordance with Form 43-101 (F1). As such, NPV calculations should not be interpreted to represent the value of the Company.

Yours sincerely,

NORWEST CORPORATION

Alister Horn
Project Manager

Enclosures: None

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3 SUMMARY

3.1 Background

Ivanhoe Mines Ltd. (Ivanhoe) and its wholly owned subsidiary, Ivanhoe Mines Mongolia, Inc. (IMMI) began exploration activities at Ovoot Tolgoi in 2004. Norwest Corporation (Norwest) was commissioned to manage and provide technical supervision to a coal exploration program initiated in February, 2005. Ownership of the Ovoot Tolgoi property was transferred to Southgobi sands, LLC (SGS), a wholly owned subsidiary of Ivanhoe, during 2007. Subsequent to the transfer, Ivanhoe sold its coal division to SouthGobi Energy Resources Ltd (SGQ), formerly Asia Gold Corporation (Asia Gold), including SGS. In April, 2008, with basic infrastructure already constructed in-place, the Ovoot Tolgoi Mine (Ovoot) began stripping and producing it's first coal. Coal was stockpiled on site, with initial coal sales beginning September, 2008. Through June, 2009, total coal sales are approximately 0.6 million tonnes (Mt).

Unless otherwise specified and except in cases where relevant, the term 'SGQ' will be used in this report to denote any company owned by SouthGobi Energy Resources Ltd, that controls, via it's subsidiary SGS, exploration and mining leases concerning the Ovoot Tolgoi project.

In accordance with National Instrument 43-101, Norwest has used the referenced document, the Canadian Institute of Mining, Metallurgy and Petroleum's CIM "Definition Standards on Mineral Resources and Reserves" adopted by CIM Council on November 14, 2004 and referenced the Geological Survey of Canada Paper 88-21 "A Standardized Coal Resource/Reserve Reporting System for Canada" (GSC Paper 88-21) during the classification, estimation and reporting of coal resources and reserves for the Ovoot Tolgoi Property.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

3.2 Estimate of Resources

Norwest designed and managed the continuation of exploration activities in 2006 under the direction of SGQ. Through 2006 this program saw the completion of a total of 341 exploration boreholes, in addition to several holes drilled as part of hydrological and geotechnical characterization programs. An additional 89 exploration boreholes was completed between 2007 and 2008 for the purposes of increasing resource confidence. The level of knowledge available for SGQ-controlled Ovoot Tolgoi resource areas is sufficient for the calculation of the resource and reserve values presented in this report.

The current report is inclusive of exploration activities undertaken up to 2008 end-of-year. The resource statement presented in this report is based on information as of June 1, 2009. Norwest has previously provided Technical Reports for resource estimates on this property in accordance with National Instrument 43-101.

The exploration drilling conducted during 2007 and 2008 was conducted under the supervision of SGQ and not managed by Norwest. Norwest, however, has validated the geologic data through review of the raw basic data, field verification of drill holes and review of the procedures employed by SGQ.

The Ovoot Tolgoi coal deposit is located in the southwest corner of the Omnogovi Aimag (South Gobi Province) of Mongolia. The deposit is within the administrative unit of Gurvantes Soum, 320km southwest of the provincial capital of Dalanzadgad and 950km south of the nation's capital Ulaanbaatar (Figure 4.1).

Resource areas detailed in this document are adjacent to the existing Nariin Sukhait Mine, owned and operated by MAK, a Mongolian company (MAK), and MAK-Qinghua, Mongolian/Chinese Joint Venture (MAK-Qinghua). The operations currently consists of several open-pit mines on its 28.8km^2 mining license. The pits are operated directly by MAK, with one of the pits operated as a joint venture between MAK and Inner Mongolia Qinghua Group, a Chinese company. The Ovoot Tolgoi resource is contained within an SGQ-controlled mining license that covers 9,308 hectares (Ha).

The Ovoot Tolgoi property is situated in the Oboto Hural Basin, located in the western part of the South Gobi province. Intermittent coal outcrops believed to be late Permian in age occur along a strike-length of 100km in the upper plate sequence of an arcuate, east-west trending thrust fault, the dominant structural feature of the basin. Structural geology at Ovoot Tolgoi shows evidence of folding and faulting. Individual coal seams however, are still relatively intact. The deposit is classified as "Complex" based on criteria set forth in the Geological Survey of Canada Paper 88-21.

Exploration work by SGQ has identified five different coal series, or packages, consisting of 1 or more coal seams within a distinct stratigraphic horizon. Most of the work has focused on identifying resources within the thick seams of the 5 Series, with additional resources in the 8-, 9-, and 10-Series above this.

Resources on SGQ holdings at Ovoot Tolgoi are found in two different resource areas, referred to as the Sunrise and Sunset Fields (formerly the South-East and West Fields, respectively). To facilitate the estimation of resources in the Ovoot Tolgoi Property, Norwest developed geological 'block models' for the Sunrise and Sunset Fields using *MineSight®* software. Key horizons (surfaces) were modeled to provide the necessary limits for volume estimation. Volumes were converted to tonnages by application of density values representative of the coal seams as derived from available coal quality data.

Estimated resources for these areas are as shown in Table 3.1. The resources identified through the current exploration program have been determined to be suitable for surface mining to a maximum depth of 250m (Table 3.1) and potential underground mining between a depth of 250m to a maximum depth of 600m. The resource statement is current as of June 1, 2009. Coal is of high volatile bituminous B to A in rank. Identified coal products include a high quality thermal coal, a metallurgical blending coal and a semi-soft coking coal.

Table 3.1
Updated In-Place Coal Resources Summary*

Area	**Type**	**Resource Limits Depth (m)**	**ASTM Group**	**In-Place Resources (Million Tonnes)**		
				Measured	**Indicated**	**Inferred**
Sunrise Field	Surface	Surface to 250m	hvB to hvA	53.8	15.7	4.9
Sunset Field	Surface	Surface to 250m	hvB to hvA	82.1	19.4	8.1
Sub-Total				**135.9**	**35.1**	**13.0**
Sunrise Field	Underground	250m to 600m	hvB to hvA	11.2	5.2	11.2
Sunset Field	Underground	250m to 600m	mhB to hvA	34.6	27.8	9.3
Sub-Total				**45.8**	**33.0**	**20.5**
Total				**181.7**	**68.1**	**33.5**

* Based on information as of June 1, 2009

3.3 Estimate of Reserves

Previous work by Norwest has been recently repeated to take into account the additional drilling and updated geologic model and resources base.

As of the publication of this study mining operations at Ovoot are currently spread over two pits in the Sunset area, and most of the mine infrastructure is in place or is currently being constructed. Consistent with the proposals of the earlier work by Norwest, the mining method utilizes a combination of mining trucks matched with hydraulic mining shovels (HMS) and front-end loaders (FEL) to strip waste and mine coal. It is proposed that this method continue through the Life of Mine (LOM).

Installed mining equipment is comprised of a mid-sized (13.5 m^3) hydraulic shovel and (10 m^3) front end loader (Liebherr 994 and LeTourneau 950, respectively), matched with a minimum of six Terex 91-tonne capacity mining trucks (TR100) and a suite of support equipment. In addition, a larger hydraulic shovel (Liebherr R996, 34 m^3 bucket) is on-site. The current pre-feasibility study proposes that this equipment continue to be used, with primary stripping to be accomplished using the larger 34 m^3 bucket-sized HMS matched with 218t-class mining trucks (Terex MT4400).

Three coal products are to be produced; a hard coking (or metallurgical) coal (HCC), a premium coal (PRE) that would potentially be used for PCI coking coal or a high-quality thermal coal, and a thermal coal product (THE) for use in power generation. Production will ramp-up through 2011, and hit “steady-state” by 2012, as shown in Table 3.2.

Table 3.2
Production Ramp-up Schedule

Period	Coal Production
2009	1,000,000 tonnes
2010	4,000,000 tonnes
2011	6,500,000 tonnes
2012 +	8,000,000 tonnes

As described above, a ‘block model’ approach was taken in constructing a geologic model of the deposit using the *MineSight* software. The software was then used in order to apply a Lerchs-Grossman (LG)-based algorithm in order to determine the economically feasible (i.e., optimized for Net Present Value, NPV) portions of the deposit. By applying the optimization tools available in MineSight, Norwest was able to generate a series of phased, or “nested” pits of increasing NPV that describe the broad mining sequence. This sequence served as the basis of a detailed schedule of stripping and coal mining to meet various goals.

Once completed, the detailed mine plan served as the basis of an estimate of operating, capital and indirect costs. This estimate was performed using a combination of historically tracked data from the mine as well as industry averages, adjusted for the region. An independent market study specifically for Ovoot was then used in order to determine reasonable markets and coal prices. With costing and pricing information a cash flow analysis was performed that yielded an estimate of NPVs at various discount rates ranging from undiscounted to 20%, and confirmed the economic feasibility of the project (see Table 3.3). In addition, analyses were performed to determine project sensitivity to such factors as railing the coal to China, assuming an exemption to the current VAT refund law, and changes in key parameters such as coal price, mining costs, etc.

Table 3.3
NPV at Various Discount Rates (8Mtpy)

Interest Rate	**0%**	**8%**	**10%**	**12%**	**15%**	**20%**
Net Present Value ($000)	2,320,177	1,156,318	994,467	862,322	706,242	523,565

With a demonstrated economic viability, a portion of the resource base may be classified as proven and probable reserves, as summarized in Table 3.4. Feasibility of underground mining has not been determined in this study.

Table 3.4
Summary of Estimated Reserves Ovoot Tolgoi Mine

		Surface Mineable Reserves Tonnes in Millions**		
Reserve Area	**ASTM Coal Rank**	**Proven**	**Probable**	**Total**
Ovoot Tolgoi Mine	hvB to hvA	105.0	9.1	**114.1**

* Based on information as of July 1, 2009
** Rounded

4 INTRODUCTION AND TERMS OF REFERENCE

Norwest prepared this Technical Report at the request of SouthGobi Energy Resources Ltd.. Previous work by Norwest at Ovoot Tolgoi was done at the request of Ivanhoe Mines Ltd. The coal division of Ivanhoe and the exploration licenses at Ovoot Tolgoi were sold to SouthGobi Energy Resources Ltd. (formerly Asia Gold Corp) in May, 2007. Southgobi sands LLC, an indirect wholly-owned subsidiary of SouthGobi Energy Resources Ltd., is a Mongolian-registered company created to be the operating company, and holds the licenses and permits. Unless otherwise specified and except in cases where relevant, the term 'SGQ' will be used in this report to denote any company owned by SouthGobi Energy Resources Ltd, that controls, via it's subsidiary SGS, exploration and mining leases concerning the Ovoot Tolgoi project.

This Technical Report has been prepared in accordance with National Instrument 43-101, Form 43-101F1. The report is to describe the coal resources and reserves on SGQ — Ovoot Tolgoi holdings as of June 1, 2009.

This Technical Report utilizes data collected at Ovoot Tolgoi by SGQ and IMMI through 2008. Additional data has been gathered from previous Soviet-Mongolian government studies at Ovoot Tolgoi.

The Ovoot Tolgoi coal deposit is located in Omnogovi Aimag (South Gobi Province) of Mongolia. The deposit is within the administrative unit of Gurvantes Soum, 320 km southwest of the provincial capital of Dalanzadgad and 950 km south of the nation's capital Ulaanbaatar (Figure 4.1). The Ovoot Tolgoi resources and reserves are contained within an SGQ-controlled mining license that covers 9,308 hectares (Ha) (see Figure 4.2).

IMMI initiated coal exploration in the Ovoot Tolgoi area in October 2004, by completing a series of five core holes. Norwest began work on the Ovoot Tolgoi Project in late January of 2005 with a site visit. Norwest oversight of an extensive exploration program in the Ovoot Tolgoi region started in March 2005, and continued in 2006.

The 2006 exploration program at Ovoot Tolgoi was designed to bring the level of knowledge for the identified resource areas on SGQ holdings to the pre-feasibility level for mine planning. In addition to resource definition drilling, the program included investigation of hydrologic conditions, geotechnical engineering rock properties, bulk sampling drilling, and coal quality analyses. Norwest has provided on-site management and technical assistance throughout the program. Additional exploration programs were carried out in 2006 through 2008, concentrating on the Sunrise and Sunset Fields (continued work elsewhere on the trend). These programs were supervised by SGQ.

Qualified persons responsible for this report have personally inspected the Ovoot Tolgoi property. Norwest has either been directly involved in the design and implementation of exploration activities, the processing and interpretation of data, or has closely reviewed the procedures used and reviewed the resultant data.

A personal inspection of the site by the geologist Qualified Person (QP) responsible for resources estimation, Richard Tifft, was performed on June 12th through 13th, 2009. The QP for the mine planning and reserves estimation portion of this report, Alister Horn, made a personal site inspection on April 17th through 20th, 2009.

5 RELIANCE ON OTHER EXPERTS

Norwest has prepared this report for SGQ. The findings and conclusions are based on information developed by IMMI, SGS, SGQ and Norwest from data collected through exploration programs conducted between 2005 and 2008, and incorporation of limited data from earlier programs.

Guidance, on-site management and data validation was provided by Norwest during 2005 and 2006. SGQ provided on-site exploration management during 2007 and 2008. The authors of this report have not relied on other experts in the preparation of this report.

6 PROPERTY DESCRIPTION AND LOCATION

The Ovoot Tolgoi coal deposit is located in the southwest corner of the Omnogovi Aimag (South Gobi Province) of Mongolia at latitude 42° 50’ N and longitude 101° 40’ E. The deposit is within the administrative unit of Gurvantes Soum, 320km southwest of the provincial capital of Dalanzadgad and 950km south of the nation’s capital Ulaanbaatar, shown previously in Figure 4.1. Ovoot Tolgoi is approximately 40 km north of the Mongolia-China border at Ceke — Shivee Khuren border crossing (as the crossing is referred to in China and Mongolia, respectively). The Ovoot Tolgoi Project was formerly known as the Nariin Sukhait Project, and was referred to by that name in previous technical reports.

The SGQ-controlled property surrounds and is adjacent to the existing MAK-Qinghua Mines (inlcluding the Nariin Sukahit mine) operations. These operations currently consist of several open-pit mines on its 28.8 km^2 mining license. The SGQ resource areas discussed in this report are both adjacent to the existing MAK mining license. The various mines are operated directly by MAK, with one of the pits operated as a joint venture between MAK and Qinghua.

Previous work at Ovoot Tolgoi was conducted under the property control of IMMI. The coal division of IMMI and all of its coal exploration licenses (including the exploration licenses at Ovoot Tolgoi) were sold to SGQ in 2007.

SGS, the operating company under SGQ, is a Mongolian-registered company that holds the licenses and permits to Ovoot Tolgoi. The Mongolian government grants Mineral Exploration Licenses (MELs) for a period of three years with the right to extend the period twice for two additional years each. Exploration license holders are subject to various environmental protection obligations including preparation and acceptance of a detailed Environmental Impact Assessment and Environmental Protection Plans, as well the annual posting of a bond equal to 50% of expected reclamation costs (see Section 25). Other obligations are for Exploration License holders to pay a fee and incur a minimum expenditure per hectare of license area (see Table 6.1).

Table 6.1
Mongolian Mineral Exploration License Fees

Year	License Fee (US$/Ha.)	Minimum Expenditure (US$/Ha.)
1	0.10	0.00
2	0.20	0.50
3	0.30	0.50
4-6	1.00	1.00
7-9	1.50	1.50

Following successful exploration, an exploration license holder can apply for a mining license to any portion of the exploration license area. A mining license is granted for a period of 30 years, with the right to extend the period twice for 20 additional years with each extension. The mining license covers both mineral and surface lease rights. Portions of existing MELs held by SGQ were converted to a single Mining License, granted in September, 2007, for the development of an open-pit coal mine. The remaining portions of those MELs (11187X, 9443X and 6359X) are still intact and are current (see Table 6.2).

Table 6.2
Summary of Remaining Exploration Licenses

MEL Number	Remaining Area	Expiration Date
11187X	66,193	May 22, 2012
9443X	34,882	December 28, 2010
6359X	8,589	September 30, 2011

The Sunset Field resource area occupies the area southwest of the MAK license boundary and encompasses the West Pit of SGQ's Ovoot Tolgoi surface mining operation, shown in Figure 4.2. The Sunset Field underground area is the down-dip extension of the Sunset Field. The Sunrise Field surface resource area occupies the area southeast of the MAK license. The Sunrise Field underground resource area is the down-dip extension. Resource areas are indicated in Figures 9.2 and 9.4. The mineable reserves can be seen on Figures 25.1 through 25.7, along with waste dumps, infrastructure and property boundaries.

The MAK southern limit of its lease boundary, as established in the field is assumed to be coincident with the SGQ license boundary. However, Norwest has not verified the ownership and precise location of the MAK mining license. The Mongolian government approved the coordinates for the SGQ mine license, obtained from survey are presented in Table 6.3.

Table 6.3
SGQ Mine License Description

License Number	Licensee	Inception Date	Expiry Date	License Coordinates			Area (Hectares)	Mineral Interest
				Corner	Easting	Northing		
12726A	Southgobi sands, LLC	11-Sept-07	2037	1	101°05'06"	43°01'20"	9,308	100% Coal
				2	101°08'05"	43°01'20"		
				3	101°08'05"	42°59'58"		
				4	101°16'30"	42°59'58"		
				5	101°16'30"	43°01'20"		
				6	101°19'10"	43°01'20"		
				7	101°19'10"	43°01'40"		
				8	101°20'40"	43°01'40"		
				9	101°20'40"	42°58'15"		
				10	101°05'06"	42°58'15"		

The Mongolian Minerals Law (2006) and Mongolian Land Law (2002) govern SGQ's exploration, mining and land use rights for the Ovoot Tolgoi project. Water rights are governed by the Mongolian Water Law, and the Mongolian Minerals Law. These laws allow licence holders to use the land and water in connection with exploration and mining operations, subject to the discretionary authority of Mongolian national, provincial and regional governmental authorities as granted under Mongolian law. SGQ is currently operating under mining license 12726A, as described in Table 6.1 and approved Detailed EIA and EPP documents (see below).

Currently, no known environmental, permitting, legal, title, taxation, socioeconomic, political or other relevant issues that may materially affect potential mining within the confines of the license area. Any coal extracted and sold is subject to a royalty rate of 2.5% and 5% of the sales value for domestic and international sales respectively. In addition to a mining license, SGQ is obliged to have an approved Detailed Environmental Impact Assessment (EIA) and Environmental Protection Plan (EPP). These documents were approved initially in October, 2005, with an addendum completed and approved in March, 2007. SGQ currently has all necessary permits to continue mining operations at Ovoot.

7 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Ovoot Tolgoi deposit is located in south-central Mongolia, approximately 40km north of the border with China, and within the physiographic region of the Gobi Desert. The deposit lies within the administrative unit of Gurvantes Soum within the Omnogovi Aimag or South Gobi Province. The location of Ovoot Tolgoi with regard to population centers and transportation infrastructure is shown in Figure 7.1.

The area currently supports a traditional subsistence economy focused on raising sheep, goats, and camels. The Omnogovi Aimag is the most sparsely populated province in Mongolia with a density of 0.8 people / km^2. The number of persons skilled in the exploration and development of mining properties in Mongolia is limited. To date, SGQ has been successful in recruiting key personnel but, as the development of the Ovoot Tolgoi project continues, it will require additional personnel.

The surface expression of the deposit ranges from flat, gravel-covered desert plains to moderately hilly terrain. Surface elevation ranges from 1,515 to 1,555m above sea level. Vegetation is sparse, consisting primarily of small shrubs and grasses. The region experiences a continental desert climate. Temperature typically ranges from 0° to -30°C in the winter, increasing to 30° to 35° C in the summer months. High winds occur frequently; particularly throughout the spring. Average rainfall is approximately 53mm with most precipitation occurring during the summer months. The weather is acceptable for exploration activities from April through October. Exploration activities are not recommended during the harsh winters, however, the climate allows year-round mining operations.

An on-site airport has been permitted as of September 2006, with construction of the paved runway and terminal infrastructure completed by SGQ shortly thereafter. Ovoot Tolgoi is now accessible via charted aircraft from Ulaanbaatar for a four-to-five day per week crew-rotation and delivery of supplies, as required. Regular air service is also available from Ulaanbaatar to Dalanzadgad. Travel from Dalanzadgad to the property takes approximately seven hours over unpaved roads. All parts of the property can be reached with four-wheel-drive vehicles.

A new rail line was completed and became operational during 2008, connecting the Ovoot Tolgoi area with the interior of China. The railroad terminus is approximately 40km south of the resource areas at Ovoot Tolgoi, at the Chinese border town of Ceke. Coal trucks travel overland from Ovoot as well as the neighbouring MAK-Qinghua mines to the railroad terminus located at Ceke. Electrical power is available from a powerline distributing power from China to various locations at Ovoot. Additional electric power is currently supplied by on-site diesel generators, as required.

No surface water is currently available in the immediate area of the Ovoot Tolgoi deposit. Water for the camp and shop complexes is being supplied from water supply wells drilled during the hydrological investigations. The recently-completed permanent man-camp (see Section 25) has a water treatment facility on-site. Water for dust suppression is available from the pit dewatering.

Waste disposal areas have been identified and approved in the mining permit. Currently, limited screening is being conducted on some of the high ash content coal. SGQ intends to assess the feasibility of upgrading the coal through washing.

8 HISTORY

The first geologic investigations in the Nariin Sukhait region (including Ovoot Tolgoi) occurred between 1951 and 1952. This initial geologic investigation led by V.S. Volkhonina (1952), included mapping at a scale of 1:500,000. Coal was first identified at Nariin Sukhait in 1971 by a Mongolian exploration survey led by D. Dashtseren (1971).

The first comprehensive study of the Nariin Sukhait deposit was undertaken by Exploration Unit No. 15 of Ulaanbaatar Geological Research Group in 1991. This study included field mapping, trenching, the drilling of 34 boreholes, analysis of coal quality, and calculation of resources for the two most promising resource areas, now controlled by MAK-Qinghua. Resources were reported based on the standards of the former Soviet Union, and inferred resources calculated for categories A+B+C1+C2+P1. Inferred resources were reported to the +1450m level, corresponding to 75 to 90m depth. Total inferred resources were reported at 125,519,900 tonnes.

The Russian coal classification system differs from the system recommended in NI43-101 and described in the Geologic Survey of Canada (GSC) Paper 88-21. The Canadian coal system has been tailored to accommodate the wide range of geologic complexity to which Canadian coals are subject. A potential coal resource is first defined by its geologic complexity ("Geology Type") and probable method of mining ("Deposit Type"). Geology Type further dictates the distance between data points (assurance of existence) that is used to classify potential resources into sub-categories of Measured, Indicated, Inferred, and Speculative. Potential resources are quantified based on bulk density, areal extent and seam thickness, and classified further based on their economic feasibility. The Russian coal classification system relies on fewer parameters. Resources are divided into four classes; A, B, C1 and C2. Coal is classified accounting for detail of exploration work, distance form data points, a general qualification of geologic complexity, previous mining and coal testing. The four classes are in descending order of assurance, with 'A' being the most assured.

This historical estimate is relevant in that it provides a resource estimate of the neighboring project area, and is based on an accepted standard widely used throughout Mongolia, and the former Soviet Union. The 1991 study was used to provide a description of the deposit in general and as an indication of the nature of the deposit within the Ovoot Tolgoi project area. When assessing reliability of this historical estimate it should be noted that it was based on a relatively small number of boreholes, and that resources were estimated using a system not compliant with standards set out in NI 43-101. A more comprehensive history of the deposit is included in a publicly available summary report produced by the Mongolian State Geological Centre (Dashkhoral et al, 1992).

Ovoot is a producing mine still in a start-up phase, owned by SGQ and operated by them since April, 2008 with approximately 0.6Mt of coal sales through June, 2009.

9 GEOLOGICAL SETTING

The coal-bearing rocks at Ovoot Tolgoi are late Permian in age. Coal was deposited along the margins of tectonically active continental basins. The region has subsequently undergone Basin and Range style extensional tectonics followed by a period of compressional folding and faulting.

9.1 Regional Stratigraphy and Geologic Setting

The South Gobi region of Mongolia reflects a complex geologic history of continental accretion and Basin and Range style crustal extension. The region is dominated by elongate, east-west trending mountain ranges and intervening basins. The intervening basins comprise sediments of Late Cretaceous to Permian age, overlain by a relatively thin Quaternary gravel layer or thin Aeolian deposit. The mountain ranges separating these sedimentary basins comprise mostly crystalline basement rocks dominated by intermediate to high angle faults that show evidence for both compressional and extensional movement.

9.2 Coal Occurrences

The most prominent feature relating to the coal deposit at Ovoot Tolgoi is the arcuate, east-west trending Ovoot Tolgoi fault. The coal bearing section, interpreted to be late Permian in age, is exposed primarily in a window adjacent to the Nariin Sukhait fault. The only place where the fault is exposed is in the MAK Nariin Sukhait Mine, where it appears as an intermediate angle structure (40-50 degrees) in their West pit. SGQ holdings at Ovoot Tolgoi contain two distinct resource areas within the window of upper Permian rocks, the Sunrise Field and the Sunset Field.

Initial work at Nariin Sukhait (Dashkhoral et. al., 1992) described the existence of 10 coal seams and estimated the overall thickness of the coal bearing section at 1,370 m. Cumulative thickness of the coal was given as a range of 68 to 250m, with the bulk of the resources found within the 5 Seam.

Exploration activities undertaken by SGQ within the Ovoot project area have also focused on the thick coal of the 5 Seam, but additionally have defined further resources in packages of "upper seams" located above this horizon. This work has shown that what was previously named as a single seam often contains a number of discrete coal seams separated by rock partings of highly variable thickness and extent. As such, modeling efforts have required the organization of these coal packages into a number of coal series, as summarized in Figure 9.1. The thick seam originally identified as the 5 Seam in outcrop has retained that designation, but the discovery of splits above and below this has required a number of additional correlatable seams to be designated within what is now the 5-Series.

The remainder of the resource is found in the 8-, 9-, and 10-Series, which each contain a number of discreet coal seams. The No. 4 and No. 7 seams are recognized in a number of drill holes, but do not appear to represent any significant resources. Coal seams 1 through 3 described in the early work at Nariin Sukhait have not been identified on the Ovoot Tolgoi SGQ property.

Interburden both within and between coal series is highly variable at Ovoot Tolgoi. Interburden between the series is generally dominated by sandstones and conglomerates, while the partings within the coals are most commonly mudstones and carbonaceous mudstones.

9.3 Structural Geology

9.3.1 *Sunrise Field*

The Sunrise Field is located on SGQ-controlled land surrounding the SE corner of the MAK mining license. An exploration geology map showing drilling activity to date and coal outcrop lines projected from the current geologic model are shown in Figure 9.2. The 5 Seam is currently being mined by MAK and MAK-Qinghua in this area along the axis of a poorly defined antiform. This structure trends to the southwest from the MAK East Pit, and forms the basis for the SGQ resources here. The coal bearing section is found primarily as a southeast dipping homocline, as shown in cross-section C-C' (Figure 9.3). Coal resources modelled in the Sunrise Field are almost entirely of the 5-Series. This is the primary seam that will be (and currently is) mined.

9.3.2 *Sunset Field*

The Sunset Field is located on SGQ land near the southwest corner of the MAK mining license. Coal resources are found along a southwest striking trend as shown in the Sunset Exploration Geology Map in Figure 9.4. Previous interpretation of structure in the Sunset Field described a southwest plunging antiform. New data, however, has led to the interpretation of a thrust fault system controlling the distribution of coal in this area. This interpretation requires the field to be divided into several distinct resource blocks. The majority of resources are found in the 5-Series coal within a southeast dipping coal-bearing sequence. Additionally, a considerable amount of resources are also found in the upper coals, Series-8, -9, and -10.

Cross-section A-A', shown in Figure 9.5, represents the most structurally complex part of the field toward the southwest end. Current interpretation indicates this area to contain a repeat of the upper series coal seams due to the presence of a thrust fault. The more steeply dipping rocks of the south limb have been moved over the section to the north, where the units flatten out and show a number of small folds and faults. This scenario can be followed to the northeast.

10 DEPOSIT TYPES

The definition of "Deposit Type" for coal properties is different from that applied to other types of geologic deposits. Criteria applied to coal deposits for the purposes of determination of coal resources and reserves include both "Geology Type" as well as "Deposit Type". For coal deposits this is an important concept because the classification of a coal deposit as a particular type determines the range limiting criteria that may be applied during the estimation of Reserves and Resources.

"Geology Type" for coal deposits is a parameter that is specified in Geological Survey of Canada (GSC) Paper 88-21, which is a reference for coal deposits as specified in NI 43-101. Coal "Geology Type" is a definition of the amount of geological complexity, usually imposed by the structural complexity of the area, and the classification of a coal deposit by "Geology Type" determines the approach to be used for the resource/reserve estimation procedures and the limits to be applied to certain key estimation criteria. The identification of a particular Geology Type for a coal property defines the confidence that can be placed in the extrapolation of data values away from a particular point of reference such as a drill hole.

The classification scheme of GSC Paper 88-21 is similar to many other international coal reserve classification systems but it has one significant difference. This system is designed to accommodate differences in the degree of tectonic deformation of different coal deposits in Canada. Four classes are provided for that range.

Norwest has applied the classification scheme of GSC Paper 88-21 to the Ovoot Tolgoi coal deposits in Mongolia. The Ovoot Tolgoi deposit has been subjected to a relatively high degree of tectonic deformation. Coal seams explored to date sit in the hanging wall (upper plate) of an east-west trending, regional thrust fault. The hanging wall stratum has been further modified by secondary folding, normal and reverse faulting. Coal seams within the two fields are typically inclined in excess of 35°. Fold segments and fault-bounded blocks however, generally retain normal stratigraphic thicknesses and continuity. The Geology Type for the Sunrise, and Sunset Fields has been determined to be "Complex".

"Deposit Type" as defined in GSC Paper 88-21 refers to the extraction method most suited to the coal deposit. There are four categories, which are:

1. Surface
2. Underground
3. Non-conventional
4. Sterilized.

The Ovoot Tolgoi deposit is considered to contain both "Surface" mineable and "Underground" mineable deposits.

11 MINERALIZATION

Mineralized zones on SGQ Ovoot Tolgoi license areas are found primarily within a zone of upper-Permian sediments exposed in the hangingwall of the Ovoot Tolgoi Fault as described in Section 9. Mineralization detailed in this report is restricted to the Sunrise Field and Sunset Field resource areas. Early work adopted the seam nomenclature presented by Dashkhoral et al (1992), thereby calling the very thick coal in the middle of the sequence the No. 5 Seam, and naming the upper seams in ascending order. As exploration work progressed, numerous additional seams and splits were discovered within the overall packages of coal previously described. As correlation and modelling has gone forward, coal seams were named and organized into a series basis as shown in Table 11.1. Thicknesses reported are based on drill intercepts and represent apparent thickness.

Table 11.1
Ovoot Tolgoi Property Coal Seam Characteristics

Property	Series	No Seams	Minimum Thickness*(m)	Maximum Thickness*(m)	Mean Thickness*(m)
Sunrise Field	Upper Seams	11	0.6	74	10
	5 Main	1	0.9	157	53
	5 Lower	1	0.6	100	16
	4 Main	1	1.0	30	8
	Upper Seams	60	0.6	31	7
Sunset Field	5 Main & Lower	2	0.6	142	39

* Apparent Seam Thickness

12 EXPLORATION

IMMI began exploration in late 2004 with the completion of 5 boreholes in the Sunrise Field. This program was continued in early 2005 and expanded to include general exploration activities along the entire regional trend as well as resource delineation drilling in the Sunrise and Sunset Fields. The exploration programs in 2006 through 2008 concentrated on the Sunrise and Sunset Fields, but continued work elsewhere on the trend. Exploration activities used to date at Ovoot Tolgoi include:

- Geological mapping
- Satellite imagery
- Geophysical surveys
- Trenching, and
- Drilling.

Geologic mapping was initiated by IMMI in early 2005 and continued during 2006. Mapping and examination of images was used to define the trend of coal outcrops. Additionally, these activities were used to locate coal occurrences in the hangingwall of the Nariin Sukhait fault along the entire length of this structure. Reconnaissance exploration work was contracted primarily to Sapphire Geo Ltd. (Sapphire) and supervised by SQG. Norwest has provided assistance in the review of activities and interpretation of results. The majority of the reconnaissance work was conducted prior to transfer of the mineral exploration licenses to SGQ. Satellite imagery was used in conjunction with the geological mapping to locate surface exposures of coal and identify structures.

Additionally, 3-D and 2-D surface resistivity surveys were used to help locate mineralization in areas of thin surficial cover. Potential targets identified with the above mentioned techniques were then tested with trenches cut perpendicular to the apparent strike, to expose coal seams close to surface.

Trenching has been useful in identifying the near-surface expression of coal seams for locating exploratory drill holes. Coal seam thickness and structure as observed in the trenches are greatly affected by near-surface erosion, alteration, and deformation however. Trenching intercepts have been found to be unreliable sources of seam characteristics and structure, and are not used in resource estimation.

13 DRILLING

Drilling through December 31, 2008 on SGQ Ovoot Tolgoi holdings includes a total of 430 exploration holes completed and 100,393 m drilled. This does not include limited drilling that took place under the Soviet-Mongolian government sponsored exploration programs. This was expanded considerably by IMMI and SGS from 2004 to 2008 (see Section 14 for description of drilling and sampling methods).

All holes have been geophysically logged except where holes have caved. Depending on the equipment used, logs were either examined visually, or interpreted using the geophysical logging software. Drillhole depths were then incorporated into the geologic model. A drilling summary by method and area is presented in Table 13.1.

Table 13.1
Historic Coal Exploration Drilling Activity

Area	Year	Reverse Circulation		Rotary		Core		Combination [1]	
		No. Holes	Meters Drilled	No. Holes	Meters Drilled	No. Holes	Meters Cored	No. Holes	Meters Cored
Sunrise Field	2004 IMMI	—	—	—	—	5	750		
	2005 IMMI	76	14,425	18	2,807	34	5,524		
	2006 SGS	11	4,855	12	1,999	5	1,860	7	NA[2]
	2007 SGQ	—	—	17	3,542	1	253.9	—	—
	2008 SGQ	—	—	—	—	—	—	—	—
Sunset Field	2005 IMMI	70	12,861	17	2,223	13	2,034		
	2006 SGS	48	10,203	0	0	25	5,737		
	2007 SGQ	—	—	23	5,430.6	7	2,699.5	—	—
	2008 SGQ	—	—	—	—	41	23,189.4	—	—
Total		**205**	**42,344**	**87**	**16,001.6**	**131**	**42,047.8**	**7**	**NA[2]**

1 Combination holes with RC and/or PCD rotary and/or core method
2 Meters drilled recorded as RC, Rotary or Core meters

Drill hole core and drill cuttings descriptions, geophysical logs and coal analyses data were used to characterize and interpret the stratigraphy of the Sunrise and Sunset Fields, particularly with respect to the coal seams. All holes were drilled vertically.

Drill hole collars were initially located using a handheld GPS unit. After completion of drilling and logging, surveys were conducted to accurately locate the drill hole position and elevations.

14 SAMPLING METHOD AND APPROACH

The majority of exploration holes at Ovoot Tolgoi have been drilled with rotary techniques which offer the opportunity only to sample drill cuttings. All quality analyses used for modeling have been restricted to core samples, and, for the 2005 through 2008 drill programs, this has been restricted to triple-tube coring equipment.

Reverse circulation drilling has provided cuttings samples of relatively good integrity. Samples were collected at 1m intervals, and the cuttings were laid out in rows on the ground. For examination and logging by the site geologist. A portion of the reverse circulation samples collected was used for basic proximate and thermal analysis as a comparison to the core samples. The remainder have been stored in Ulaanbaatar. A number of additional holes were drilled with a conventional air-rotary system. Cuttings were generally logged in a similar fashion as for reverse circulation drilling.

Core drilling has been used where it is desirable to collect complete representative samples of the coal seams, observe structural details, and to more accurately measure the depths of lithologic contacts. Sufficient quantity of core samples with satisfactory core recovery has been acquired to adequately characterize the most important quality characteristics. Norwest is not aware of any factors that may have lead to sample bias.

Some of the initial core holes at Ovoot Tolgoi were drilled with single-tube Russian made core equipment. The bulk of the core drilling at Ovoot Tolgoi has been done with wireline drilling systems and modern, triple-tube core barrels. All of the triple-tube coring during the 2005 and 2006 drill programs was performed under Norwest supervision. Core logging and sample handling was performed by Sapphire under Norwest supervision. Drilling undertaken during the 2007 and 2008 period has been undertaken and supervised by SGQ. Core logging and sampling for that period was performed by Sapphire. Sapphire's procedures in use during the 2007 and 2008 programs were similar to those they employed in earlier exploration programs. Sapphire has a four year record of providing competent geologists for geologic and geotechnical exploration, sampling and testing, in accordance with defined procedures, developed by Norwest, and implemented in 2005. Logs for reporting geologic data as well as laboratory instruction forms are in English to ensure effective communication, and have been in use since 2005.

Core was retrieved, logged and sealed according to Norwest conventions. Each core run was measured for core cut and recovered. Photographs were taken at 0.5m intervals. Coal showing distinct lithologic variation was sampled separately, as were partings over 0.05m. Otherwise, coal intervals with a uniform appearance were bagged in 0.6m sample increments as per the capacity of the core box length. When zones of core loss greater than 0.1m were encountered, separate samples were collected both above and below the zone.

15 SAMPLE PREPARATION, ANALYSES AND SECURITY

Samples have been collected from drill core and reverse circulation cuttings. These samples were collected and recorded by field geologists employed by Sapphire under the supervision of Norwest during the 2005 and 2006 exploration programs. Sapphire continued the same data collection protocol during 2007 and 2008 under the supervision of SGQ. The collected samples were submitted for analysis using methods that are standard for the coal industry. The specific process and protocol used by Norwest for the Ovoot Tolgoi drilling program is described below:

15.1 Core Drilling Samples

1. Recovered core is measured to determine an overall recovery (reported in percent) by comparing the recovered core length with the coring run length recorded by the driller. Recovered core is measured and compared to the coal interval thickness determined from the geophysical log suite.

2. Recovered coal intervals are sampled using the following criteria:

   i. Coal samples are broken out based on lithologic changes. In zones of uniform coal appearance, samples are bagged about every 0.60m as per the capacity of the core boxes.

   ii. In-seam partings, to a maximum thickness of 0.10m, are included in a coal sample, where the thickness of the adjacent coal beds above and below the parting are both a minimum of twice the parting thickness.

   iii. A parting are sampled separately if it is

   - $>$0.05m thick,
   - Carbonaceous shale, bone or interbedded coal/mudstone
   - Deemed to be $>$50% coal.

3. Collected samples are cleaned of any mud contamination and placed in individual, core-sleeve style, plastic bags. The bags are labeled on the outside with both the core hole and sample number and sealed with plastic tape to prevent excessive moisture loss. Samples are then placed in sequence into waxed-cardboard core boxes. Core boxes are sealed with tape. Core boxes from the 2005 program were transported to IMMI in Ulaanbaatar, then shipped to SGS[1] Mineral Labs in Denver, Colorado (ISO-9000 certified, accredited by the NQA in the United States of America). Core from the 2006 was similarly transported to SGS Laboratories offices in Ulaanbaatar, and then shipped to SGS Laboratories in Tianjin, China (currently holds ISO-17025 certification, accredited by the CNAS, China National Accreditation Service for Conformity Assessment).

At the time of shipment, during the 2005 and 2006 programs, scanned geologic and geophysical logs, laboratory instructions and shipment manifest were forwarded to Norwest's Salt Lake City office. Laboratory instructions and the shipment manifest were in turn forwarded to SGQ in Ulaanbaatar. All records are compared shipment. Core samples undergo a full suite of coal quality testing including short proximate, full proximate, thermal tests, ash analysis, and metallurgical testing. Some select samples undergo washability testing.

[1] SGS North America Inc. (Denver), and SGS-CSTS Ltd. (Tianjin), are international testing and certification service companies, not to be confused with Southgobi sands LLC.

15.2 Reverse Circulation Samples

Samples are collected at 1.0m intervals into plastic bags. The bags are labelled on the outside with both the drillhole and sample number and sealed with plastic tape to prevent excessive moisture loss. Samples are then grouped by hole into larger bags, packaged and transported to Ulaanbaatar for storage at SGS facilities. It is believed that testing of reverse circulation samples was discontinued in 2007.

In coal work additional special security methods for the shipping and storage of samples are not commonly employed, as coal is a relatively low-value bulk commodity.

In the author's opinion, sample preparation and analysis was performed adequately and securely so as to provide unbiased and accurate results.

16 DATA VERIFICATION

Norwest has directly managed the 2005 and 2006 exploration programs from conceptual planning of exploration targets, through data collection, to interpretation and analysis. During that time, Norwest has provided on-site management throughout the great majority of the exploration.

All data collection was done under a defined set of protocols established by the qualified persons responsible for this report. Norwest site geologists were responsible for the training and administration of data collection procedures and were responsible for reviewing all data. Norwest maintained oversight of all data collection throughout those exploration programs, and the qualified persons have visited these operations and reviewed these procedures.

Upon completion of a drill hole, the geologic and geophysical logs were reviewed by a Norwest geologist. All geologic, geophysical, and sampling data was entered and maintained in an electronic database. All mapping was entered and maintained in electronic format on a CAD-based system. Data entry of all geologic data was managed by Norwest at the project site. All electronic data is forwarded on a routine basis to Norwest's office in Salt Lake City. Results from the coal quality testing were added into the database in the Salt Lake office.

Information collected prior to Norwest involvement in 2005 has been supplied to Norwest by IMMI and SGS and has not been directly verified by Norwest.

Exploration drilling data collected during 2007 and 2008 was done under the supervision of SGQ. Norwest visited the site during 2009 and conducted a validation of those data. This validation included the following;

- Verification of drill hole position and elevation by visiting a significant percentage of the sites and taking GPS measurements for comparison with the survey data and topographic maps.
- Review of geophysical logs for validation with the geologic database.
- Review of the coal quality analytical reports for validation with the geologic database.
- Review of selected core logs and core photographs.

In the author's opinion sample preparation and analysis was performed adequately and securely so as to provide unbiased and accurate results.

17 ADJACENT PROPERTIES

SGQ's Ovoot Tolgoi Property surrounds and is adjacent to the Nariin Sukhait Mine, owned and operated by MAK, a Mongolian company, and MAK-Qinghua, Mongolian/Chinese Joint Venture. Operations began at the Nariin Sukhait Mine in 2003. The operation currently mines coal from the No. 5 Seam from two open-pit mines, referred to as the West Pit and the East Pit. Within the past couple of years a third open pit has been established, located approximately mid way between the West and East Pits. Annual production is estimated to be approximately 2 million tonnes per year (Mtpy) transported to customers in China.

The MAK-Qinghua East Pit operations have trespassed and recovered a minor amount of coal from adjacent SGQ holdings. SGQ management has discussed this issue with MAK- Qinghua. No legal action is pending regarding this issue, and SGQ management anticipates cooperation with MAK in the development of SGQ mining at Ovoot Tolgoi.

Information regarding the MAK and MAK-Qinghua operations has been provided by IMMI and SGQ to Norwest. Norwest has been unable to verify this information and the information is not necessarily indicative of the coal resource potential on the SGQ controlled licenses.

Norwest has used a limited amount of data from the MAK and MAK-Qinghua properties in the development of the mineral resource and reserve models used in this report. The resource quantities presented, however, are solely restricted to SGQ holdings. All costs and revenues associated with stripping and mining coal within the MAK lease have not been included in the reserves estimate.

18 MINERAL PROCESSING AND METALLURGICAL TESTING

The equivalent terminology, which will be used in this report on coal at Ovoot Tolgoi, is “Coal Quality and Processing”.

Core samples were subjected to the analyses described below:

- **Proximate Analysis:** Determination of moisture, ash, volatile matter and fixed carbon in a sample. The fixed carbon is determined by difference and the four components total 100%.
- **Sulphur:** Determination of the percent sulphur in a sample. Coal seams at Ovoot Tolgoi have low sulphur contents averaging approximately 1.0%.
- **Thermal Value:** A measure of the heat producing capability of coal measured in Kcal/kg or BTU/lb.
- **Metallurgical Testing:** A series of tests to evaluate the coking characteristics of coal. Tests include the Gieseler Plastometer, Audibert — Arnu Dilatometer, Reactive Maceral Analysis (petrographics), Phosphorous content (P%), Free Swelling Index (FSI), Trace Element Analyses (ppm)
- Hardgrove Grindability index (HGI) determination has been conducted in order to describe the coal handling characteristics
- Trace element analyses in coal expressed as parts per million (ppm) to ascertain the potential for release of deleterious elements following combustion of the coal.

18.1 Regional Quality Characteristics

Composite quality analyses performed to date at SGQ’s Ovoot Tolgoi holdings indicate the coal rank to be high volatile B to A bituminous, based on the ASTM D388 standard. Previous Soviet-Mongolian studies (Dashkhoral et al, 1992) utilized Soviet standards and determined the rank to be of the GJO and IGJO groups, equivalent to high-volatile bituminous coals. High volatile B and A bituminous coals are hard black coals. High volatile B produces between 7,212 to 7,785 kcal/kg and high volatile A produces greater than 7,785 kcal/kg heat output.

The detailed sample analyses undertaken by Norwest has identified the coal at Ovoot Tolgoi to be mixture of potentially thermal and metallurgical grade coals. Regionally, the coal is generally low ash at less than 20 percent (dry basis) and sulphur at or around one percent. When using Free Swell Index as a guide to the metallurgical (coking) properties of the coal (based on the criteria of potential customers) there is considerable range in values from non-coking (less than 3) to coking (greater than 4). Inherent (or residual moisture) in the coal remains at less than 2 percent of the coal.

18.2 Coal Quality

Coal quality is observed to be similar at both the Sunrise and Sunset areas. Seam designations vary between fields.

Drilling activities at Ovoot Tolgoi are summarized in Section 14. A total of 442 drill holes (including 12 water holes/wells) have been completed in the resource areas at Ovoot Tolgoi through the end of 2008. Of this total, 105 core holes have contained samples suitable for quality analyses, as shown in Table 18.1.

Table 18.1
Drill Holes on the Property

		Core Quality Holes	
Resource Area	**Total Number of Drill Holes***	**Number of Core Holes used for Quality Analysis**	**Percentage of Quality Holes**
Sunset Field	242	75	31
Sunrise Field	200	30	15
Totals	**442**	**105**	**24**

* Includes 12 hydrological holes

Exploration and modeling activities to date have defined multiple seams in both the Sunrise Field and Sunset Field resource areas. These seams have been organized into a coal series basis as discussed in Section 11. A summary of general coal quality values for each of the resource areas are organized by coal series is presented in Table 18.2 & 18.3.

Table 18.2
Summary of in Place Raw Coal Quality for Sunrise Resource Area

Seams	Moisture (AD)%	Ash %	Sulphur %	GCV Kcal/kg	FSI	Volatiles %
4	0.84	21.79	0.67	6,246	2.0	27.18
5 Lower	1.03	15.22	1.19	6,749	3.8	31.26
5	1.25	14.15	1.01	6,804	3.2	31.53
Upper Seams	1.29	19.13	1.17	6,271	2.6	30.79
Surface Total	**1.24**	**16.24**	**1.07**	**6,592**	**3.0**	**31.12**
5 Seam Underground	**0.72**	**13.10**	**0.95**	**6,976**	**3.5**	**31.84**
Grand Total	**1.14**	**15.64**	**1.05**	**6,666**	**3.1**	**31.26**

Table 18.3
Summary of in Place Raw Coal Quality for Sunset Resource Area

Seams	Moisture (AD)%	Ash %	Sulphur %	GCV Kcal/kg	FSI	Volatiles %
5 and 5 Lower	1.20	7.69	0.62	7,476	4.4	32.37
Upper Seams	1.20	18.96	1.16	6,443	3.6	30.59
Surface Total	**1.20**	**16.45**	**1.04**	**6,673**	**3.8**	**30.99**
5 and 5L Underground	**1.20**	**8.28**	**0.49**	**7,509**	**5.0**	**32.28**
Grand Total	**1.20**	**13.34**	**0.83**	**6,991**	**4.2**	**31.48**

19 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

19.1 Approach

In accordance with National Instrument 43-101, Norwest has used the referenced document, the Canadian Institute of Mining, Metallurgy and Petroleum's "CIM Definition Standards on Mineral Resources and Reserves" adopted by the CIM Council on November 14, 2004 and referenced the Geological Survey of Canada Paper 88-21 "A Standardized Coal Resource/Reserve Reporting System for Canada" (GSC Paper 88-21) during the classification, estimation and reporting of coal resources and reserves for the Ovoot Tolgoi Property.

19.2 Coal Resource Estimation

The term "resource" is utilized to quantify coal contained in seams occurring within specified limits of thickness and depth from surface. The resource estimations contained within are on a clean basis. i.e. as an in-situ tonnage and not adjusted for mining losses or recovery. However, minimum mineable seam thickness and maximum removable parting thickness are considered; coal intervals not meeting these criteria are not included in the resources.

Resources are classified as to the assurance of their existence into one of three categories, Measured, Indicated or Inferred. The category to which a resource is assigned depends on the level of confidence in the geological information available. GSC Paper 88-21 provides guidance for categorizing various types of coal deposits by levels of assurance. These were considered by the Qualified Person during the classification of the resources.

Resources and Reserves are further classified in GSC Paper 88-21 as to the assurance of their existence into one of four categories, using the criteria for coals found in Geology Type "Complex" conditions, as shown in Table 19.1. The resources have been further divided into surface mineable and underground resources. The surface mineable resources are limited to a depth from surface of 250m and the underground resources are limited to between 250m and 600m from surface. The underground resources are limited to the 5 Main seam series due to consistency in seam thickness and extent of drillhole intercepts at depths below 250m. All coal seams occurrences within each series are limited top a minimum apparent seam thickness of 0.6m.

Table 19.1
Criteria Used to Define Assurance of Existence for Coals in Complex Geology Type

	Assurance of Existence Category		
Criteria	**Measured**	**Indicated**	**Inferred**
Cross-section spacing (m)	150	300	600
Minimum # data points per section	3	3	3
Mean data point spacing (m)	100	200	400
Maximum data point spacing (m)	200	400	800

Coal Resources at Ovoot Tolgoi are defined for the categories of Measured, Indicated and Inferred, as summarized in Table 19.2. The resource statement is current as of June 1, 2009 and based on exploration data gathered through 2008.

Table 19.2
Classification of Resources Geology Type: Complex *

Area	Type	Resource Limits Depth(m)	ASTM Group	In-Place Resources (Million Tonnes)		
				Measured	Indicated	Inferred
Sunrise Field	Surface	Surface to 250m	hvB to hvA	53.8	15.7	4.9
Sunset Field	Surface	Surface to 250m	hvB to hvA	82.1	19.4	8.1
Sub-Total				**135.9**	**35.1**	**13.0**
Sunrise Field	Underground	250m to 600m	hvB to hvA	11.2	5.2	11.2
Sunset Field	Underground	250m to 600m	mhB to hvA	34.6	27.8	9.3
Sub-Total				**45.8**	**33.0**	**20.5**
Total				**181.7**	**68.1**	**33.5**

* Based on information as of June 1, 2009

To facilitate the estimation of resources in the Ovoot Tolgoi Property, Norwest developed geological models for the Sunrise and Sunset Fields using *MineSight*™ software. Key horizons or "surfaces" were modeled to provide the necessary limits for volume estimation. Volumes were converted to tonnages by application of density values representative of the coal seams as derived from available coal quality data.

Areal extent of the Sunrise and Sunset Field resources are illustrated on Figures 19.1 and 19.2, respectively. The work required to make this estimate of mineral resources was performed by, or under the direct guidance, of Richard Tifft (PG), a Qualified Person.

19.3 Coal Reserve Estimation

A coal reserve is the economically mineable part of a Measured or Indicated coal resource supported by at least a Preliminary Feasibility level of study, which includes information on mining, processing, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. Coal reserves are sub-divided in order of increasing confidence into "Probable" and "Proven" reserves, respectively. A "Probable" reserve is the economically mineable part of an "Indicated" resource and, in some cases may include a portion of a "Measured" resource. A "Proven" reserve is the economically mineable part of a "Measured" resource. Mineral resources that are not mineral reserves do not have demonstrated economic viability. All mineral reserves reported here are included within the identified mineral resources.

Mine design and financial analyses have been completed for Ovoot. Total mineral reserves, as of June 1, 2009, are summarized in Table 19.3.

Table 19.3
Summary of Estimated Reserves Ovoot Tolgoi Mine

Reserve Area	ASTM Coal Rank	Surface Mineable Reserves Tonnes in Millions*		
		Proven	Probable	Total
Ovoot Tolgoi Mine	hvB to hvA	105.0	9.1	**114.1**

* Based on information as of July 1, 2009

** Rounded

Approximately 92% of the reserves fall into the Proven reliability or assurance category; the remaining 8% falls into the Probable category.

The work required to make this estimate of mineral reserves was performed by, or under the direct guidance, of Alister Horn (QP), a Qualified Person.

This estimate of resources and reserves was generated using the best information available concerning issues related to environmental, permitting, legal, title, taxation, socio-economics, marketing and political factors that could have a material influence on Norwest's findings. Norwest is not aware of any additional factors which may affect our reserves estimate.

20 OTHER RELEVANT DATA AND INFORMATION

There are no other relevant data and information applicable to this report.

21 INTERPRETATION AND CONCLUSIONS

Exploration to date at the Ovoot Tolgoi resource areas has been successful in delineating 249.8 million tonnes of coal classified as both surface and underground deposit types and measured and indicated resources. The geology type for the two resource areas at the Ovoot Tolgoi Property, the Sunrise and Sunset Fields, has been determined to be "complex" based on criteria set forth in the Geological Survey of Canada Paper 88-21.

The completion of a pre-feasibility study on the Ovoot Mine has confirmed the economic viability of 114.1 million tonnes of coal reserves through surface mining.

Coal is of high volatile bituminous B to A in rank. The coal is suitable as a high quality thermal coal, and intervals have been identified that are suitable for a metallurgical blend or semi-soft coking coal.

Norwest has managed and provided direct supervision of the 2005 and 2006 exploration programs, and has reviewed data from previous and current programs. Exploration activities have yielded reliable data of density adequate to meet the objectives of delineating viable, surface mineable coal resources and reserves at Ovoot Tolgoi.

Resource and reserve calculations and classification have been estimated in accordance with National Instrument 43-101.

22 RECOMMENDATIONS

Activities to date at Ovoot Tolgoi are now considered to be sufficient to define economic viability of coal reserves. Studies to date have made various recommendations for additional levels of detailed work. This will allow detailed mine planning that may identify additional resources and/or reserves, or cost-benefits to extracting currently identified reserves.

Table 22.1 summarizes Norwest's recommendations for the major components of such a study, along with estimated costs.

Table 22.1
Summary of Additional Detailed Studies

Item	**Estimated Cost (US$)**
Geotechnical Study	60,000
Hydrology Study	45,000
Coal Washing Study	250,000
Detailed Mine Planning	55,000
Environmental Update	45,000
Total Budget Estimate	**455,000**

23 REFERENCES

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24 DATE

The effective date of publication of this technical report is October 21, 2009.

Dated this 21st day of October, 2009.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

Richard D. Tifft III, PG
Vice President Geologic Services, Norwest Corporation

Dated this 21st day of October, 2009.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

Alister Horn
Project Manager, Norwest Corporation

Following are signed and dated Certificates of Qualifications of the persons involved in preparing this report.

CERTIFICATE OF QUALIFICATIONS

I, Richard D. Tifft, III, of Grand Junction, Colorado, do hereby certify that:

1. I am Vice President; Geologic Services with Norwest Corporation, 743 Horizon Court, Suite 372, Grand Junction, CO 81506 USA.

2. This certificate applies to the Technical Report entitled *"Technical Report Coal Geology, Resources and Reserves, Ovoot Tolgoi: A Production Property, Omnogovi Aimag, Mongolia"* dated October 21, 2009.

3. I am a licensed Professional Geologist in the state of Utah — License Number 5190241-2250.

4. I am a graduate of Utah State University (Bachelor of Science, 1978, Geology).

5. I have practiced my profession as a geologist for 30 years. I have worked on coal properties in the United States of America, Canada, India, China (PRC), and Mongolia. I have completed investigations on coal properties on behalf of private and public companies. I am a "qualified person" for the purposes of National Instrument 43-101.

6. I personally have reviewed or supervised the review of the data collected and provided by Norwest Corporation and SouthGobi Energy Resources Ltd. for the Ovoot Tolgoi property. I participated in the preparation of a technical report concerning the coal geology and coal resource tonnage for the area. I have most recently visited the Ovoot Tolgoi property on June 12th through 13th, 2009. Prior to that, I have visited the IMMI Ulaanbaater geology offices between March 2, 2007 and March 9, 2007 and to the Ovoot Tolgoi project site was between August 14, 2005 and August 31, 2005. I have personally witnessed the exploration activities during 2005 and was responsible for management of the 2006 activities.

7. I have no direct or indirect interest in SouthGobi Energy Resources Ltd or any affiliates of it, nor do I expect to acquire any such interest. I am independent of the Company in accordance with the requirements of NI 43-101, Section 1.5.

8. I have not been restricted in any way in my access to information, data or documents that I consider relevant to this report.

9. I am responsible for preparing all parts of this Technical Report, except for Section 25.

10. As at the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to not make the Technical Report misleading.

11. I have read NI43-101 and Form 43-101F1. This Technical Report (Coal Geology and Resources, Ovoot Tolgoi Property, Omnogovi Aimag, Mongolia) is in compliance with NI43-101 and Form 43-101F1.

Dated at Grand Junction, Colorado this 21st day of October, 2009.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

Richard D. Tifft III, PG
Vice President Geologic Services

CONSENT OF AUTHOR

Richard D. Tifft, III, PG
Norwest Corporation
743 Horizon Court, Suite 372
Grand Junction, Colorado, 81506, U.S.A.

CONSENT OF QUALIFIED PERSON

TO: British Columbia Securities Commission
Alberta Securities Commission
Manitoba Securities Commission
Ontario Securities Commission
AND TO: SouthGobi Energy Resources Ltd. (the "Company")

I, Richard D. Tifft, III, do hereby consent to the following: i) the public filing of the written disclosure of the technical report titled "Technical Report: Coal Geology, Resources and Reserves Ovoot Tolgoi: A Production Property — Omnogovi Aimag, Mongolia" and dated October 21, 2009 (the "Technical Report"); ii) including any extracts from or a summary of the Technical Report in the Material Change Report of SouthGobi Energy Resources Ltd. dated October 21, 2009 (the "Disclosure Document"); iii) the filing of the Technical Report with the securities regulatory authorities referred to above; and iv) the filing of the Technical Report with any stock exchange on which the Company lists or proposes to list its common shares.

I also confirm that I have read the Disclosure Document and that, to the extent that the Disclosure Document contains or summarizes any information from those parts of the Technical Report for which I am responsible, the Disclosure Document accurately represents the information in the Technical Report that supports the Disclosure Document.

Dated this 21st day of October, 2009.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

____
Signature of Qualified Person

RICHARD D. TIFFT, III
Print name of Qualified Person

CERTIFICATE OF QUALIFICATIONS

I, Alister Horn, of Salt Lake City, Utah, do hereby certify that:

1. I am a Project Manager with Norwest Corporation, 136 East South Temple, 12th Floor, Salt Lake City, Utah 84111 USA.

2. This certificate applies to the Technical Report entitled *"Technical Report, Coal Geology and Resources & Reserves, Ovoot Tolgoi: A Production Property, Omnogovi Aimag, Mongolia"* dated October 21, 2008.

3. I am a Qualified Professional Member Member of the Society of Mining & Metallurgical Society of America, Member Number 01369QP

4. I am a graduate of McGill University, Montreal, Canada (Bachelor of Engineering (Mining), 1997).

5. I have practiced my profession as a mining engineer for 12 years. I have worked on coal properties in the United States of America, Canada, Mexico, Venezuela, India, Mongolia and Mozambique. I have completed investigations on coal properties on behalf of private and public companies. I am a "qualified person" for the purposes of National Instrument 43-101.

6. I personally have reviewed or supervised the review of the data collected and provided by Norwest Corporation and SouthGobi Energy Resources Ltd for the Ovoot Tolgoi property. I participated in the preparation of a Technical Report concerning the coal geology and coal resources and reserves for the area. I am responsible for Section 25 of this report. My most recent visit to the Ovoot Tolgoi project site was between April 17th through 20th, 2009.

7. I have no direct or indirect interest in SouthGobi Energy Resources Ltd or any affiliates of it, nor do I expect to acquire any such interest. I am independent of the Company in accordance with the requirements of NI 43-101, Section 1.5.

8. I have not been restricted in any way in my access to information, data or documents that I consider relevant to this report.

9. As at the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to not make the Technical Report misleading.

10. I have read NI43-101 and Form 43-101F1. The Technical Report (Coal Geology and Resources, Ovoot Tolgoi Property, Omnogovi Aimag, Mongolia) is in compliance with NI43-101 and Form 43-101F1.

Dated in Salt Lake City, Utah, this 21st day of October, 2008.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

Alister Horn, QP
Mining Engineer

CONSENT OF AUTHOR

Alister Horn, QP
Norwest Corporation
136 East South Temple, 12th Floor
Salt Lake City, Utah, 84111, U.S.A.

CONSENT OF QUALIFIED PERSON

TO: British Columbia Securities Commission
Alberta Securities Commission
Manitoba Securities Commission
Ontario Securities Commission
AND TO: SouthGobi Energy Resources Ltd. (the "Company")

I, Alister Horn, do hereby consent to the following: i) the public filing of the written disclosure of the technical report titled "Technical Report: Coal Geology, Resources and Reserves Ovoot Tolgoi: A Production Property — Omnogovi Aimag, Mongolia" and dated October 21, 2009 (the "Technical Report"); ii) including any extracts from or a summary of the Technical Report in the Material Change Report of SouthGobi Energy Resources Ltd. dated October 21, 2009 (the "Disclosure Document"); iii) the filing of the Technical Report with the securities regulatory authorities referred to above; and iv) the filing of the Technical Report with any stock exchange on which the Company lists or proposes to list its common shares.

I also confirm that I have read the Disclosure Document and that, to the extent that the Disclosure Document contains or summarizes any information from those parts of the Technical Report for which I am responsible, the Disclosure Document accurately represents the information in the Technical Report that supports the Disclosure Document.

Dated this 21st day of October, 2009.

"Original Signed And Sealed By Author"

____
Signature of Qualified Person

Alister Horn
Print Name of Qualified Person

25 ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

25.1 Mining Operations

In April, 2008, with basic infrastructure already constructed in-place, the Ovoot Tolgoi Mine began stripping and producing it's first coal. Coal was stockpiled on site, with initial coal sales beginning September, 2008. Through June, 2009, total coal sales are approximately 0.6 million tonnes (Mt).

As of the publication of this study mining operations at Ovoot are currently spread over two pits in the Sunset area; the main pit focusing on the Seam 5 with the additional pit uncovering the upper seams. Most of the mine infrastructure is in place or is currently being constructed. Consistent with the proposals of earlier studies performed by Norwest, the mining method utilizes a combination of mining trucks matched with hydraulic mining shovels (HMS) and front-end loaders (FEL) to strip waste and uncover coal. Installed mining equipment is comprised of a mid-sized (13.5 m^3) hydraulic shovel and (10 — 17 m^3) front end loader (Liebherr 994 and LeTourneau 950, respectively), matched with a minimum of six Terex 91-tonne capacity mining trucks (TR100) and a suite of support equipment. In addition, a larger hydraulic shovel (Liebherr R996, 34 m^3 bucket) is on-site. This pre-feasibility study proposes that this equipment continue to be used, with primary stripping to be accomplished using the larger 34 m^3 bucket-sized HMS matched with 218t-class mining trucks (Terex MT4400).

Three coal products are to be produced; a hard coking (or metallurgical) coal (HCC), a premium coal (PRE) that would potentially be used for PCI coking coal or a high-quality thermal coal, and a thermal coal product (THE) for use in power generation. Historically, coal in Mongolia has not been washed on site, but rather by the end-users in China, and this has been assumed in the PFS. It is noted that none of the current sales contracts account for washed coal.

Mine infrastructure is installed and operations have been producing coal since 2008. Production will ramp-up through 2011, and reach "steady-state" by 2012, as shown in Table 25.1.

Table 25.1
Production Ramp-up Schedule

Period	Coal Production
2009	1,000,000 tonnes
2010	4,000,000 tonnes
2011	6,500,000 tonnes
2012 +	8,000,000 tonnes

Broad design assumptions concerning the PFS mine plan are as follows:

- The mine plan will be based on an 'optimized' pit shell, determined through analysis by the Lerchs-Grossman (LG) method.
- Mine planning will focus on producing HCC (predominantly in Seam 5).
- Waste dumps will be located beyond areas of reasonable economic cut-off, beyond a maximum pit shell as determined by geotechnical analysis of maximum pit depth.
- The mine schedule will follow a gradually rising or level Strip Ratio (SR).
- Pit ramps will be designed to minimize excavated volume and keep re-location to a minimum.

- The mine will be 'remote'; all employees will travel from UB. Travel schedule determined by job-type and corresponding shift schedule.
- Groundwater will be managed with the use of a single retention pond for each field, and downstream discharge.
- Stripping and coal mining will be performed "in-house" by the owner.
- Blasting, fuel supply and all maintenance are to be performed by contractor.
- Mine economics will be determined "mine-gate" (i.e., the study will not include loading, transportation or stockpiling at the Chinese / Mongolian border).
- Coal is to be trucked to the Chinese border; therefore, there is no allowance for rail loop, loading yard, stacker reclaim, or other coal handling infrastructure.

The detailed assumptions used in mine planning include:

- Waste density of 2.5 tonnes/bcm
- Coal density as modeled
- Primary swell of 30 percent in waste and coal
- Final swell of 25 percent in waste
- Coal loss of 10 cm and 5 cm, from roof and floor respectively
- Dilution of 20 cm and 10 cm, from roof and floor respectively
- In addition to the coal losses and dilutions above, overall recoveries for seams in the Ovoot deposit were assumed as follows:
  - Seam Thickness $<$ 3m 85 percent
  - Seam Thickness 3-10m 90 percent
  - Seam Thickness 10-20m 95 percent
  - Seam Thickness $>$20m 98 percent
- Mining bench height assumed to be 10m. Half-bench size of 5m can be used for the selective mining of the upper seams
- Waste dumped in up to 20m lifts
- Overall dump slope of 3:1.

25.1.1 *Mining Sequence and Scheduling*

As described above, a block model approach was taken in constructing a geologic model of the deposit using the *MineSight* software. The software was then used in order to apply an optimization analysis to the deposit. This analysis uses an Lerchs-Grossman (LG)-based algorithm in order to determine the economically feasible (i.e., optimized for Net Present Value, NPV) portions of the deposit, taking into account the cost of stripping, expected coal pricing for the various products, and the physical location and quality of the coal. By applying the optimization tools available in MineSight, Norwest was able to generate a series of phased, or "nested" pits of increasing NPV that describe the broad mining sequence.

Once a sequence had been proposed, the block model was used to generate volumes by 5m and 10m benches, in logical areas. These volumes of coal and waste were then sequenced, using the phased pits as a guide, in order to fulfill the needs defined above (i.e., desired coal production rates, level strip ratio (SR) profile over Life of Mine (LOM), early exposure of HCC, etc). The quantities from this mine sequence are used as the basis of determining equipment needs and, ultimately, cost estimate and a cash flow analysis.

Figures 25.1 through 25.7 show the sequencing and development of the pits and dumps over the LOM. Mining is to occur in two distinct fields, the Sunrise Field to the east of the lease area, and the Sunset Field, approximately 5km to the west. Mining will continue in the two Sunset pits until 2010, when the Sunrise field is developed. The two fields are mined concurrently so as to achieve a desired production of the three coal products and to balance the SR. Initially, Sunrise consists of one pit, however, a smaller second pit begins in 2018. The Sunset Field in mined through the LOM, while the Sunrise Field is depleted in 2023. Waste from the Sunset pit is initially dumped in two distinct out-of-pit dumps, however, by 2011 they will merge together. Waste from Sunrise is dumped out-of-pit in a single dump through 2019 after which point it is hauled back into the pit as backfill. Material volumes over the LOM are summarized in Table 25.2.

It is noted that the PFS mine plan is intended as a base in order to define reserves, and is not intended as a replacement for detailed mine planning. It is recommended that at some point detailed mine planning be performed in order to determine the potential for:

- Additional in-pit backfilling of Sunrise and Sunset pits with waste, thereby shortening hauls and improving truck productivities
- Re-sequencing to produce a coal production schedule targeted for the needs of future customers.

Table 25.2 Life of Mine Summary Quantities

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	
(in thousands)	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**Total**
OVERBURDEN/INTERBURDEN																	
Total Virgin OB/IB ('000 bcm)																	
Topsoil Removal ('000 bcm)	146	163	356	621	121	187	187	187	140	236	0	0	62	0	0	0	2,405
Overburden/Interburden ('000 bcm)	4,179	10,229	26,314	33,209	32,836	32,622	32,756	32,633	32,795	32,761	32,505	33,001	32,875	32,758	14,884	4,003	420,360
Total OB/IB ('000 bcm)	**4,325**	**10,392**	**26,669**	**33,830**	**32,956**	**32,809**	**32,943**	**32,820**	**32,935**	**32,997**	**32,505**	**33,001**	**32,937**	**32,758**	**14,884**	**4,003**	**422,765**
Excavator/Shovel Volumes																	
Wedge Prep (Front End Loader)	418	1,023	2,631	3,321	3,284	3,262	3,276	3,263	3,279	3,276	3,251	3,300	3,287	3,276	1,488	400	42,036
Bench (Hydraulic Shovel/Excavator)	3,761	9,206	23,682	29,888	29,552	29,360	29,481	29,370	29,515	29,484	29,255	29,701	29,587	29,482	13,396	3,602	378,324
Wedge																	0
Wedge Clean-up																	0
Total Excavator Volumes ('000 bcm)	**4,179**	**10,229**	**26,314**	**33,209**	**32,836**	**32,622**	**32,756**	**32,633**	**32,795**	**32,761**	**32,505**	**33,001**	**32,875**	**32,758**	**14,884**	**4,003**	**420,360**
OB Truck Volumes ('000 bcm)																	
Excavator/Truck Volume	4,179	10,229	26,314	33,209	32,836	32,622	32,756	32,633	32,795	32,761	32,505	33,001	32,875	32,758	14,884	4,003	420,360
Other	146	163	356	621	121	187	187	187	140	236	0	0	62	0	0	0	2,405
Total Truck Volume ('000 bcm)	**4,325**	**10,392**	**26,669**	**33,830**	**32,956**	**32,809**	**32,943**	**32,820**	**32,935**	**32,997**	**32,505**	**33,001**	**32,937**	**32,758**	**14,884**	**4,003**	**422,765**
Dozer Assist Volumes (bcm)																	
Dozer Push to Loading tool																	0
Dozer Push to hydraulic excavator																	0
Parting Push to FEL																	0
Final Coal Cleaning – Dozer Push																	0
Total Dozer Push (bcm)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total Waste (including Rehandle)	**4,325**	**10,392**	**26,669**	**33,830**	**32,956**	**32,809**	**32,943**	**32,820**	**32,935**	**32,997**	**32,505**	**33,001**	**32,937**	**32,758**	**14,884**	**4,003**	**422,765**
In-Place Strip Ratio	**4.33**	**2.60**	**4.10**	**4.23**	**4.12**	**4.10**	**4.12**	**4.10**	**4.12**	**4.12**	**4.06**	**4.13**	**4.12**	**4.09**	**1.86**	**0.61**	**3.70**
COAL PRODUCTION																	
Coking Coal ('000 tonnes)																	
Tonnage Shipped	340	881	366	1,783	735	381	981	739	823	395	440	783	1,160	2,279	1,989	2,867	16,941
Cumulative Tonnage Shipped	340	1,220	1,586	3,369	4,104	4,485	5,466	6,205	7,028	7,423	7,863	8,646	9,806	12,086	14,074	16,941	
Coking Coal Quality																	
Ash (%)	8.60	8.17	7.28	7.69	8.20	8.14	7.98	7.77	7.61	9.75	8.66	8.40	8.59	7.89	7.81	7.40	**7.93**
FSI	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	5	5	5	5	4 1/2	5	5	5	5	5	5 1/2	**5 1/2**
Sulfur (%)	0.53	0.58	0.60	0.57	0.58	0.58	0.53	0.52	0.50	0.81	0.70	0.54	0.58	0.53	0.53	0.45	**0.54**
Specific Gravity	1.36	1.35	1.33	1.34	1.35	1.35	1.34	1.34	1.34	1.35	1.35	1.35	1.35	1.34	1.34	1.34	**1.34**
Moisture (%)	1.20	1.18	1.15	1.17	1.19	1.19	1.20	1.20	1.20	1.22	0.90	1.20	1.20	1.20	1.20	1.20	**1.19**
Heating Value (kcal/kg)	7,161	7,157	7,107	7,096	7,126	7,152	7,190	7,213	7,223	6,937	7,117	7,158	7,129	7,193	7,197	7,250	**7,173**
Premium Coal ('000 tonnes)																	
Tonnage Shipped	275	1,084	1,937	5,192	5,375	3,335	3,953	3,047	2,446	6,829	4,344	1,084	2,237	2,062	2,736	1,345	47,280
Cumulative Tonnage Shipped	275	1,359	3,296	8,488	13,863	17,198	21,151	24,198	26,643	33,473	37,817	38,901	41,137	43,199	45,935	47,280	
Prem. Coal Quality																	
Ash (%)	10.36	12.08	16.57	13.50	16.20	14.74	12.87	14.03	15.72	15.93	13.43	17.56	17.03	15.42	16.58	13.25	**14.93**
FSI	2 1/2	2 1/2	3	3	2 1/2	2 1/2	2 1/2	3	3	2 1/2	3	3	3	3 1/2	3 1/2	3 1/2	**3**
Sulfur (%)	0.96	1.07	1.22	1.04	1.16	1.08	1.03	1.09	1.19	1.04	0.98	1.15	1.07	0.96	1.04	0.79	**1.06**
Specific Gravity	1.38	1.40	1.44	1.39	1.42	1.42	1.39	1.40	1.43	1.41	1.38	1.48	1.45	1.43	1.43	1.43	**1.41**
Moisture (%)	1.21	1.27	1.31	1.30	1.28	1.22	1.20	1.24	1.30	1.27	1.05	1.22	1.30	1.29	1.29	1.22	**1.25**
Heating Value (kcal/kg)	6,803	6,599	6,123	6,533	6,238	6,369	6,575	6,463	6,237	6,304	6,592	6,052	6,129	6,306	6,208	6,458	**6,369**
THEQ + THE Coal ('000 tonnes)																	
Tonnage Shipped	385	2,035	4,196	1,026	1,890	4,283	3,066	4,215	4,732	776	3,216	6,133	4,603	3,659	3,276	2,403	49,894
Cumulative Tonnage Shipped	385	2,421	6,617	7,643	9,533	13,817	16,882	21,097	25,829	26,604	29,820	35,953	40,556	44,215	47,491	49,894	
Thermal Coal Quality																	
Ash (%)	25.41	25.62	26.15	25.10	26.19	26.00	26.08	25.96	25.29	25.28	25.18	25.65	25.72	25.63	27.08	26.98	**26.02**
FSI	3 1/2	3 1/2	3 1/2	3	3 1/2	3 1/2	3 1/2	3 1/2	3	3	3 1/2	3	3	3	3	3	**5 1/2**
Sulfur (%)	1.03	1.05	1.04	0.88	1.04	1.04	1.03	1.04	0.96	0.90	1.00	1.00	0.94	0.91	0.94	0.89	**0.95**
Specific Gravity	1.57	1.56	1.57	1.58	1.57	1.57	1.57	1.57	1.57	1.57	1.56	1.57	1.58	1.57	1.58	1.59	**1.58**
Moisture (%)	1.22	1.23	1.23	1.19	1.22	1.23	1.22	1.23	1.23	1.21	1.22	1.23	1.23	1.23	1.23	1.24	**1.22**
Heating Value (kcal/kg)	5,359	5,380	5,373	5,257	5,317	5,363	5,339	5,357	5,424	5,347	5,362	5,398	5,417	5,399	5,336	5,371	**5,360**
Total Tonnage Shipped	1,000	4,000	6,500	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	6,614	**114,114**
Cumulative Tonnage Shipped	1,000	5,000	11,500	19,500	27,501	35,500	43,500	51,500	59,501	67,501	75,500	83,500	91,500	99,500	107,500	114,114	
COMBINED AS-SHIPPED QUALITY																	
Heating Value (btu/lb)																	
Ash (%)	15.57	18.11	22.23	13.70	17.83	20.46	17.33	19.74	20.55	16.53	17.90	22.87	20.80	17.95	18.70	15.71	**18.67**
FSI	3.6	3.5	3.2	3.3	3.0	3.2	3.3	3.4	3.3	2.8	3.3	3.4	3.3	3.7	3.6	4.1	**3.3**
Sulfur (%)	0.84	0.95	1.07	0.92	1.08	1.04	0.97	1.01	0.99	1.01	0.97	0.97	0.93	0.81	0.87	0.68	**0.95**
Specific Gravity	1.44	1.47	1.52	1.40	1.45	1.50	1.46	1.48	1.51	1.42	1.45	1.54	1.51	1.47	1.47	1.45	**1.47**
Moisture (%)	1.21	1.23	1.25	1.26	1.26	1.22	1.21	1.23	1.25	1.26	1.11	1.22	1.24	1.23	1.24	1.22	**1.23**
Heating Value (kcal/kg)	6,368	6,102	5,694	6,495	6,102	5,868	6,177	5,950	5,858	6,243	6,126	5,658	5,864	6,144	6,097	6,406	**6,054**

25.1.2 *Mining Equipment*

In general, there has been an increase in the capacity of equipment proposed in this current mine plan, when compared to previous recommendations. This reflects the need to improve economies of scale while increasing the previously proposed 5Mtpa production rate to the currently proposed 8Mtpa. Budgetary quotes for most major equipment has been received (in many cases, equipment has been purchased and is on-site) and specific models proposed. The equipment proposed for the mine includes the following:

- 13.5 m^3 HMS (Liebherr R994, front shovel configuration) for waste stripping and to assist with coal loading.
- 34 m^3 HMS (Liebherr R996, front shovel configuration) for primary waste stripping.
- 10 m^3 FEL (LeTourneau L950) for waste stripping (with "quick-change" 17m^3 bucket for coal, as needed).
- 91-tonne rear dump Mining Trucks (Terex TR100) matched with the R994 (waste and coal) and the LeT 950 (waste).
- 218 tonne rear dump Mining Trucks (Terex TR4400) matched with the R996.
- 334 kN pulldown — class Overburden Drill (Atlas Copco DM75k).
- 200 kN pulldown — class Overburden Drill (Atlas Copco DM45k).
- Road maintenance equipment (water truck, 5m blade-class grader)
- 10 m^3 FEL (Cat 988) for transport truck loading.
- 360 kW wheel dozer (Cat 834) for stockpile handling
- Waste dump maintenance and reclamation equipment (Caterpillar D10 track dozer)
- Miscellaneous support equipment (service trucks, mobile crane, pumps, light plants, etc.).

Equipment productivity was estimated from "first principles" (i.e., calculated using capacities, assumed fill factors, swing cycle times etc.) then compared with historically tracked productivities from the operating mine, where applicable. In almost all cases, the actual productivities were found to be slightly lower, reflecting the learning curve of a relatively "green" workforce. These were considered to be reasonable, and were used in the study in order to be conservative.

Truck productivities were estimated by modeling haul routes throughout the LOM using Caterpillar's proprietary *Fleet Production Cost* software (FPC), taking into account haul length and profile, equipment limitations, safe speeds, loading limitations, etc.

Assumed productivities for major equipment are as follows:

Table 25.3
Major Equipment Productivities

Equipment	Productivity Rate	Units
Overburden Mining Equipment		
34m^3 HMS (R996)	1,277	bcm/hr
13.5m^3 HMS (Leib. R994)	663	bcm/hr
XXm^3 FEL (LeT. 950)	530	bcm/hr
91 tonne truck (Terex TR 100C)	95 - 172	bcm/hr
218 tonne truck (Terex MT4400)	199 - 388	bcm/hr
200kN-class drill (Atlas Copco DM45)	30	m/hr
334kN-class drill (Atlas Copco DM75)	42	m/hr
Coal Mining Equipment		
13.5m^3 HMS (Leib. R994)	852	tonnes/hr
91 tonne truck (Terex TR 100C)	206 - 428	tonnes/hr

25.1.3 *Mine Facilities and Infrastructure*

Much of the infrastructure proposed and designed from Norwest's previous work has been implemented (see Photos 25.1 and 25.2). Norwest has reviewed the current and proposed mine infrastructure and has found it to be sufficient for the needs of Ovoot. Norwest ahs also recommended some relatively minor additional infrastructure.

Primary mine infrastructure currently in place, or under construction, at Ovoot include:

- Temporary maintenance shop
- Permanent maintenance shop and warehouse complex (construction recently completed)
- All weather fire-engine bay
- Temporary "ger" camp
- Permanent man camp / recreation center / office complex (construction recently completed)
- Temporary laboratory
- Air strip with paved runway and terminal facilities
- Explosives magazine
- Fuel depot
- Miscellaneous additions such as security building, border facilities, etc.

Photo 25.1 Permanent Maintenance Facility

Photo 25.2 Permanent 'Man-Camp' Facility

25.1.4 *Geotechnical Considerations*

A geotechnical study was previously (2007) performed by Norwest, based on prior work and sampling and testing performed during the previous exploration programs.

Since that time, although no additional testing was done or data gathered, there was another analysis performed by Seegmiller International (described and summarized in their report "*Evaluation / Analysis West Pit Slope Stability, Ovoot Tolgoi Mine*, December, 2008). For the majority of conditions the findings of the Seegmiller study are similar to those of Norwest. Some slight variation occurs in regions of weak and / or weathered material, with Norwest's findings being the more conservative. Therefore, Norwest's pit slope design recommendations have been assumed in mine planning. In addition, as there has been negligible variance between the geologic structural model since the original 2007 geotechnical work, and similar pit shell locations. For these reasons it assumed that Norwest original pit slopes recommendations are still valid. Norwest has recommended that further work be performed prior to the Ovoot pits becoming deeper.

Recommendations were provided for specific pit locations within both the Sunset and Sunrise fields, and reported separately for footwall, highwall and endwalls. In addition, various zones were identified specifically within each pit, with unique proposed slope angles and design parameters.

Recommendations included a range of bench heights from 6m to 18m, and bench face angles from natural bedding angle (average 20) to 65, depending on field, pit locations, zone within the pit, and competency of the rock. These recommendations were adhered to in preparing pit shells for mine planning, and so far no unusual ground-stabiltiy issues have been noted.

25.1.5 *Hydrological Analysis*

Norwest was initially retained by SGS to install and test wells and to prepare the documentation for a groundwater and surface water evaluation program in the vicinity of SGS's Ovoot Tolgoi mine exploration program. The results of this work are described in Norwest's original report *(Groundwater and Surface Water Hydrology Report,* December 18, 2006, Norwest Applied Hydrology, Denver). Minor updates to that study were made taking into account the current mine plan.

Four dewatering test wells, four water supply test wells, and four observation wells for the water supply test wells were drilled and completed as part of the 2006 NS field program. In addition, two water supply wells at the new mine camp near the airstrip, and two water supply wells at the new maintenance shop were drilled and completed as additions to the original scope of work.

The purpose of the dewatering test wells was to measure hydrogeologic parameters needed to design a mine dewatering program for the Ovoot Tolgoi Mine; the purpose of the water supply test wells was to investigate potential potable water supply for the mine; and the purpose of the water supply wells was to provide potable water to selected areas of the Ovoot mine camp.

Step-rate drawdown tests and constant-rate pumping tests were conducted on all hydrology test wells completed as part of the 2006 Ovoot field program and at the water supply wells at the new camp and maintenance shop locations. Surface water infiltration tests were conducted at four locations in the Sunset pit watershed and at two locations in the Sunrise pit watershed to provide data for the design of the surface water diversion system at the proposed Ovoot mine. The results of this testing led to construction of an Acquifer model using the AQTESOLV™ and Visual MODFLOW® software. This allowed an estimate to be made on pit inflow rates, the volumes of dewatering required and the impact of mine dewatering on regional water levels.

In addition, groundwater quality was examined. There is a general trend of "fresher" water quality associated with shallow wells and wells located to the north and more brackish water quality in deeper wells and wells located to the south. However, exceptions to that trend were noted.

Previously, trace metals (mercury, copper, cadmium, lead, zinc, chromium, and nickel) were analyzed in all samples and were non-detect with the exception of mercury and zinc. The mercury found in two of sixteen wells is potentially from a natural source. Mercury is typically found in volcanic rocks as mercury sulfide (HgS) or in veins associated with volcanic activity or geothermal springs. The oxidation of HgS by oxygen in the shallow aquifer system could be the source of mercury in these samples. The potential oxidation of sulfide is supported by the significant concentrations of sulfate in local groundwater.

Zinc was only detected in one well at a concentration of 0.104 mg/L which is below the Canadian Aesthetic Objectives (AO) standard of 5 mg/l and the United States National Water Quality Standard of 7.4 mg/L. Mercury concentrations in two wells were significantly high, 0.57 and 0.05 mg/L respectively, and exceed the Maximum Acceptable Concentration (MAC) standard of 0.001 mg/L and the United States National Water Quality Standard of 0.002 mg/L. Therefore, prior to mine start-up, it was proposed that theses wells should be re-sampled for trace metals and mercury to determine whether the mercury detection is a sampling or laboratory artifact, or from a natural source.

Since operations have begun at Ovoot, there have been several tests (by ENCO) of potable water with no report of unusually high mercury concentrations. Samples tested by SGS Laboratories (Shanghai) have failed to confirm the presence of any mercury at all in water derived from pit-dewatering efforts. Finally, the results of recent testing are currently outstanding, with samples having already been delivered to a laboratory in Shanghai. It is recommended that sampling and testing of potable and pit water continue in order to confirm that the presence of trace metals remains below acceptable levels.

25.1.6 *Water Management*

A Water Management Plan was originally developed in 2007, and the fundings have been found to still apply to the current mine plan. SGQ has already implemented some of the early-stage recommendations (e.g., in-pit sumping, out-of-pit retention ponds).

The Water Management Plan addresses the following:

- Development of surface runoff models for the watersheds draining to the mine pits
- Determination of design flows and proposed plan for managing surface flows in these drainages that are intercepted by mine pits
- Application of a groundwater model with estimates of pit inflows
- Development of a conceptual plan for interception of groundwater inflows and pumping/draining groundwater and surface water inflows from the mine pits (groundwater monitoring wells are currently being installed).

To address interception of surface flows, Norwest has designed pit diversion structures (combination of designed dike and ditches underlain with an HDPE geo-membrane liner) for the main pits of Sunset and Sunrise fields, as well as the smaller of two Sunrise pits. Options for handling anticipated groundwater inflows include:

- In-pit pumping and discharge to downstream watercourses (currently in use at the mine)
- Installation of dewatering wells around the mine pits, and discharge to downstream watercourses
- A combination of in-pit pumping and dewatering wells, with temporary storage of pumped water in in-pit sumps.

25.2 Recoverability

Various coal products are produced at Ovoot. They are sold to customers on a "raw" basis, and therefore it is currently assumed for the purposes of this study that no coal will be washed (some portion of the coal may require additional breaking and additional to reduce out-of-seam dilution, OSD). Historically, coal in Mongolia has not been washed on site, but rather by the end-users in China, and this has been assumed in the PFS. This relates to a historical wish, on the part of Chinese investors, to minimize investment capital.

25.3 Markets

SGQ currently sells to four separate customers, all for export to China. Some portion of the coal is understood to be sold into the Jiuquan / Jiayuguan region (see Figure 25.8).As described below, this is assumed to be the primary preferred market for Ovoot, along with other industrial centers within the province of Gansu. Other regions within Gansu, as well as the western region of Inner Mongolia, are also expected to be preferred markets.

Despite the fact that there is a demonstrated market for Ovoot's coal, SGQ have commissioned a study of the region in order to identify preferable markets for anticipated increased coal production. This study is summarized in the report Ovoot-Tolgoi Mine Market Study and Forecast, June, 2009, Shanxi Fenwei Energy Consulting Co., Ltd (Shanxi Fenwei). In addition, SGQ personnel have performed their own market analysis to confirm and augment the findings of the Shanxi Fenwei study. Norwest has referred to both as sources for our own estimate of market viability and coal pricing.

25.3.1 *Market Growth*

China has large identified coal reserves of over 1,100 billion tonnes (Bt) in 2007. However, a relatively small portion of those resources are located in the western provinces near to Mongolia's South Gobi region, and to Ovoot. In addition, the western regions are less accessible to seaborne coal imports.

There is anticipated to be rapid growth in China over the next decade, with a particular emphasis on China's western regions. This growth will be driven by coal fired power plants, and will generate a need for metallurgical coal. An increasing need for coal in the region coupled with the relative shortage of locally produced coal will mean that Mongolia, as well as the Hami region of China's Xinjiang province, will become key suppliers of thermal and metallurgical coal.

25.3.2 *Thermal Coal Markets*

Gansu province, located south of Ovoot (see Figure 25.8), has experienced a rapid growth in net regional coal imports over the last several years (approximately 4Mt in 2006 to 13Mt by 2008) which is projected to continue to 59Mt by 2020. Much of Gansu's domestic coal production is sold to customers to the east, following a general trend throughout China. Gansu's proximity to Ovoot, its rail access to Ceke from the major industrial centers of Jiuquan / Jiayuguan, its projected growth in market size and shortage of domestic production, all point to Gansu as being a key market for Ovoot.

Similarly China's Inner Mongolia is projected to continue a trend of rapidly rising thermal coal requirement that cannot be met through domestic production. In 2003, 116Mt of thermal coal was produced, of which 53Mt was exported out-of-province. By 2008, output expanded to 379Mt with 226Mt being exported out-of-province. In addition, coal supplied in the region is typically of lower quality than Ovoot's coal, which should provide a good opportunity. However, as western Inner Mongolia is further away than Gansu, increased transport costs are likely to make the region less attractive. For this reason, Inner Mongolia has been identified as a secondary target market.

SGQ has identified several target thermal coal customers in these regions.

25.3.3 *Metallurgical (Coking) Coal Markets*

In recent years China's coal production has grown in response to exported out-of-province increased international and domestic demand, from 842Mt of raw coking coal in 2003 to over 1Bt in 2008. In 2009 China became a net importer of metallurgical coal and is the world's largest metallurgical coal market.

As with thermal coal, the demand for metallurgical coal is expected to increase in the regions described above (Gansu and western Inner Mongolia), despite recent slowdowns in coking coal production. SGQ has identified several target metallurgical coal customers in these regions.

25.3.4 *Pricing Forecast*

There are several sources of information used as the basis of a pricing forecast. These include the following:

- The Shanxi Fenwei market study
- Pricing as indicated by communication between SGQ and its current and target customers
- Norwest's experience based on knowledge of coal pricing for other similar operations within the region
- A net-back pricing analysis based on adjustments to the China Policy Price, taking into account international benchmark prices.

The market study has indicated that the primary target market for thermal coal, Gansu, could receive large volumes of low price coal from the Hami region of Xinjiang province. This decreases the forecasted coal price below the Chinese national average, and means that the price is likely to continue to be fairly stable. Preliminary discussions with customers in the region have implied that pricing may be higher than projected by Fenwei. A net-back pricing analysis, as described previously, was therefore used to estimate what the coal price may be through 2010. For conservatism, there was no attempt made to confirm Fenwei's steady rise of over 18% in forecasted coal prices through 2020. In this way, end-use thermal coal prices of 397RMB/t ($58.43/t) and 458RMB/t ($67.36/t) were estimated for thermal and premium coal products, respectively.

As above, there are various sources of information on which to forecast HCC pricing for this project. As the current market study did not focus as much on forecasting a coking coal price as it did for thermal coal, Norwest has decided to base its estimate on adjusting international market prices for a similar coal, according to experience and calibrating according to knowledge of reported coking coal prices within the region. The prices used in this study are significantly less than those suggested in the Fenwei study, and are considered conservative. A metallurgical coking coal end-user price of RMB718.2/t ($105.62/t) has been estimated for 2010 onwards.

These prices for various coal products were adjusted to mine-gate prices by "backing-out" costs as follows:

- Transportation by truck from Ovoot to Ceke, a 45km haul route at RMB0.33/tonne-km (t-km).
- "Frictional" border crossing costs including stockpiling, handling and loading fees (RMB10/t) as well as an assumed 2,000MNT/t duty on thermal coal (and unwashed potential coking coal).
- Average rail transport distance of 500km at RMB0.15/t-km, encompassing the primary and secondary target markets.
- A 5% discount for customers in long-term contract agreements.
- An estimate of excess margin currently charged by "traders".

Some of these costs are phased out over the initial years. For this study, it is assumed that transportation on the Chinese side will gradually phase from all truck-transport in 2009 to all rail-transport by 2013, as suggested in the Shanxi Fenwei study. Likewise, SGQ's use of "traders" is assumed to be phased out through 2010. These increases in efficiency in getting the product to the customer will lead to reductions in costs. At a constant assumed "end-use" (i.e., FOB customer) coal price, this will result in SGQ realizing an improvement in their "mine-gate" price, which is expected to reach RMB260/t ($38.18/t), RMB317/t ($46.67/t) and RMB546/t ($80.30/t) by 2013, for thermal, premium and metallurgical coal, respectively. It is expected that the premium coal is used either as PCI or semi-soft metallurgical coal (after washing) or as a blend to poorer quality thermal coals.

25.4 Contracts

There are currently sales contracts for four individual customers, who either use the coal directly or sell it throughout different regions of China including Gansu and western Inner Mongolia. The coal is used in various ways including:

- Sold on to a Gansu-based Jiuquan Iron & Steel Co, Ltd., (JISCO) who use it as a thermal feed for their powerplants or as a coking coal blend.
- Used directly by a customer as a coking coal blend for their coke plant in Inner Mongolia.

Norwest has reviewed each of the four current contracts. The general terms of the contracts are follows:

- Contract terms are typically short, varying from several months to 5 years.
- Base quantities are typically small, in keeping with th generally short contract terms, and range from 300 - 400 thousand tonnes (Kt).
- Adjustments in price allow for pricing variances according to coal quality.
- There are agreed-upon procedures (and resolutions) for weighing, quality sampling, etc.

It is noted that the mine is currently in a start-up phase, which explains the relatively low volume of contracted sales. Long terms sales agreements are expected to be entered into.

25.5 Environmental Considerations

Norwest has reviewed numerous reports, publications, and policies from sources such as the Mongolian government and previous work performed both by Norwest and other consultants to understand the regulatory framework as well as the key environmental issues and potential impacts.

25.5.1 *Regulatory Framework*

The principal Mongolian environmental agency is the Ministry of Nature and Environment. This agency reviews and approves Environmental Impact Assessments (EIAs), Environmental Protection Plans, and Environmental Monitoring Plans required by the Mineral Law of Mongolia. In addition, the Soum Government receives a copy of the EIA document and has environmental inspectors who monitor the development, operation, and reclamation of mines within their jurisdiction.

In addition to obtaining approval of an EIA, an operator is also required to develop costs for annual implementation of the Environmental Protection Plan. Money to cover an amount equal to 50 percent of the budget for each year is then deposited in a special account established by the Government Ministry in charge of the environment. Funds from this account are released upon demonstration of full implementation of the environmental protection plan for that year. Mining operations began in April, 2008. It was estimated that the cost of environmental work for that year would total $60,000, and $30,000 was therefore posted.

If the mining damages the environment, causes pollution, or violates the terms of any permits, the operator must make payments for the damage as determined by the government. In addition if any cultural or historic resource is damaged as a result of the mining, the operator must also pay damages. Financial compensation is also required for damages to any structure owned by individuals. The mine operator is also required to pay all relocation costs for anyone required to be relocated as a result of the mining operation. The applicability of these costs is not included in the scope of this study.

SGS completed their Detailed Environmental Impact Assessemnt (EIA) and Environmental Protection Plan (EPP) for the Ovoot Project in August 2005 and submitted the documents to the Ministry of Nature and Environment. The documents were approved in October 2005. Since that time, the exploration licenses were transferred from Ivanhoe Mines Mongolia Inc. to the newly formed Southgobi sands LLC (SGS), then converted to a mining license. A number of fairly significant project changes have also occurred including adding of reserves which increased the mine pit size and depth with associated increases in ore and waste rock quantities and hauling; increased blasting; increased operating hours and days; increased workforce; and relocation of the man camp. These changes resulted in the preparation of an addendum to the approved Detailed EIA which was completed in March 2007.

25.5.2 *Key Issues and Impacts*

The Detailed EIA and Addendum for the Ovoot Project outlined a number of potential environmental concerns. Several of these issues could require study and result in additional expenditures for mitigation of potential environmental impacts. Key issues are discussed below.

One of the issues raised concerns pit dewatering. The water collected during pit operations will have various uses such as dust mitigation on the mine site. If site uses do not require all this collected water, the surplus will be monitored for quality and, if acceptable, discharged to the surface water system. In fact, since the beginning of operations a containment pond has been constructed according to 'best practise' and typical standards, and is currently used to contain pit water. Site use of the water was included in the Detailed EIA and therefore has been approved by the Mongolian Ministry of Health and Environment, however, several issues were identified in the DEIA report that suggested further study to evaluate potential additional costs associated with settling pond construction and sizing. The first is the sizing for these settling ponds and how the ponds would be lined to prevent discharges to ground water. It was not clear how many ponds or how large these ponds will need to be to contain the water being pumped. Norwest has addressed this by making a preliminary estimate for the cost and execution of a Water Management Plan (see Water Management section). It is also expected that SGQ will be given variance to allow a downstream discharge of collected water.

Another potential issue is the flooding of the final pit. As backfilling is not proposed as a significant part of the mine plan it is possible that a pit lake would appear as a result of re-establishment of the groundwater table. If a pit lake is a part of the post mining reclamation, then this creates a potential water quality liability. The pit slopes are to be scaled back to a reasonable grade which is expected to mitigate safety concerns. In addition, it is recommended that appropriate study be performed to determine if the pit lake will discharge to the surface water system or the alluvium in order to estimate the long term effect of water in the final pit. Final reclamation plans are to include scaling back final highwall slope crests (as well as final dumps) to a 3 : 1 slope, in such a way as way as to minimize potential hazards, improve stability and reduce the visual impact.

With respect to estimating Acid Mine Drainage (AMD) there is limited data presented in the Detailed EIA and Addendum to indicate the potential for AMD. Based on the limited data presented, the sulfur content of the coal is very low and acid generation as a result of exposure to air and water would not be expected. In addition, the dry climatic conditions are also not conducive to acid generation. However the Detailed EIA and Addendum recognize the need for additional testing to verify that acid generation will not occur in the waste rock. AMD is easier to mitigate and control if the potential is known from the start of the operations than trying to go back after the fact and mitigate the effects.

Although the Detailed EIA indicated that there are five species present within the coal deposit's exploration area that are included in the 'Red Book' of Mongolia as rare and endangered species, it has been confirmed that there no rare and endangered species present within the current mining license. The Addendum to the Detailed EIA indicates that only two species are present within 3 to 4 kilometers of the mine area. A number of other issues potentially affecting plant life have been raised in the Detailed EIA and Addendum including dust and erosion from creation of numerous roads and trails. These issues have specific mitigation associated with them as discussed in the environmental documents, but do not appear to represent any long term or potentially costly liability and are not discussed further here.

25.6 Taxes

The following taxes, royalties and duties are applicable to Ovoot:

- Royalty rate of 5 percent of FOB coal price
- VAT rate of 10 percent, payable on all capital, materials and supplies
- A refund on all VAT paid, the following year
- Income tax is 10 percent on first 3 billion MNT ($2.575M), then 25 percent on excess
- Property tax assumed to 0.6 percent
- Social Insurance of 13% to be charged for all employees

Currently, the Mongolian tax code allows for VAT paid by the producer to claim a refund. In this study it is assumed that the VAT would be refunded in full the following year. However, it is understood that there have been recent adjustments to the tax code specifically relating to VAT, although the new law has not yet been officially published. The new law proposes to make all sales of mineral products "exempt" from the refund provision, i.e., producers will not be able to claim the refund. Furthermore, SGQ has not yet received a refund for VAT claims made prior to the new rule. There are some indications that claims made before the rule would be honored.

For these reasons, it has been decided to assume that the current official rule of VAT refund will apply to the "base case" cost flow analysis. An exemption to the rule is assumed separately as a sensitivity-case.

25.7 Capital and Operating Cost Estimates

The general methodology in generating operating and capital cost estimates has been as follows:

Based on the current mine plan volumes of coal, overburden, parting (waste between coal layers) and topsoil were derived from a computer-generated 3D geologic model of the deposit.

By applying equipment productivity to the volumes required to be moved, equipment hours (as well as fleet sizes) were derived. Equipment operating costs were generated by applying equipment hours against the hourly operating cost of each piece of equipment. Unit hourly operating costs are from industry averages, adjusted for Mongolia.

Capital costs were estimated by applying the capital cost by unit to the estimated fleet sizes. Sustaining capital was estimated by applying unit capital costs to a replacement schedule based on maximum hours of work reasonably expected for each machine. Additional capital was included on a line item basis, for example, the costs of additional infrastructure.

Fleet sizes were used as a base to estimate a workforce covering equipment operators, maintenance personnel and labourers. The remaining workforce was estimated based on the workforce currently in-place at the mine, and taking into account future hires.

Finally, costs for materials, supplies, taxes and royalties were applied to arrive at total cash operating costs. No escalation has been added; reported costs are in constant 2007, US dollars.

25.7.1 *Operating Costs: Labor*

The total "hourly" (i.e., operator) labor requirements for the mine vary from a projected 199 personnel on site in 2009 to a maximum of 370 people in 2020. Staff labor climbs from 141 people in 2009 to 161 people at steady-state production (2012 onwards).

Effective employee work hours were estimated based on the following assumptions:

- 12 hour work shifts
- 28 day work cycle (working two weeks on, two weeks off)
- 13 work cycles / year
- 40 hrs vacation (remaining vacation taken during 'off' cycle)
- 24 hrs sick leave (remaining sick leave incurred during 'off' cycle)
- Holidays will be worked and employees paid double-time.

The required equipment hours were divided by the effective employee work hours to calculate the manpower requirements. Wage estimates were provided by SGQ, and reflect prevailing regional labor rates. They have been adjusted to factor in anticipated overtime and are 'loaded' to account for wage burden. An additional 13 percent is added during costing to account for Social Insurance, to be paid for all employees.

Managers will work typical 40 hr weeks (one shift/day, 5 days/week). The remainder of the salaried staff will work two weeks on and two weeks off. Salaries have been based on discussion with SGQ regarding prevailing regional rates and expected compensation for expatriate staff. Salaries are 'loaded' to account for wage burden. Staff and operator requirements by activity are summarized in Table 25.4, Staff and Operator Labour Numbers. Salaries and wages are summarized in Table 25.5.

Table 25.4
Staff and Operator Labour Numbers

Operator Workforce	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Stripping	15	31	78	119	122	127	131	136	136	133	146	147	143	143	66	19
Coal	3	9	14	19	19	20	21	22	22	21	24	28	26	26	25	23
Support	24	44	69	78	84	84	84	84	84	84	84	84	84	84	61	44
Maintenance	10	29	70	99	104	106	109	111	111	109	118	121	118	118	60	27
Total Operators	**52**	**113**	**231**	**315**	**329**	**337**	**345**	**353**	**353**	**347**	**372**	**380**	**371**	**371**	**212**	**113**
Staff Workforce	**141**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**
Total Workforce	**193**	**274**	**392**	**476**	**490**	**498**	**506**	**514**	**514**	**508**	**533**	**541**	**532**	**532**	**373**	**274**

Table 25.5 Wages and Salaries Summary	
Work Classification	**$/yr**
Equip Operator	5,425 – 10,198
Supervisor	11,744 – 16,560
Professionals	8,653 – 10,198
Managers	16,560 – 17,280
Expatriate	225,000
Mine Support	2,384 – 5,416
Admin	7,731 – 10,598

25.7.2 *Operating Costs: Materials & Supplies*

Equipment costs are based on scheduled work hours. These operating hours are then applied to industry average hourly parts costs, adjusted 15 percent upwards in order to bring them to date, cover relative increase in cost of transporting materials and supplies to market in Mongolia over North America, and to capture the rising cost of materials and supplies. The unit cost values used for the major equipment items are detailed in Table 25.6.

Table 25.6
Unit Operating Costs for Selected Equipment Items

	Overhaul & Maint. Parts ($/hr)	Lube ($/hr)	Tires ($/hr)	GET Parts ($/hr)	Adjustment for Mongolia	Total Excl. Labor and Fuel/Power
Overburden Mining Equipment						
13.5m^3 class Hydraulic Shovel	71.65	23.56	—	9.38	15.69	120.28
34m^3 class Hydraulic Shovel	138.97	51.74	—	12.80	30.53	234.04
10m^3 class FEL	21.68	13.18	36.50	1.20	10.88	83.44
91t class End-Dump Truck	10.84	9.46	18.60	—	5.84	44.74
218t class End-Dump Truck	31.83	31.49	105.89	—	25.38	194.59
200kN class Overburden Drill	19.01	17.17	—	12.44	7.29	55.92
334kN class Overburden Drill	29.21	22.95	—	11.11	9.49	72.76
Coal Mining Equipment						
13.5 m^3 class Hydraulic Shovel	71.65	23.56	—	9.38	15.69	120.28
91t class End-Dump Truck	10.84	9.46	18.60	—	5.84	44.74
Support Equipment						
D10 class Track Dozer	19.37	11.14	—	20.49	7.65	58.65
Cat 834-class Wheel Dozer	16.24	7.25	24.09	—	7.14	54.71

Fuel costs (not shown above) are based on an anticipated price of $0.80/liter, less value added tax (VAT). This price is a typical fuel price for the region. Lube, oil and grease is another significant cost. Lube costs for all major production equipment are included in this cost category.

Cost estimates of electricity are based on a price of 7 cents per kilowatt hour. Annual electricity consumption was estimated based on installed horsepower, then applied to the unit rate.

25.7.3 *Operating Costs: Other*

Other operating costs accounted for include:

- The use of contractors
- Miscellaneous office costs
- Transportation
- Final reclamation costs
- Other costs

Contractors are expected to play a key role at OvT. A blasting contractor will be responsible for providing and storing blasting agents, loading holes, designing blast patterns and optimizing blasting efficiency, and all other related field operations and technical services associated with blasting. Assumed blasting contractor costs include a fixed fee component of $21,118/month, in addition to blasting costs of $0.72/m^3 and $0.51/m^3 of material blasted, using emulsion and ANFO, respectively.

The maintenance contractor will be responsible to provide all maintenance labor and associated overhead and management. SGQ will cover accommodation costs for the on-site contracted maintenance workforce, estimated at approximately 70 people at any given time (includes all mechanics, welders and electricians). SGQ will be responsible for the direct cost only of all parts, materials and supplies. Based on preliminary budgetary quotes it is assumed that the fixed fee component of maintenance cost will be $35,676/year. In addition, all maintenance personnel are to be paid $4.44/hr for regular time, and $6.66/hr for overtime, assumed in this study to be 5%.

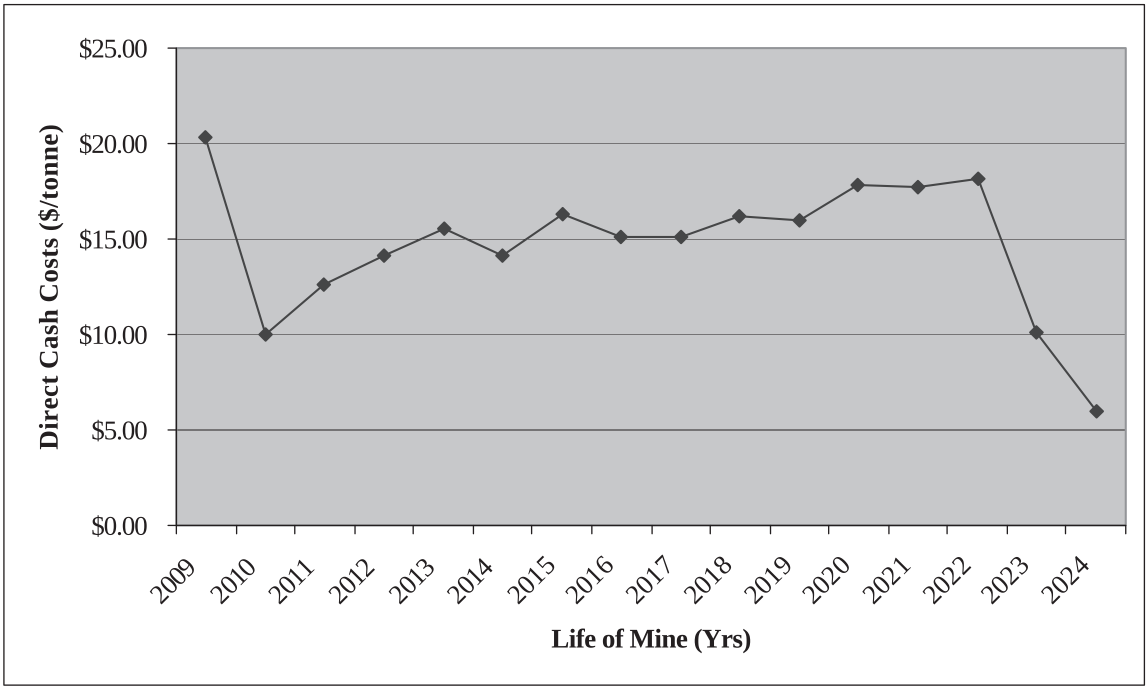
As a remote location site it is assumed that all mine workers will be employed out of Ulaan Baatar. The average round-trip airfare is $400. Non-managerial employees will be flown to and from the site once every work cycle, or 28 days. Managers will be transported once a week. Taking into account the cost of chartering a plan and anticipated work schedule, assumed costs are $5,214/employee-year and $20,800/employee-year for labor and management personnel respectively.

Final reclamation costs have been estimated by applying an assumed earth-moving cost of $1.50/bcm to an estimated schedule of final reclamation requirements that are based on re-grading of final dump slopes and pit crests.

Ten percent of direct operating costs has been applied to as a catch-all to account for miscellaneous cost items that have not been captured in the cost centers described above.

Figure 25.9 shows these combined operating costs graphically. Costs climb regularly over the LOM with increasing SR and lowering productivities.

FIGURE 25.9 DIRECT CASH COST/TONNE



25.7.4 *Capital Costs*

The Ovoot mine has been in operation since April, 2008, and much of the development capital (equipment, buildings, etc.) has already been incurred, or 'sunk'. A listing of the remaining capital spending facilities is provided in Table 25.7 along with the expected remaining costs, as tracked and reported by SGQ.

Table 25.7
Facilities with Costs

Miscellaneous tool and equipment	$ 200,000
Expansion of shop/office/warehouse/complex	$2,400,000
Man Camp with Administration Offices	$1,750,000
Bath house/Security facilities	$ 430,000
Border Facilities	$ 220,000
Total	**$5,000,000**

Equipment capital costs were estimated based applying unit purchase cost estimates to equipment fleet sizes. Cost estimates for major equipment were based on either budgetary or actual quotes from vendors, and supplied by SGQ. Sustaining capital was based on useful lives of the equipment. Assumed useful lives range from 30,000 hrs for minor support equipment (dozers, graders) and 35,000 hours for primary loaders, through to 50,000 hours for mining trucks. These estimates are based on published industry standards as well as Norwest's knowledge and experience of current mining equipment capabilities.

Capital costs for major equipment, including delivery and erection but excluding VAT, are summarized in Table 25.8.

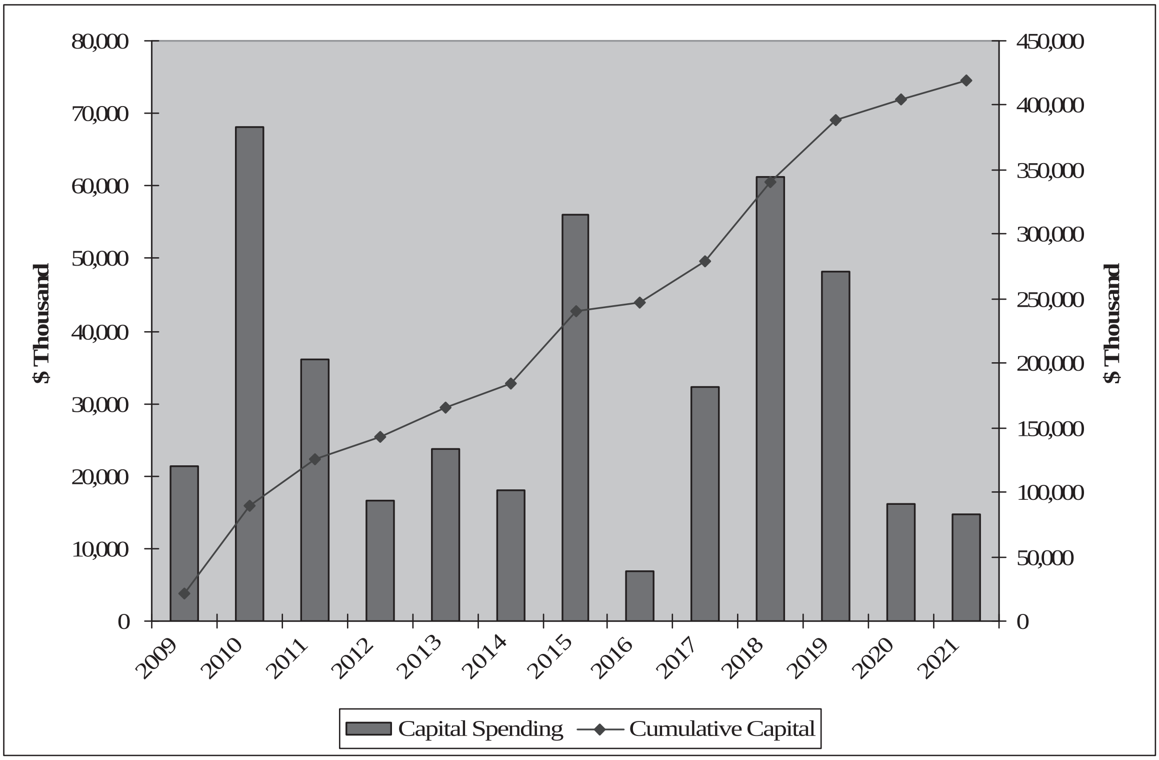
Table 25.8
Summary of Major Equipment Capital Items

Description	Capital Cost ($1000's)	Average Life
13.5m^3 HMS (Leibherrr R994)	3,529	5.5
34m^3 HMS (Leibherrr R996)	11,422	3.7
16m^3 FEL (LeT 950)	2,150	6.0
91 tonne truck (Terex TR 100C)	921	7.2
218 tonne truck (Terex MT4400)	3,545	7.1
75000 lbs Drill (DM75k)	1,386	10.4
45000 lbs Drill (DM45k)	902	10.0
10m^3 FEL Cat 988 (Loading/Stockpiling)	1,012	10.0
Caterpillar D10 Track Dozer	1,285	4.7
RTD Caterpillar 834	999	7.4

All capital expenditures were depreciated. It is assumed that the same depreciation is used for both tax and book purposes. Tax depreciation is straight-line with a half-year convention. All development and equipment capital was depreciated over a 10 year life.

Figure 25.10 shows capital spending by year, as well as cumulatively over the project life. The "spikes" in 2010, 2014 and 2018 correspond generally to replacement of major equipment such as the $34m^3$ Liebherr R996 shovel.

FIGURE 25.10 CAPITAL EXPENDITURES



25.8 Economic Analysis

Based on operating and capital costs, as well as indirect costs, an annual cash flow analysis was developed as a means of establishing the project's value, based on the reserves only. The analysis is based on a full recovery of capital and operating costs presented in the previous sections as well as a return on investment. The mine plan volumes account for material on the MAK side of the mining lease, that must be removed in order to access coal within the SGQ lease. No MAK or MAK-Qinghua coal is accounted for in this analysis. In addition, it is assumed that through a "back-slope agreement" MAK-lease coal uncovered through SGQ operations will be sold back them at such a price as to allow SGQ to be fully reimbursed for their costs of stripping. In other words, the cost of removing MAK-lease waste and coal is removed from the cost model.

The following assumptions were made based on discussion with SGQ management:

- Exchange rate of 6.8 RMB to US$1
- Annual corporate overhead of $2.925M
- 2007 exploration costs of $2.875M are expensed
- Coal prices as described previously (see 25.3, Markets).

Income was determined by applying the various coal prices to quantities of each coal product sold. Operating costs including labour, materials, supplies, contractors, administration and production taxes and royalties were deducted to arrive at earnings before taxes, interest, depreciation and amortization (EBITDA). An after-tax cash flow was developed by deducting depreciation from EBITDA to get taxable income. A income tax rate of 25 percent was applied to this value and an after-tax income determined. Depreciation was added back in and capital spending deducted to arrive at the after tax cash flow over the project life. NPVs were then calculated on this cash flow.

This cash flow analysis indicates a favourable NPV at varying discount rates. A summary of project sensitivity to discount rate appears in Table 25.9. It is noted that this a "snapshot" of economics after a project has started, i.e., economics reported are more favourable than they might have been for a developing (as opposed to producing) property. Much of the development costs (though not all) are already incurred, and project risk due to unknowns is minimized.

Table 25.9
NPV at Various Discount Rates (8Mtpy)

Interest Rate	**0%**	**8%**	**10%**	**12%**	**15%**	**20%**
Net Present Value ($000)	2,320,177	1,156,318	994,467	862,322	706,242	523,565

25.8.1 *Sensitivity Analysis*

Several issues are known that may have a positive or negative effect on cash flow and project value. The principle issues include:

- A potential switch to rail transport, Ovoot mine to Ceke. This would potentially reduce costs and increase the profit margin to SGQ.
- Recent developments with regards Mongolian tax law have made the provision allowing refund on VAT uncertain. It is possible that this tax advantage may not be realized going into the future.

The cash flow analysis has been repeated to take into account the two scenarios described above.

The typical cost of trucking coal from Ovoot to Ceke is approximately 25 RMB/tonne (including fixed and variable costs). As discussed previously, preliminary studies have indicated that there are cost benefits to constructing a rail connecting the Ovoot region (Ovoot and MAK-Nariin Sukhait mines) to the border at Ceke, and the existing rail terminus. It is expected that this would reduce transport costs to approximately 17 RMB/tonne. The cost flow analysis was adjusted to assume a rail connection from Ovoot to Ceke, starting in 2013.

Taking into the above, replacing truck transport with rail transport yields the following project NPVs.

Table 25.10
NPV at Various Discount Rates (8Mtpy, Rail Transport)

Interest Rate	**0%**	**8%**	**10%**	**12%**	**15%**	**20%**
Net Present Value ($000)	2,399,271	1,189,783	1,021,726	884,586	722,731	533,587

Currently, the Mongolian tax code allows for VAT paid by the producer to claim a refund. In this study it is assumed that the VAT would be refunded in full the following year. However, as described previously, it is understood that there have been recent adjustments to the tax code specifically relating to VAT, although the new law has not yet been officially published.

In order to gauge sensitivity of project economics to this issue, an alternate analysis has been performed that assumes that thermal and unwashed coking coal producers would be "exempt", i.e., there will no refund of VAT. The following has been taken into account:

- It is assumed that outstanding refund claims will not be fulfilled

- VAT will be applied to all capital purchases, materials and supplies (but not labor), and will not be refunded the following year, or at any other time.

Taking into the above, assuming an exception to the VAT refund rule (i.e., no VAT refund) yields the following project NPVs.

Table 25.11
NPV at Various Discount Rates (8Mtpy, Without VAT Refund)

Interest Rate	0%	8%	10%	12%	15%	20%
Net Present Value ($000)	2,172,801	1,076,041	923,983	799,960	653,641	482,677

In addition, project sensitivity to some secondary issues was analyzed.

One potential issue is coal pricing. Although coal prices in this study are based on reasonable estimates, taking into account the market, actual coal prices over the LOM are likely to vary from those used in this study. Sensitivity of project economics to variations in coal pricing for all three coal products of + and - 10% were performed, as summarized in Tables 25.12 and 25.13.

Table 25.12
NPV at Various Discount Rates (8Mtpy, + 10% Coal Prices)

Interest Rate	0%	8%	10%	12%	15%	20%
Net Present Value ($000)	2,876,775	1,453,278	1,254,009	1,090,942	897,810	670,830

Table 25.13
NPV at Various Discount Rates (8Mtpy, - 10% Coal Prices)

Interest Rate	0%	8%	10%	12%	15%	20%
Net Present Value ($000)	1,763,580	859,358	734,924	633,703	514,675	376,300

Finally, a sensitivity analysis was performed assuming a delay in project start-up. In reality, this is likely to take the form of a longer ramp-up period to steady-state (8Mtpa). However, for the purposes of the sensitivity analysis, it was conservatively assumed that the entire project would be delayed a whole year. The effects on NPV are summarized in Table 25.14.

Table 25.14
NPV at Various Discount Rates (8Mtpy, Delay of One year)

Interest Rate	0%	8%	10%	12%	15%	20%
Net Present Value ($000)	2,320,177	1,070,665	904,060	769,931	614,124	436,304

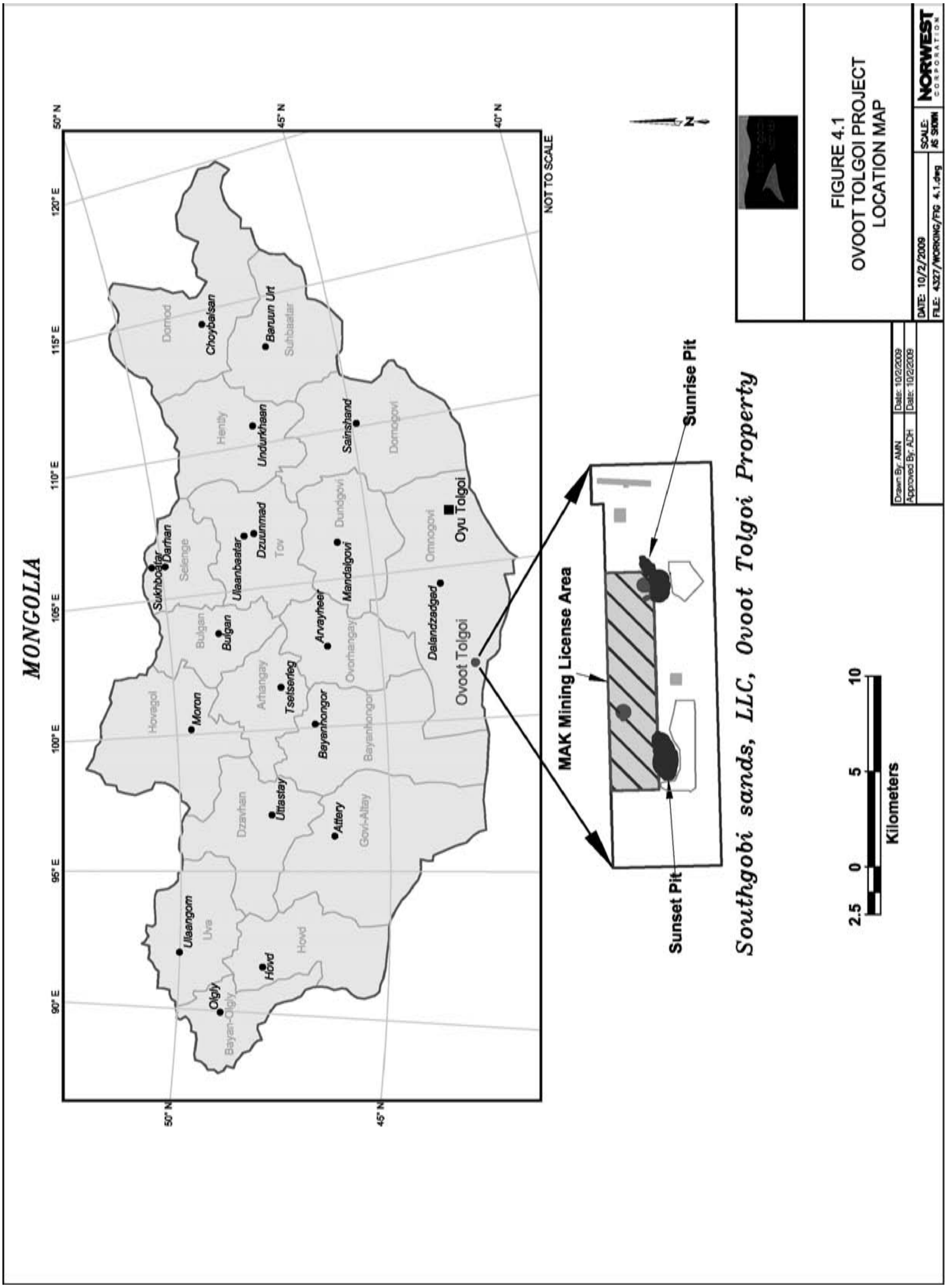
25.9 Payback Period

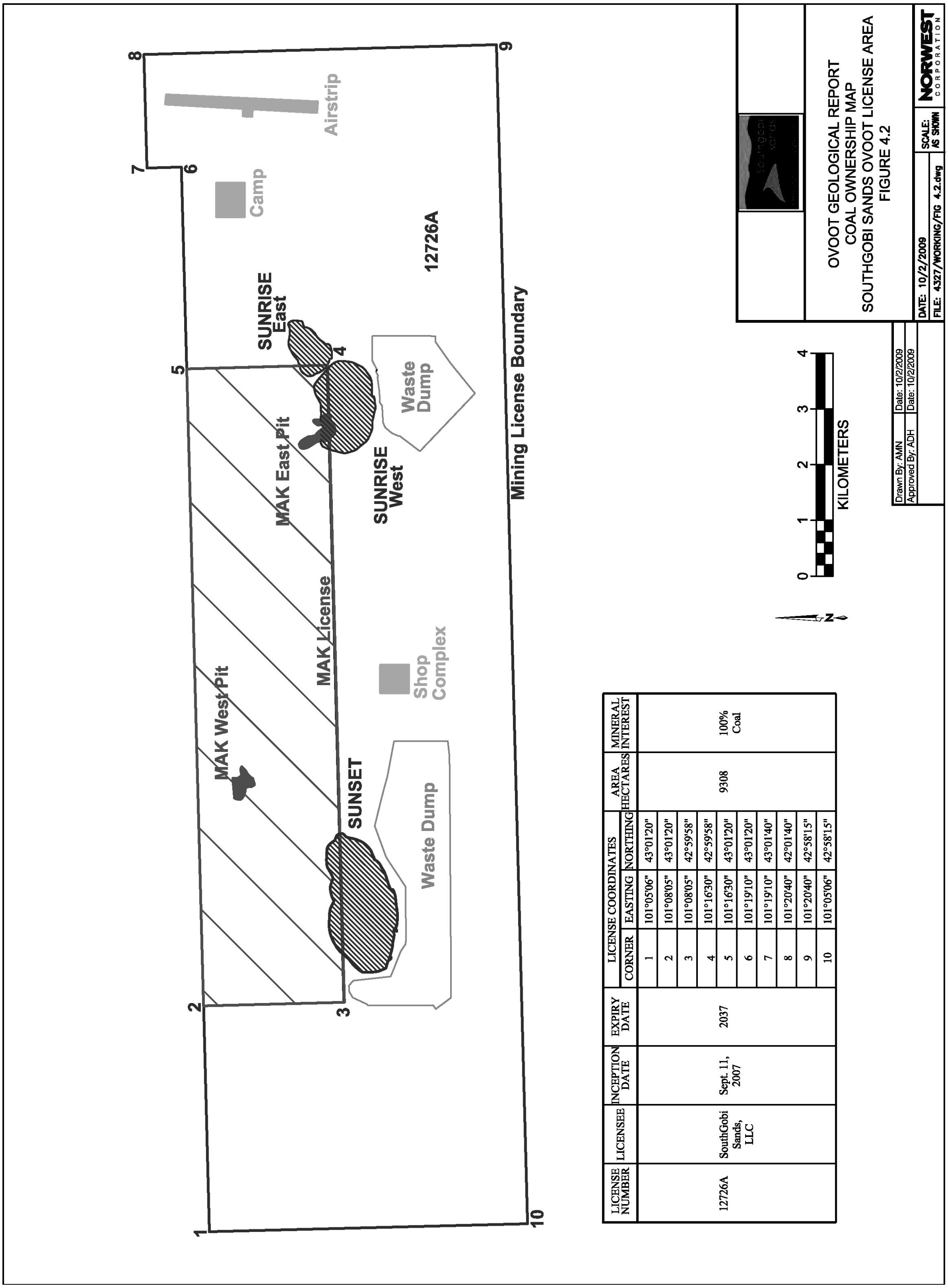
The current 'base-case' cost flow analysis (see Table 25.9) indicates that the development capital (including all sunk costs prior to June 1, 2009) will be recovered during 2010.

25.10 Life of Mine

The results of a current PFS indicate that there are economic reserves sufficient for 16 years of mining at a steady-state production of 8Mtpa. Continued exploration may bring additional resources into a Demonstrated category of confidence. If that is the case, then a PFS-level (or higher) mining study could identify additional economically attractive resources that in turn may increase the Life of Mine.

26 ILLUSTRATIONS


MONGOLIA
NOT TO SCALE
Southgobi sands, LLC, Ovoot Tolgoi Property
MAK Mining License Area
Sunrise Pit
Sunset Pit
Kilometers
Ovoot Tolgoi
Oyu Tolgoi
Choybalsan
Baruun Urt
Undurkhaan
Sainshand
Dzuunmad
Ulaanbaatar
Darhan
Sukhbaatar
Mandalgovi
Dalandzadgad
Arvayheer
Bulgan
Tsetserleg
Moron
Bayanhongor
Uliastay
Altay
Ulaangom
Hovd
Olgiy
FIGURE 4.1
OVOOT TOLGOI PROJECT
LOCATION MAP
NORWEST
CORPORATION



LICENSE NUMBER	LICENSEE	INCEPTION DATE	EXPIRY DATE	LICENSE COORDINATES			AREA HECTARES	MINERAL INTEREST
				CORNER	EASTING	NORTHING		
12726A	SouthGobi Sands, LLC	Sept. 11, 2007	2037	1	101°05'06"	43°01'20"	9308	100% Coal
				2	101°08'05"	43°01'20"		
				3	101°08'05"	42°59'58"		
				4	101°16'30"	42°59'58"		
				5	101°16'30"	43°01'20"		
				6	101°19'10"	43°01'20"		
				7	101°19'10"	43°01'40"		
				8	101°20'40"	43°01'40"		
				9	101°20'40"	42°58'15"		
				10	101°05'06"	42°58'15"		

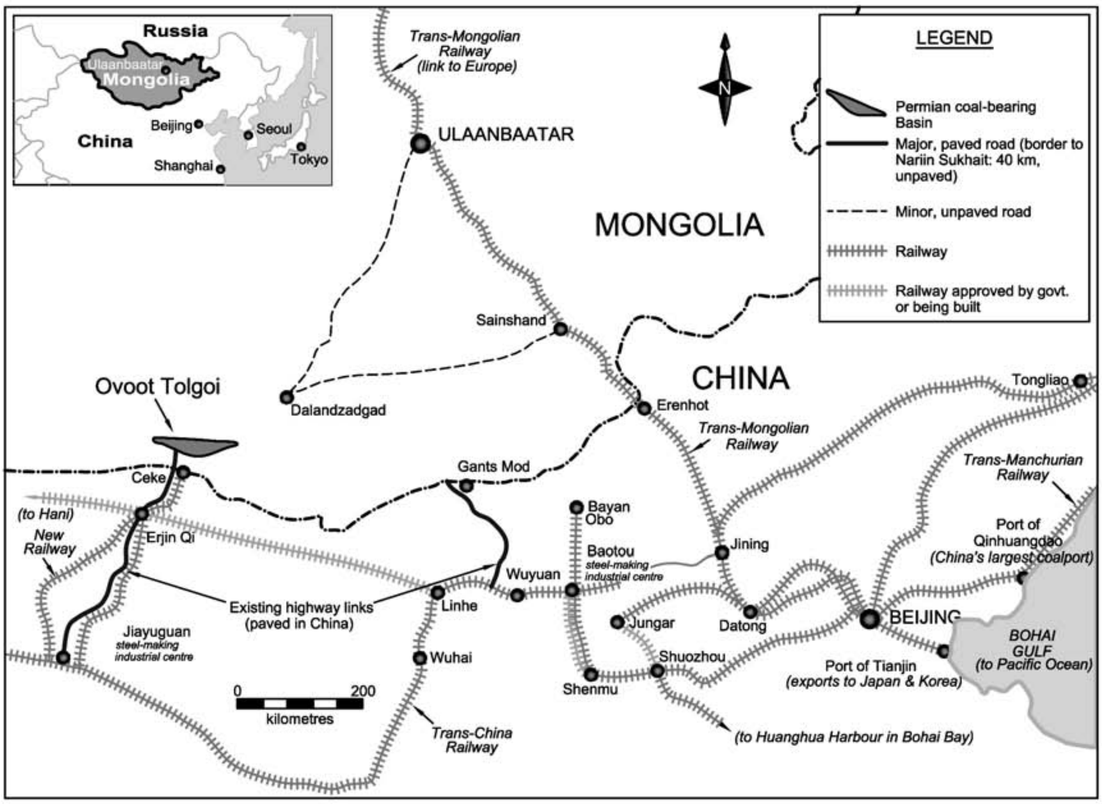
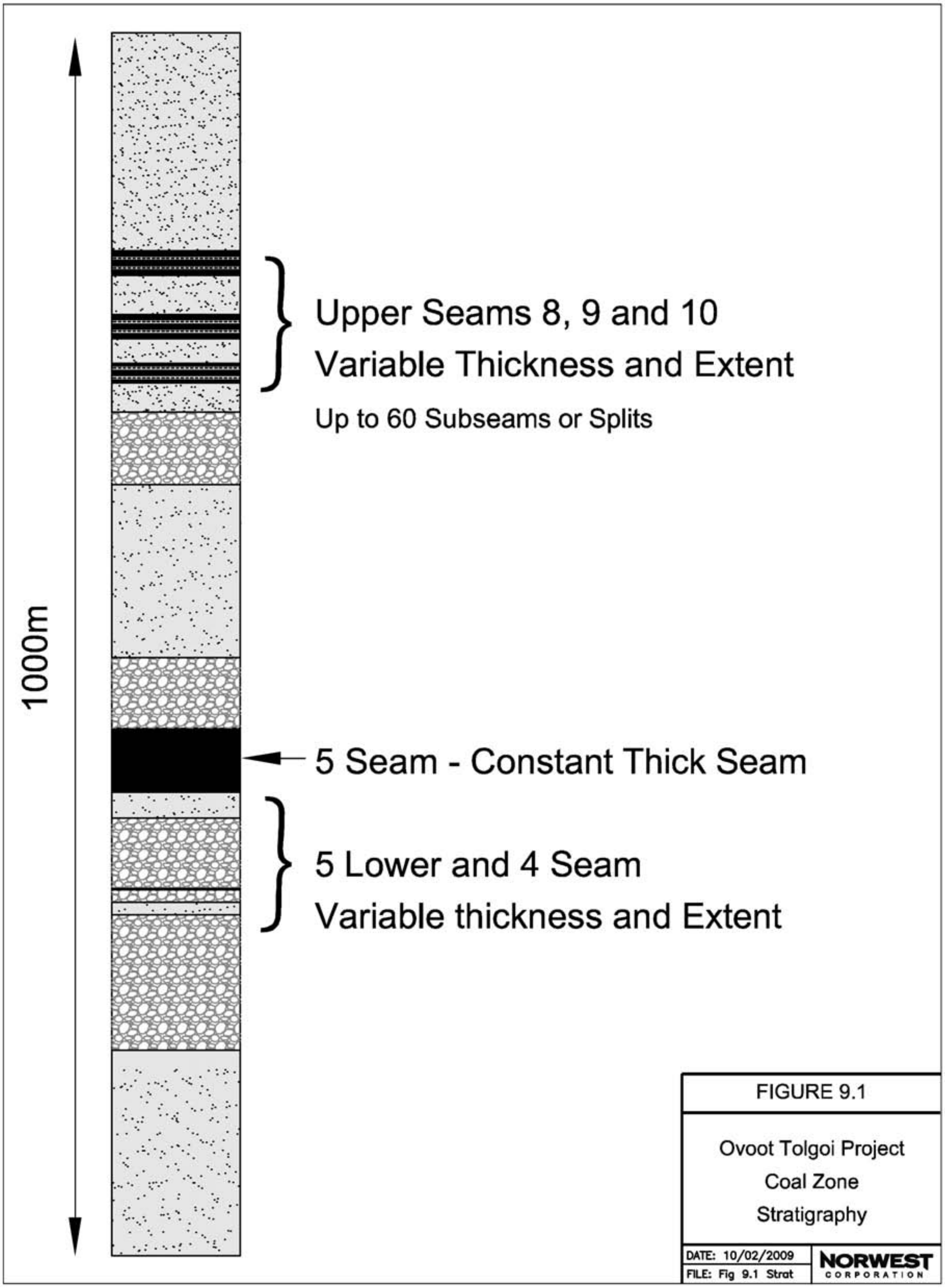


FIGURE 7.1
OVOOT TOLGOI PROJECT
REGIONAL INFRASTRUCTURE

Drawn By: AMN	Date: 10/2/2009
Approved By: ADH	Date: 10/2/2009

DATE: 10/2/2009 | SCALE: NTS | NORWEST CORPORATION
FILE: 4327/WORKING/FIG. 7.1.dwg


1000m
Upper Seams 8, 9 and 10
Variable Thickness and Extent
Up to 60 Subseams or Splits
5 Seam - Constant Thick Seam
5 Lower and 4 Seam
Variable thickness and Extent
FIGURE 9.1
Ovoot Tolgoi Project
Coal Zone
Stratigraphy
DATE: 10/02/2009
FILE: Fig 9.1 Strat
NORWEST
CORPORATION

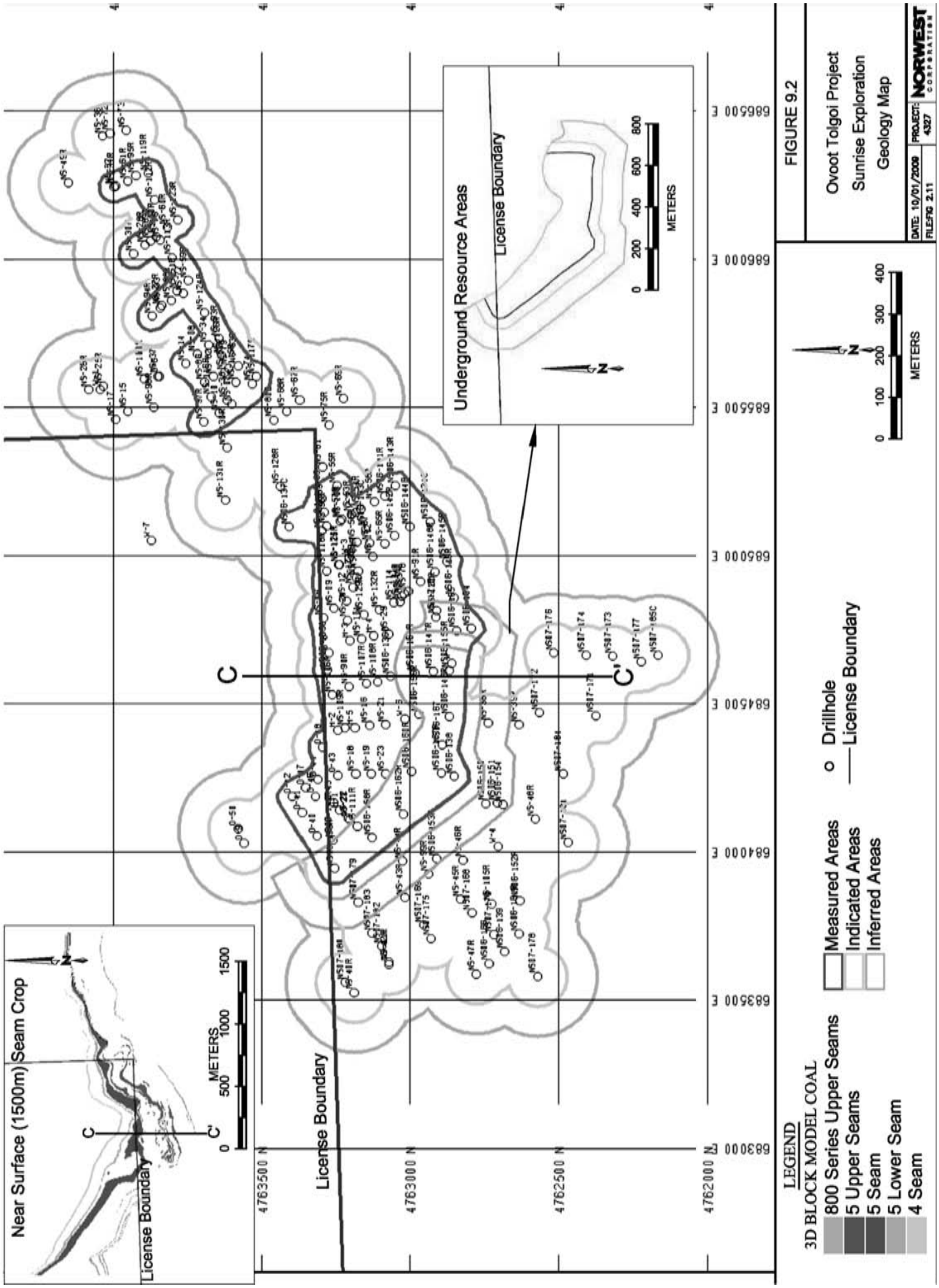


FIGURE 9.2
Ovoot Tolgoi Project
Sunrise Exploration
Geology Map
NORWEST CORPORATION
DATE: 10/01/2009
PROJECT: 4327
FILE/FIG: 2.11
LEGEND
3D BLOCK MODEL COAL
800 Series Upper Seams
5 Upper Seams
5 Seam
5 Lower Seam
4 Seam
Measured Areas
Indicated Areas
Inferred Areas
Drillhole
License Boundary
METERS
0
100
200
300
400
Near Surface (1500m) Seam Crop
License Boundary
C
C'
METERS
0
500
1000
1500
Underground Resource Areas
License Boundary
METERS
0
200
400
600
800
License Boundary
4763500 N
4763000 N
4762500 N
4762000 N
683000 E
683500 E
684000 E
684500 E
685000 E
685500 E
686000 E
686500 E

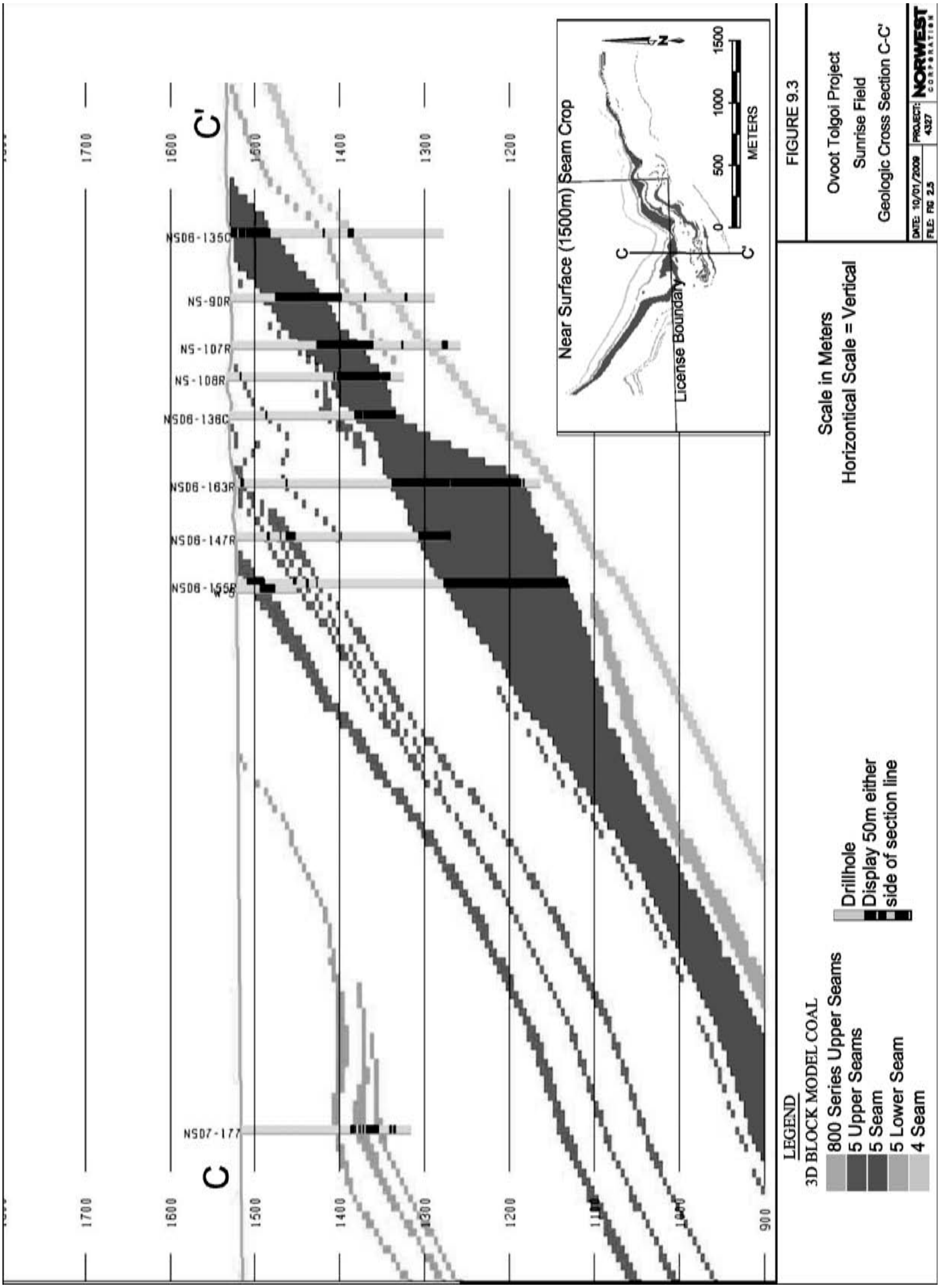
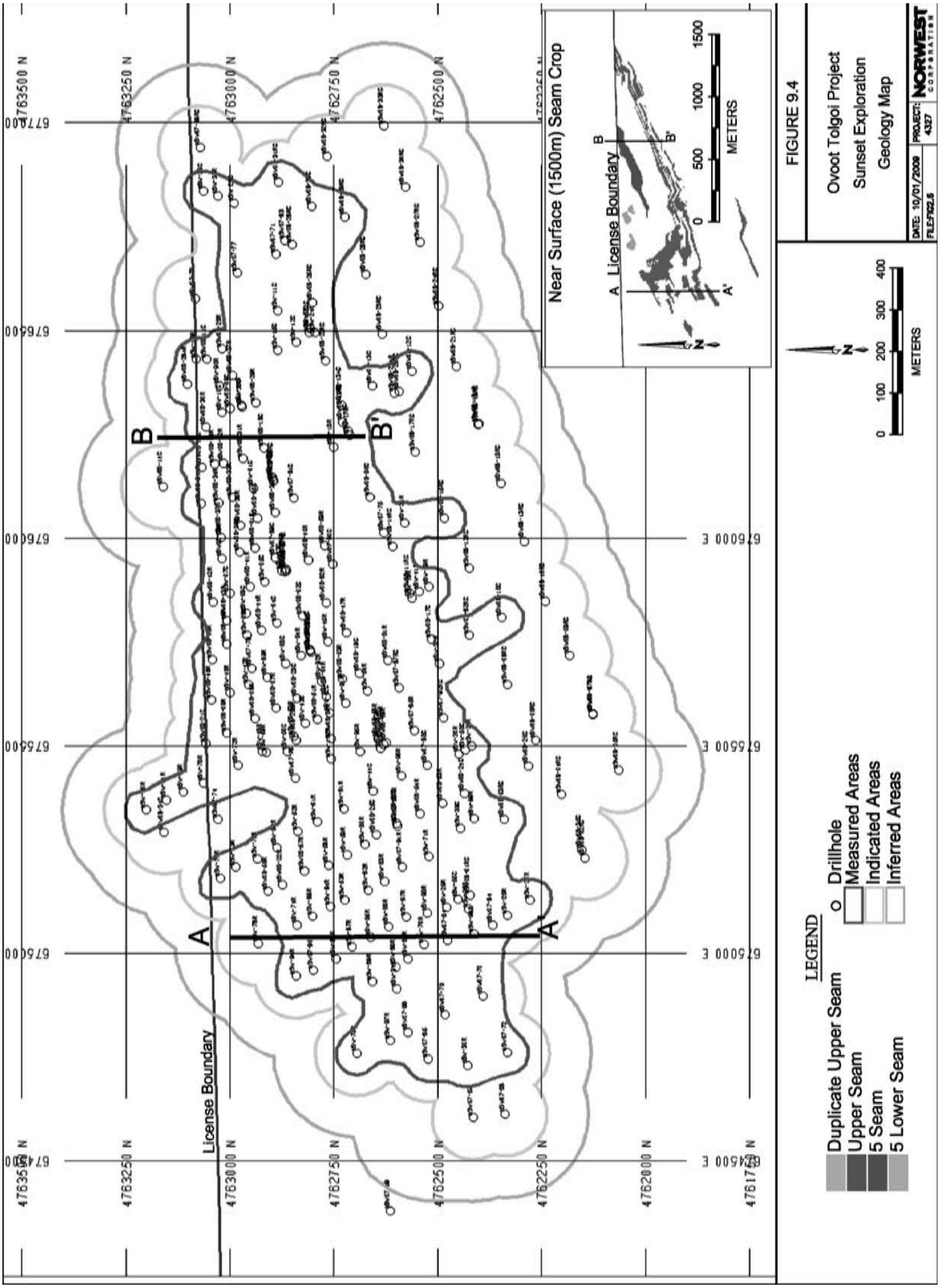


FIGURE 9.3
Ovoot Tolgoi Project
Sunrise Field
Geologic Cross Section C-C'
Scale in Meters
Horizontical Scale = Vertical
Near Surface (1500m) Seam Crop
License Boundary
METERS
0
500
1000
1500
C
C'
NS06-135C
NS-90R
NS-107R
NS-108R
NS06-136C
NS06-163R
NS06-147R
NS07-177
1700
1600
1500
1400
1300
1200
1100
1000
900
LEGEND
3D BLOCK MODEL COAL
800 Series Upper Seams
5 Upper Seams
5 Seam
5 Lower Seam
4 Seam
Drillhole
Display 50m either side of section line
NORWEST CORPORATION


Near Surface (1500m) Seam Crop
License Boundary
METERS
License Boundary
LEGEND
Drillhole
Measured Areas
Indicated Areas
Inferred Areas
Duplicate Upper Seam
Upper Seam
5 Seam
5 Lower Seam
FIGURE 9.4
Ovoot Tolgoi Project
Sunset Exploration
Geology Map
NORWEST CORPORATION

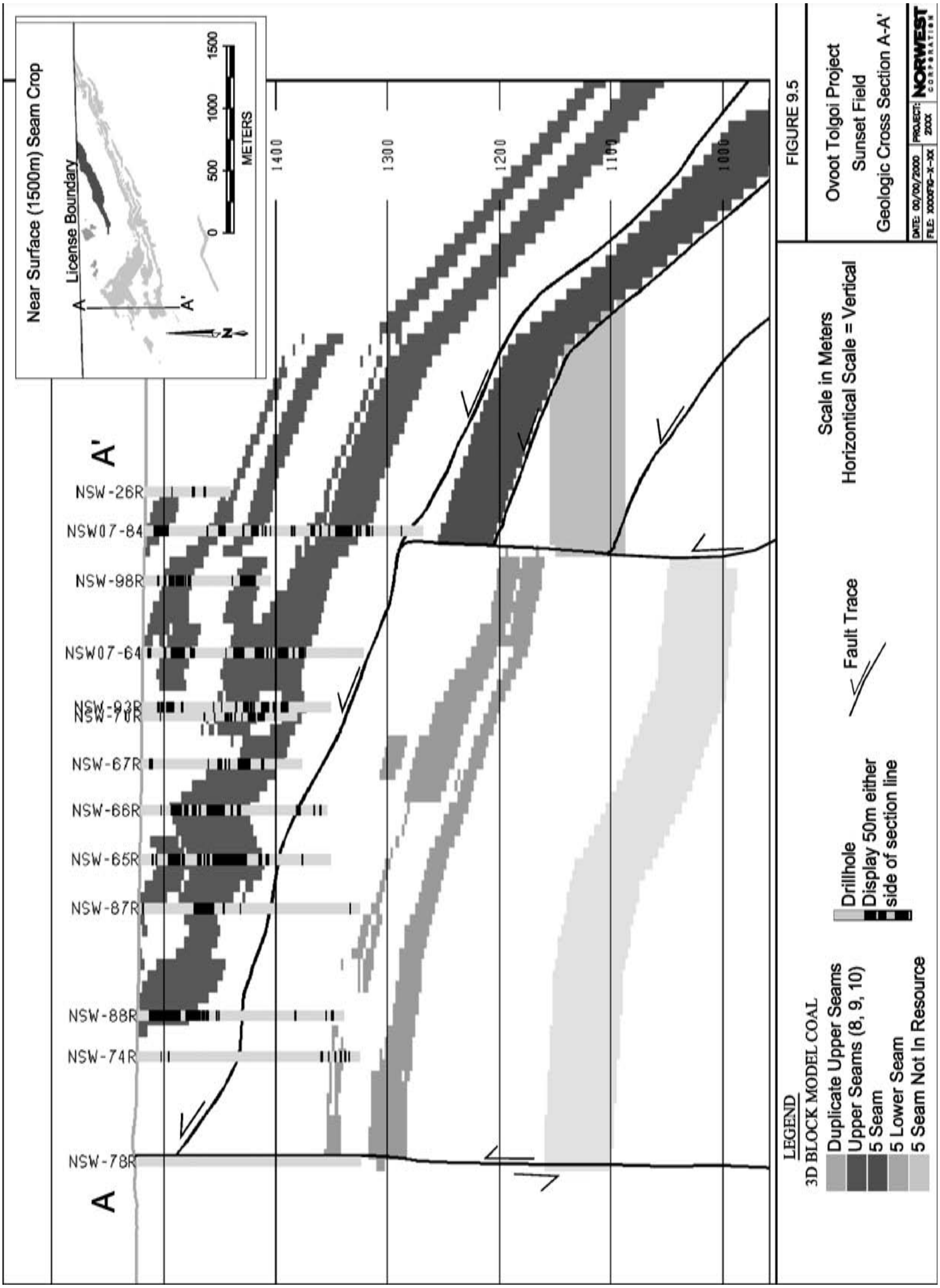


FIGURE 9.5
Ovoot Tolgoi Project
Sunset Field
Geologic Cross Section A-A'
NORWEST
Near Surface (1500m) Seam Crop
License Boundary
A
A'
0
500
1000
1500
METERS
1400
1300
1200
1100
1000
NSW-26R
NSW07-84
NSW-98R
NSW07-64
NSW-93R
NSW-70R
NSW-67R
NSW-66R
NSW-65R
NSW-87R
NSW-88R
NSW-74R
NSW-78R
Scale in Meters
Horizontical Scale = Vertical
Fault Trace
Drillhole
Display 50m either side of section line
LEGEND
3D BLOCK MODEL COAL
Duplicate Upper Seams
Upper Seams (8, 9, 10)
5 Seam
5 Lower Seam
5 Seam Not In Resource

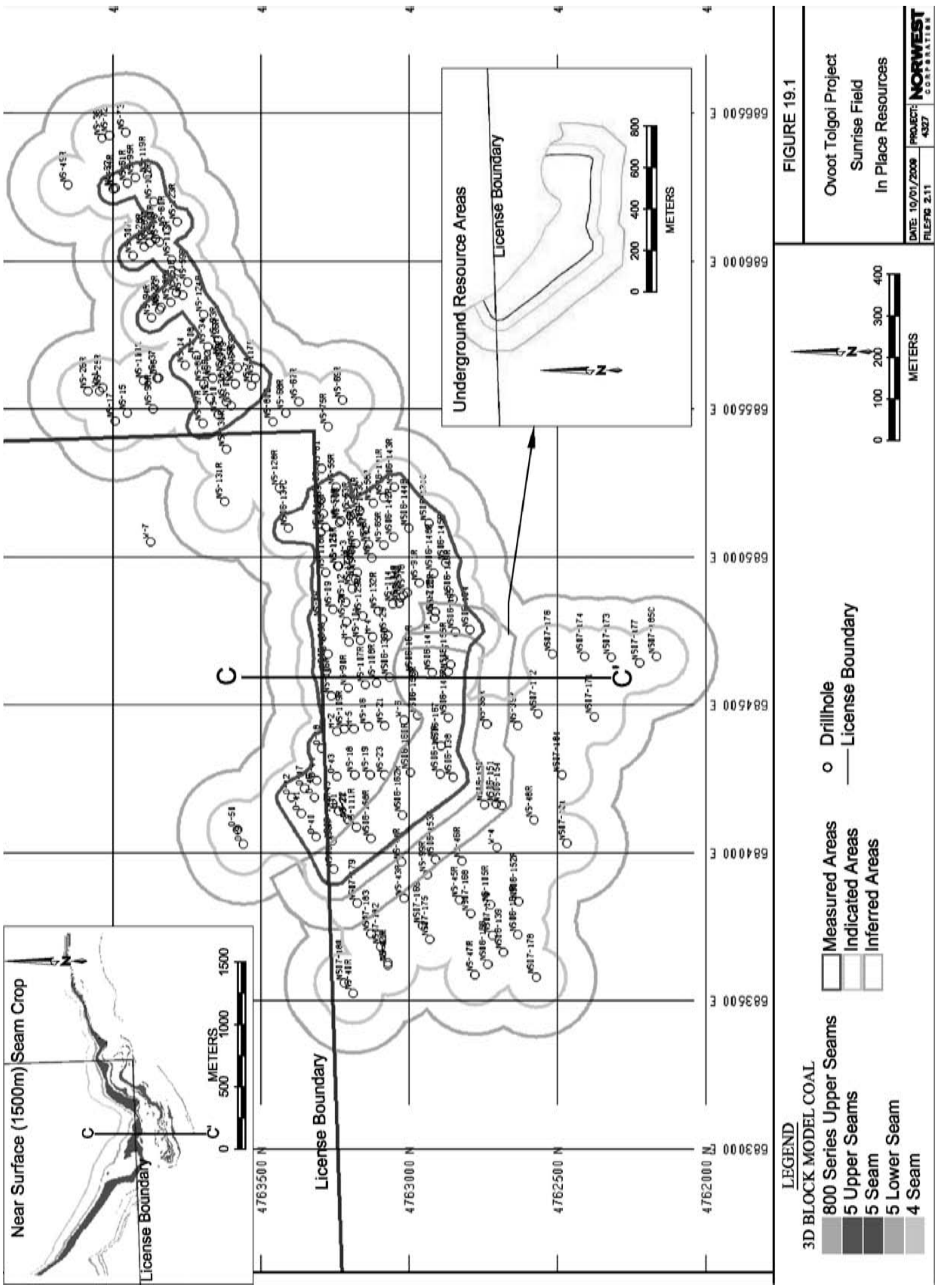
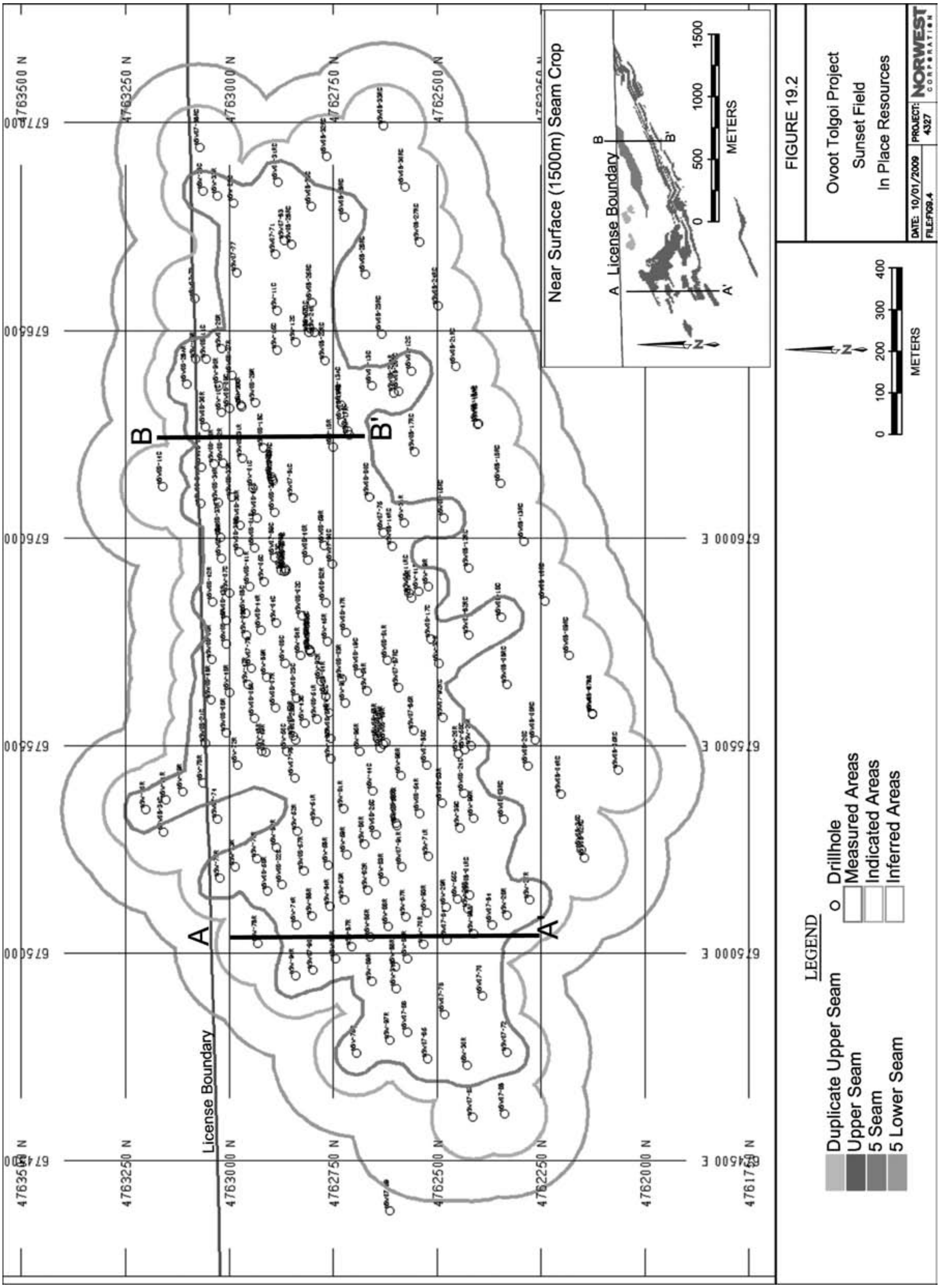


FIGURE 19.1
Ovoot Tolgoi Project
Sunrise Field
In Place Resources
NORWEST CORPORATION
LEGEND
3D BLOCK MODEL COAL
800 Series Upper Seams
5 Upper Seams
5 Seam
5 Lower Seam
4 Seam
Measured Areas
Indicated Areas
Inferred Areas
Drillhole
License Boundary
METERS
Underground Resource Areas
License Boundary
Near Surface (1500m) Seam Crop
C
C'
4763500 N
4763000 N
4762500 N
4762000 N


Near Surface (1500m) Seam Crop
License Boundary
METERS
FIGURE 19.2
Ovoot Tolgoi Project
Sunset Field
In Place Resources
NORWEST CORPORATION
DATE: 10/01/2009
PROJECT: 4327
LEGEND
Drillhole
Measured Areas
Indicated Areas
Inferred Areas
Duplicate Upper Seam
Upper Seam
5 Seam
5 Lower Seam
4763500 N
4763250 N
4763000 N
4762750 N
4762500 N
4762250 N
4762000 N
675000 E
675500 E
676000 E
A
A'
B
B'

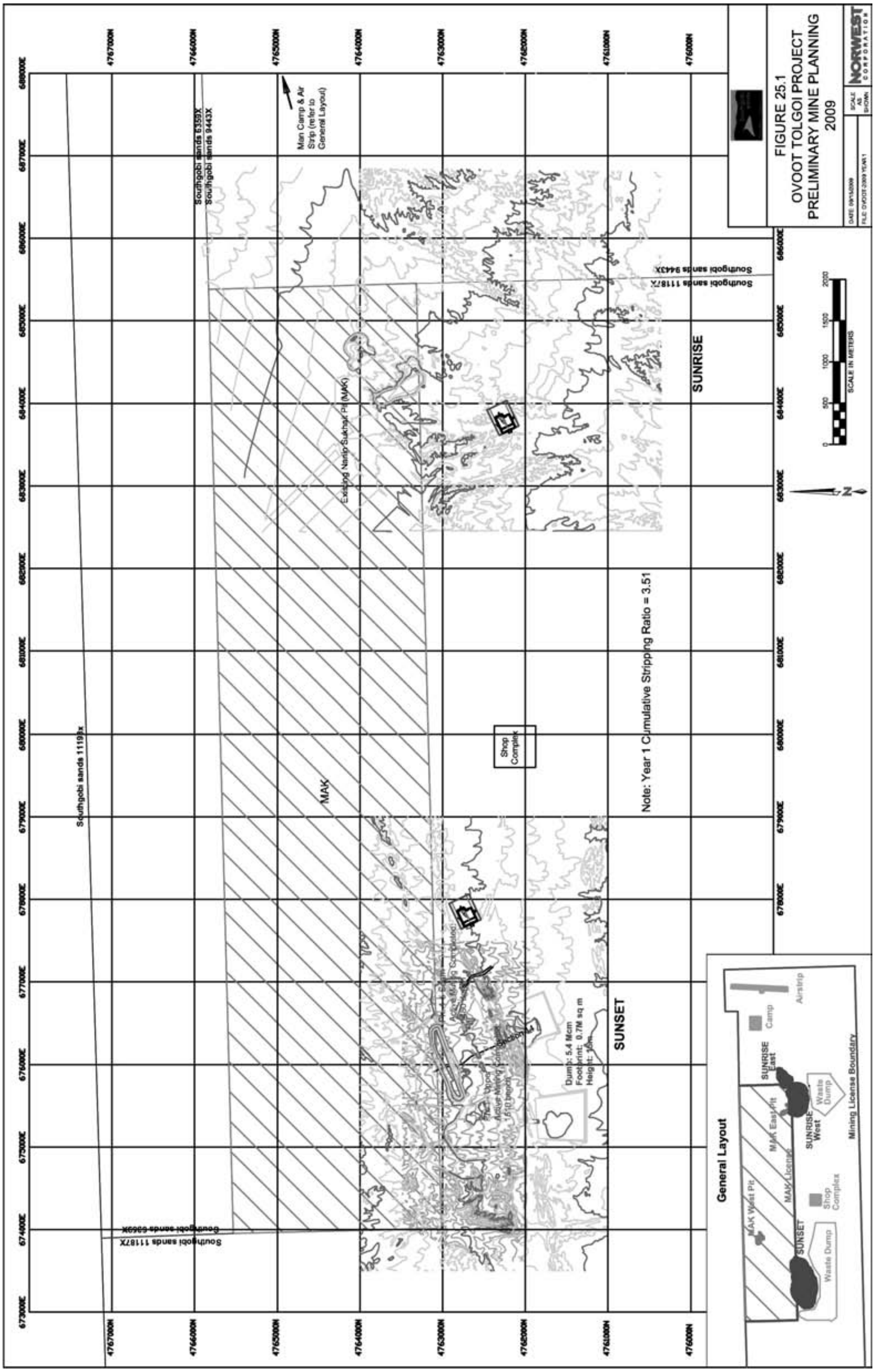


FIGURE 25.1
OVOOT TOLGOI PROJECT
PRELIMINARY MINE PLANNING
2009
NORWEST CORPORATION
MAK
SUNRISE
SUNSET
Shop Complex
Note: Year 1 Cumulative Stripping Ratio = 3.51
General Layout

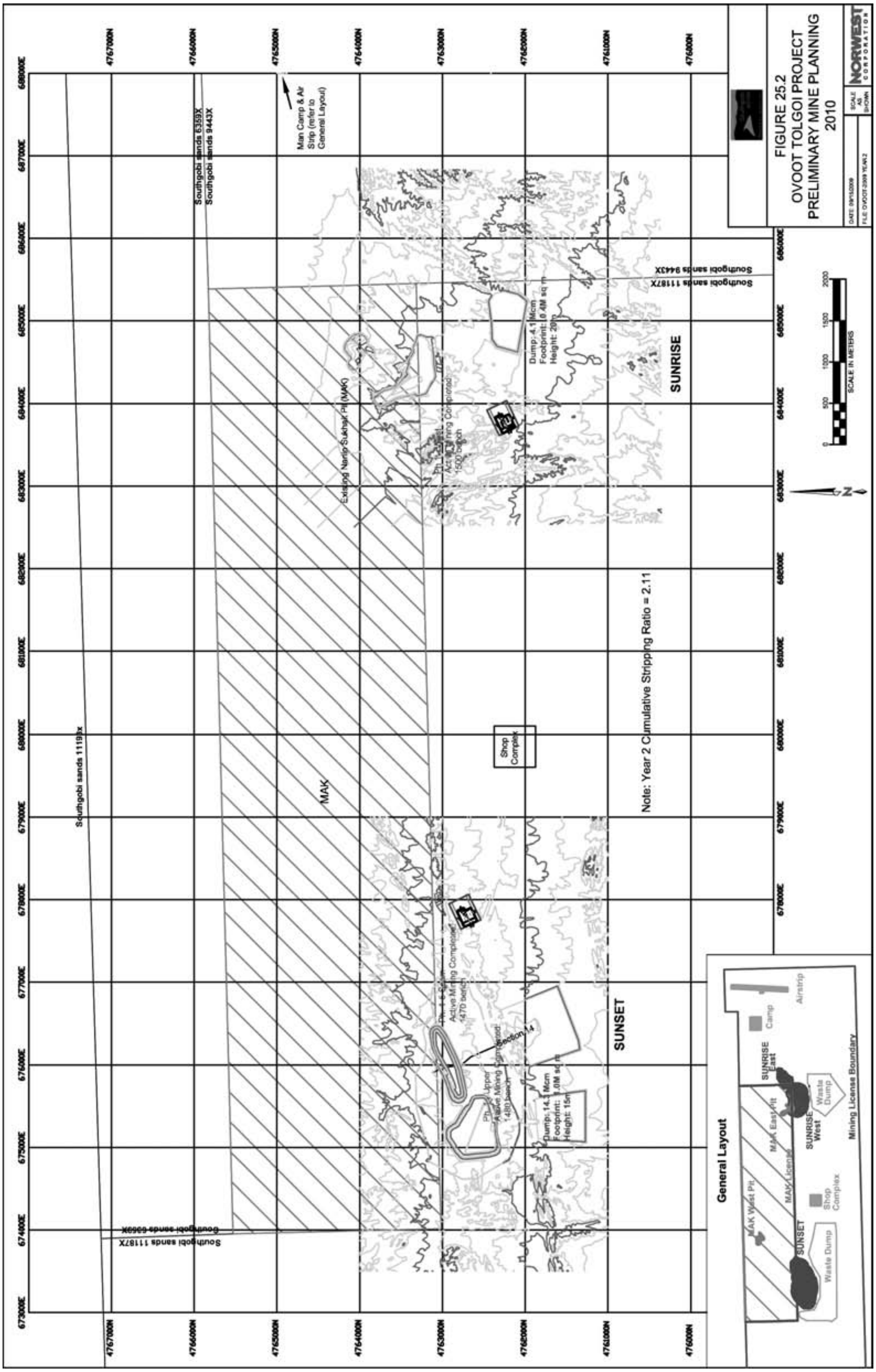


FIGURE 25.2
OVOOT TOLGOI PROJECT
PRELIMINARY MINE PLANNING
2010
NORWEST CORPORATION
SUNRISE
SUNSET
MAK
Shop Complex
Note: Year 2 Cumulative Stripping Ratio = 2.11
General Layout
Mining License Boundary
SCALE IN METERS

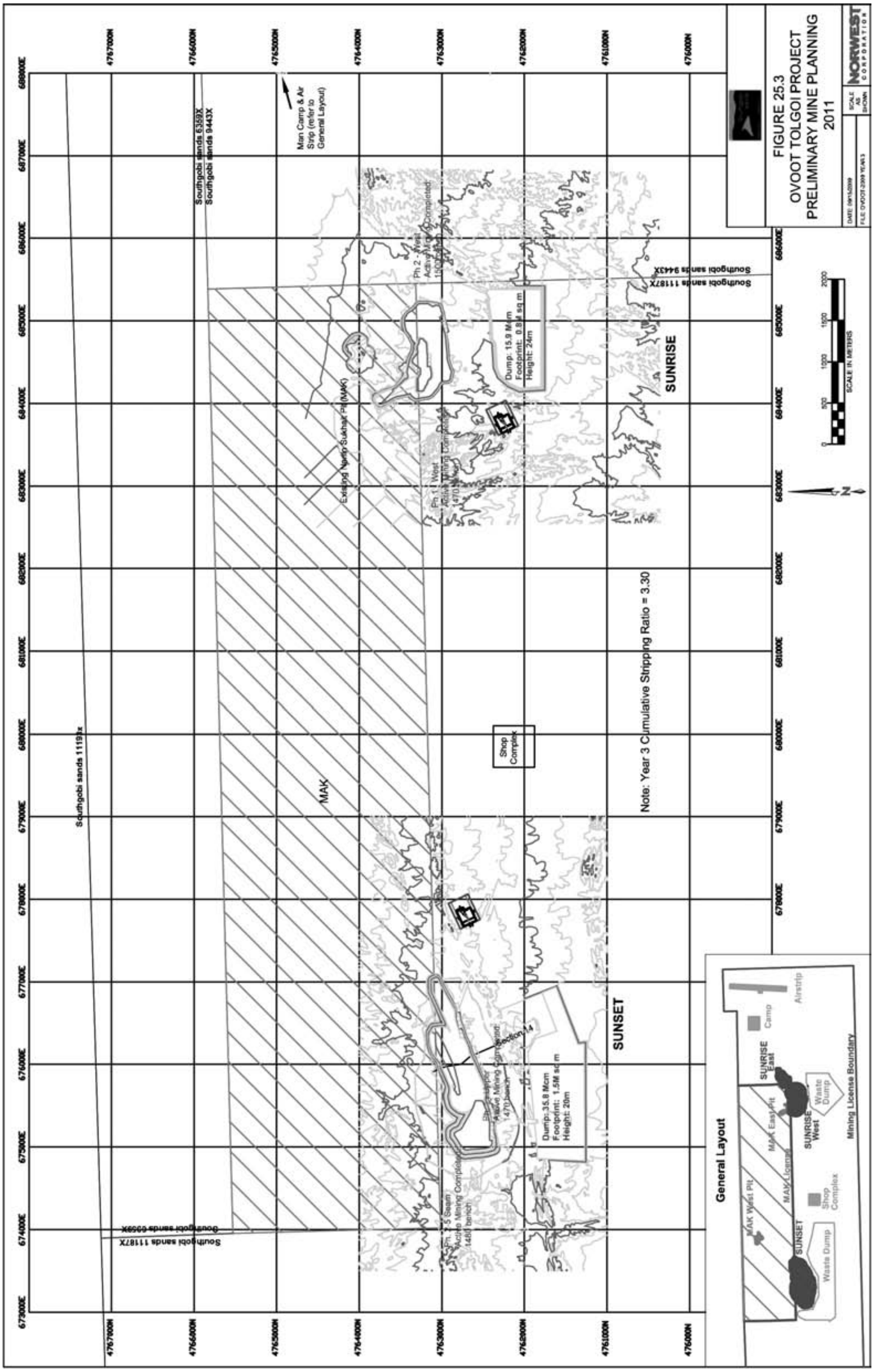


FIGURE 25.3
OVOOT TOLGOI PROJECT
PRELIMINARY MINE PLANNING
2011
NORWEST CORPORATION
Note: Year 3 Cumulative Stripping Ratio = 3.30
SUNRISE
SUNSET
MAK
Shop Complex
Southgobi sands 11193x
Dump: 15.9 Mcm
Footprint: 0.8M sq m
Height: 24m
Dump: 35.8 Mcm
Footprint: 1.5M sq m
Height: 20m
Main Camp & Air Strip (refer to General Layout)
General Layout
Mining License Boundary
Airstrip
Camp
SCALE IN METERS

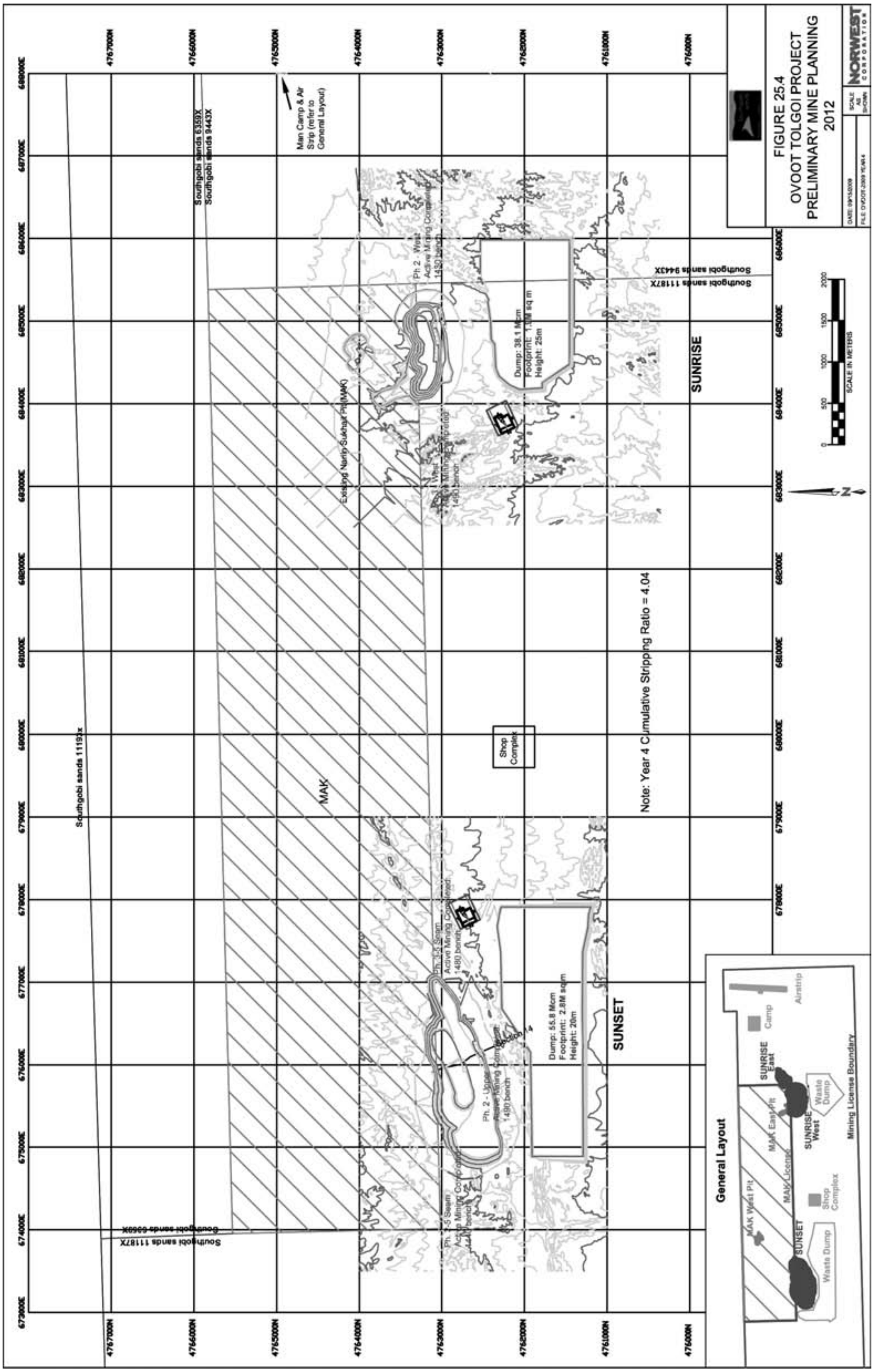


FIGURE 25.4
OVOOT TOLGOI PROJECT
PRELIMINARY MINE PLANNING
2012
NORWEST CORPORATION
SUNRISE
SUNSET
MAK
Shop Complex
Note: Year 4 Cumulative Stripping Ratio = 4.04
General Layout

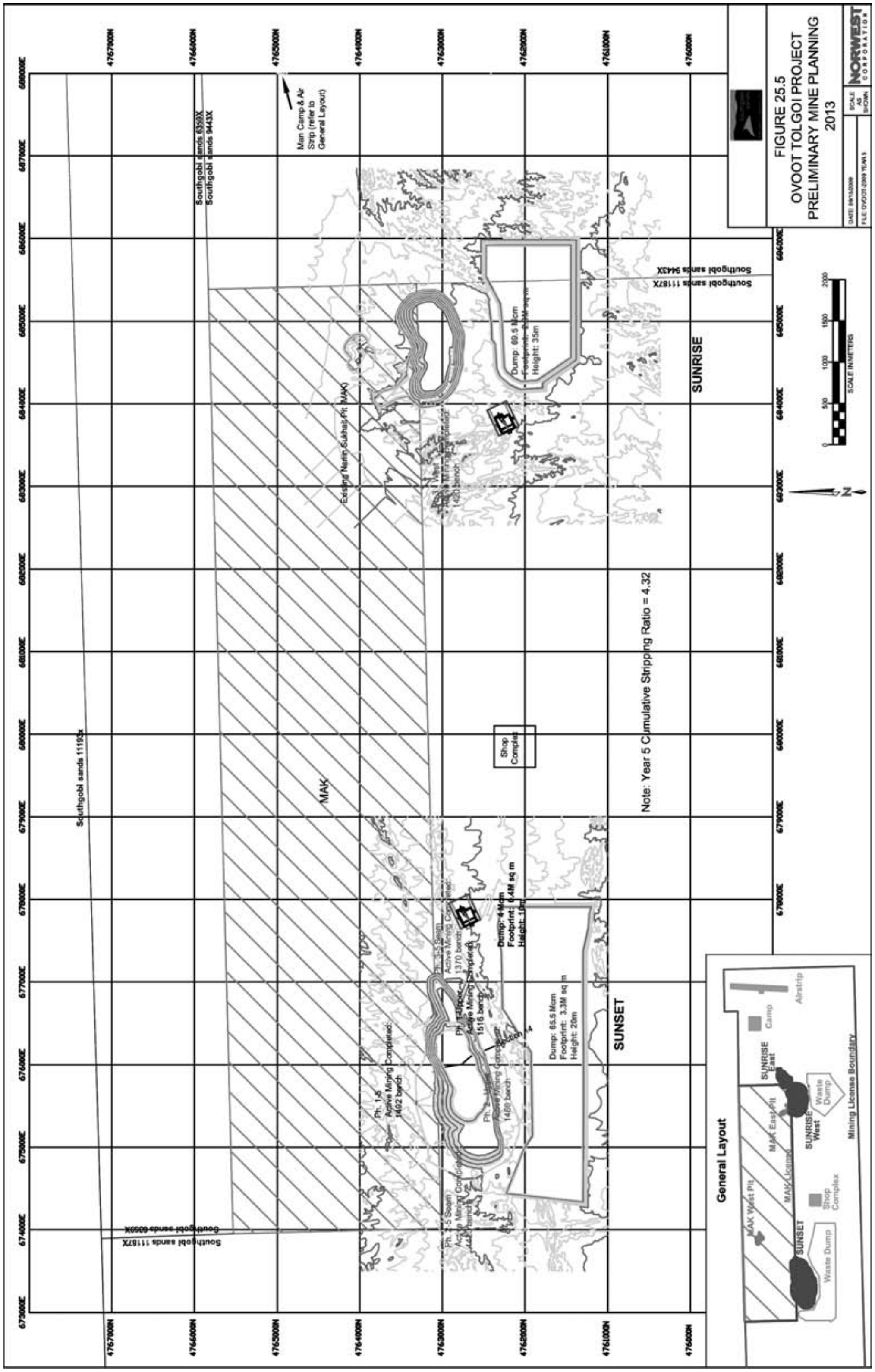


FIGURE 25.5
OVOOT TOLGOI PROJECT
PRELIMINARY MINE PLANNING
2013
NORWEST CORPORATION
Note: Year 5 Cumulative Stripping Ratio = 4.32
SUNRISE
SUNSET
MAK
Shop Complex
General Layout
SCALE IN METERS

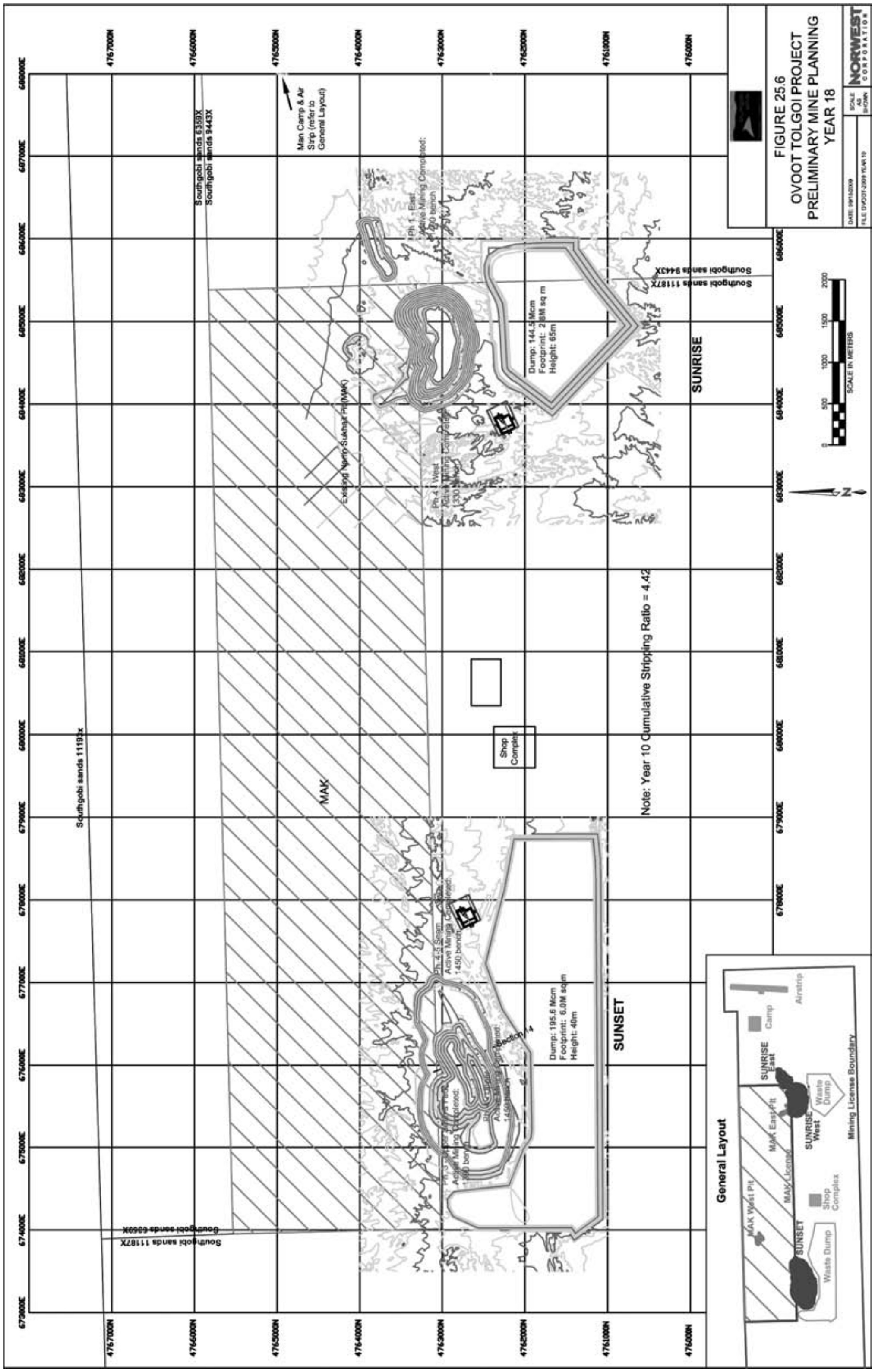


FIGURE 25.6
OVOOT TOLGOI PROJECT
PRELIMINARY MINE PLANNING
YEAR 18
NORWEST CORPORATION
SUNRISE
SUNSET
MAK
Shop Complex
Note: Year 10 Cumulative Stripping Ratio = 4.42
Dump: 144.3Mcm
Footprint: 2.8M sq m
Height: 65m
Dump: 195.6 Mcm
Footprint: 6.0M sqm
Height: 40m
SCALE IN METERS
General Layout
Mining License Boundary

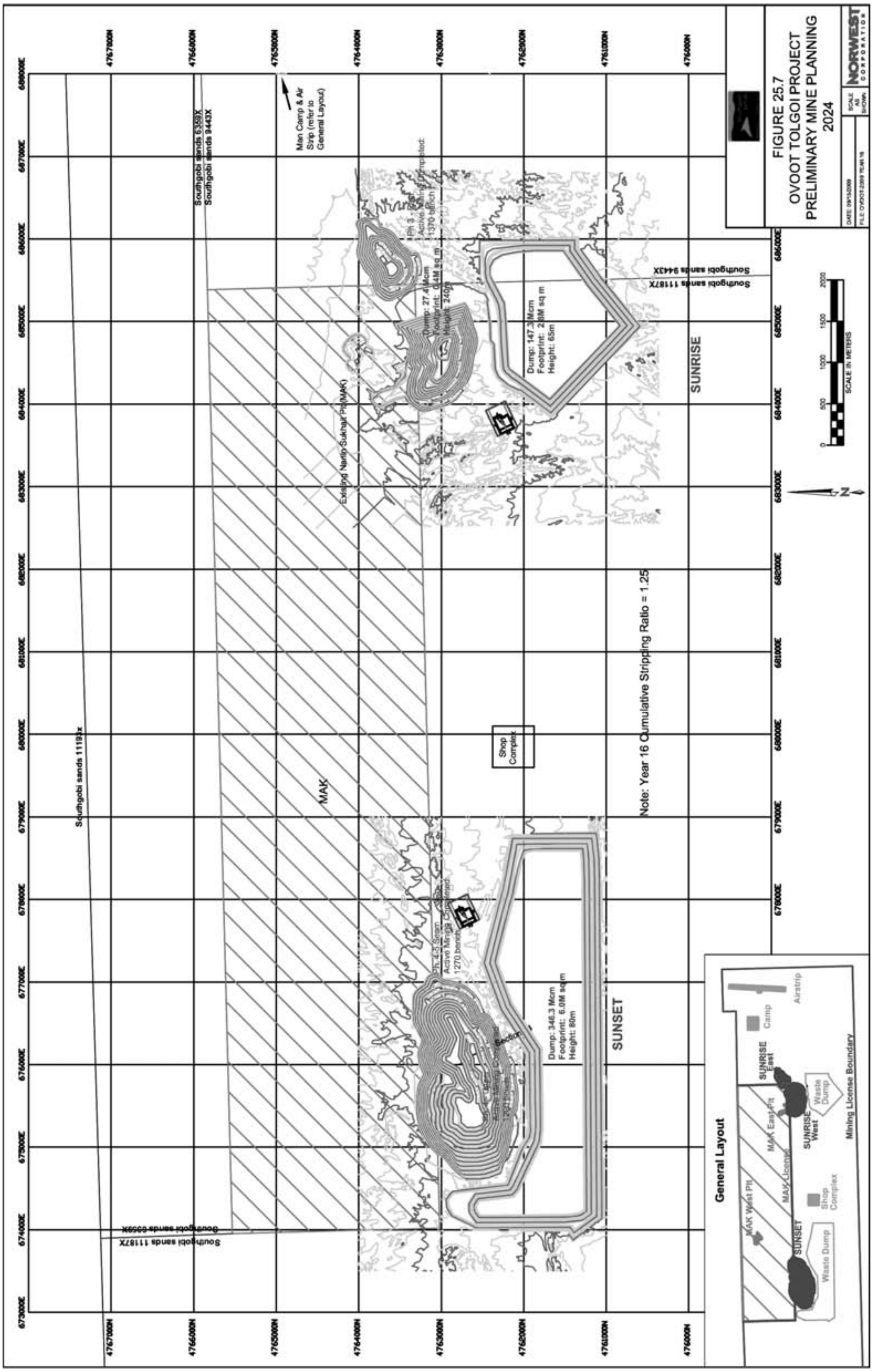


FIGURE 25.7
OVOOT TOLGOI PROJECT
PRELIMINARY MINE PLANNING
2024
NORWEST CORPORATION
SUNRISE
SUNSET
MAK
Shop Complex
Note: Year 16 Cumulative Stripping Ratio = 1.25
Dump: 147.3Mcm
Footprint: 2.8M sq m
Height: 65m
Dump: 346.3 Mcm
Footprint: 6.0M sq m
Height: 80m
Existing Nariin Sukhait Pit (MAK)
Southgobi sands 11193x
Main Camp & Air Strip (refer to General Layout)
SCALE IN METERS
General Layout
Mining License Boundary
Airstrip
Camp
Waste Dump
Shop Complex

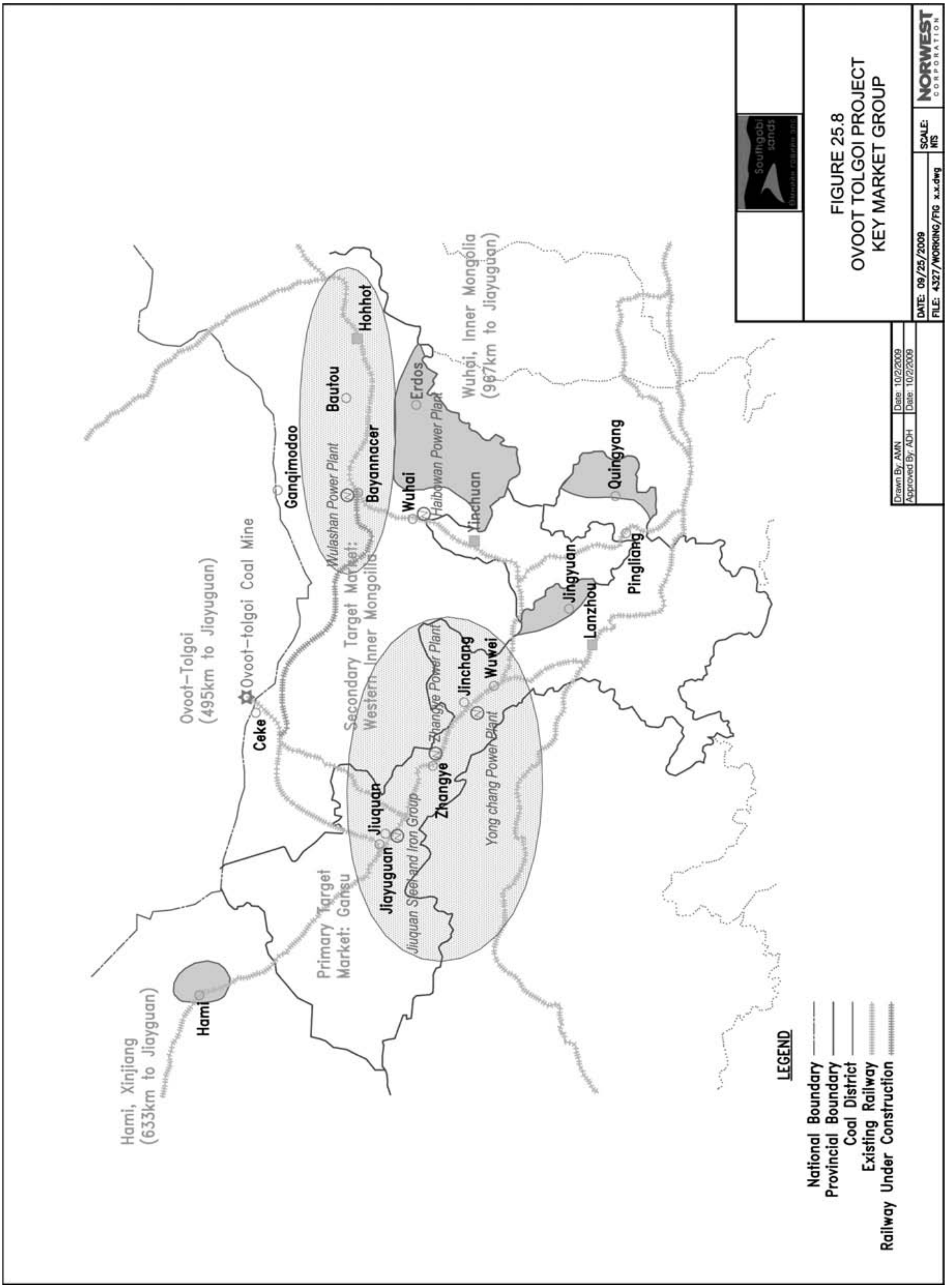


FIGURE 25.8
OVOOT TOLGOI PROJECT
KEY MARKET GROUP
Southgobi sands
NORWEST CORPORATION
Drawn By: AMN Date: 10/2/2009
Approved By: ADH Date: 10/2/2009
DATE: 09/25/2009
FILE: 4327/WORKING/FIG x.x.dwg
SCALE: NTS
LEGEND
National Boundary
Provincial Boundary
Coal District
Existing Railway
Railway Under Construction
Hami, Xinjiang (633km to Jiayguan)
Hami
Ovoot–Tolgoi (495km to Jiayuguan)
Ovoot–tolgoi Coal Mine
Ceke
Ganqimodao
Primary Target Market: Gansu
Secondary Target Market: Western Inner Mongolia
Wuhai, Inner Mongolia (987km to Jiayuguan)
Jiayuguan
Jiuquan
Jiuquan Steel and Iron Group
Zhangye
Zhangye Power Plant
Yong chang Power Plant
Jinchang
Wuwei
Lanzhou
Jingyuan
Pingliang
Quingyang
Yinchuan
Wuhai
Haibowan Power Plant
Erdos
Wulashan Power Plant
Bayannacer
Boutou
Hohhot