minarco mineconsult

SOUTHGOBI RESOURCES LTD

COAL GEOLOGY AND RESOURCES AND RESERVES, OVOOT TOLGOI COMPLEX, MONGOLIA

Technical Report

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1 EXECUTIVE SUMMARY

SouthGobi Resources Ltd (SGQ) holds the mining licence 12726A covering the Ovoot Tolgoi Complex (comprising the Ovoot Tolgoi Coal Mine and Ovoot Tolgoi Underground Deposit) in southern Mongolia. The mine is located in the southwest corner of the Umnugobi Aimag (South Gobi province), approximately 320 kilometres southwest of the provincial capital of Dalanzadgad, 950 km south of the nation's capital Ulaanbaatar, and approximately 45 kilometres north of the Mongolia-China border.

This report has been prepared by Minarco-MineConsult (MMC) at the request of SGQ in accordance with Canadian National Instrument 43-101. The purpose of the report is to update the estimate of Resources after recent exploration activities and report the estimate of Reserves following completion of a Preliminary Feasibility Study (PFS). This report states the estimate of Resources and Reserves as at 11 December, 2010.

The Ovoot Tolgoi coal deposit occurs in Upper Permian strata, which are generally structurally disturbed with complex faulting and folding. The deposit occurs along the Nariin Sukhait thrust fault. The economic coal tonnages of the Ovoot Tolgoi Coal Mine occur in two fields – the western Sunset Field (formerly named the West Field) and the eastern Sunrise Field (formerly named the South-East Field), which are separated by an area containing coal seams too thin and discontinuous to be currently considered economic.

The Sunset Field includes 4 major seam groups – the 5, 8, 9 and 10 Seams (from the base upwards). The majority of the Resources are contained in the lower 5 Seam. All seam groups consist of a number of coal plies of highly variable thickness, separated by stone partings. Interburden between the seam groups is mainly sandstone and conglomerate, whilst partings within the seam groups tend to be dominated by mudstone and carbonaceous mudstone. The seams dip at 30 to 60 degrees southwards, although complex folding is common. The 5 Seam ranges from 20-50m in true thickness and occurs from subcrop to over 600m deep in the underground Resource block. In places the 5 Seam splits into an upper and lower seam.

Coal seam stratigraphy in the Sunrise Field is similar to the Sunset Field, including the 5U, 5L, 570, 580 and 590 Seams. The upper 570-590 Seams are probably the same as the 8, 9 and 10 Seams in the Sunset Field, but correlation of these seams between the Fields has not been undertaken. The 5 Seam is split into an upper and lower section throughout the majority of the field. Most of the Resources are contained in the 5L Seam, which ranges in true thickness from 20-80m. The seams dip at 30 to 50 degrees southwards, although in the north-east of the field the dip steepens.

The Ovoot Tolgoi coal is high volatile A to B bituminous, with average raw ash generally ranging from 11-16% and calorific value 6700-7000 kcal/kg. Total sulphur for the 5 Seam is generally less than 1%, but the average for the upper seams is 0.9-1.2%. Limited metallurgical testing has been undertaken, but in places, the 5 Seam shows coking properties, with Free Swelling Index (FSI or CSN) values greater than 4.To date, the 5 Seam coal has been marketed as a raw semi-soft coking coal (1/3 coal in the Chinese system) and 8, 9, 10 Seams as a raw high ash/high sulphur product.

Geological models for both Sunset and Sunrise pits have been updated in 2010. Open cut Resources have been estimated to a depth of 300m and underground Resources for the 5 Seam from 300-600m depth. Previous Resource estimations limited open cut Resources to a depth of 250m, however recent pit optimisation studies have shown that open cut mining to a depth of just over 300m below the surface is possible. Resources for the Ovoot Tolgoi Complex are summarised in Table 1.1.

Table 1.1

Summary of Resources Ovoot Tolgoi Complex 11 December 2010

Field	Type	Seam group	Measured Mt	Indicated Mt	Inferred Mt
Sunset	**Open Cut (depth < 300m)**	10	10.13	2.11	0.24
		9	26.60	2.56	0.23
		8	6.99	0.41	0.06
		5U	24.96	6.54	0.24
		5L	13.15	4.26	1.10
		Total	**81.82**	**15.88**	**1.86**
	Underground (depth 300m-600m)	5U	42.91	12.75	1.64
		5L	3.67	8.14	11.72
		Total	**46.58**	**20.89**	**13.35**
Sunrise	**Open Cut (depth < 300m)**	570/580/590	2.58	6.32	5.76
		5U2	8.19	4.08	1.83
		5U1	4.12	0.82	0.94
		5L2	13.55	2.13	0.00
		5L1	26.01	6.57	2.51
		Total	**54.45**	**19.92**	**11.04**
	Underground (depth 300m-600m)	5U2	0.00	0.65	6.03
		5U1	0.21	0.49	1.27
		5L2	1.34	0.90	0.00
		5L1	3.88	19.17	63.49
		Total	**5.42**	**21.21**	**70.80**
Grand total	**Open Cut (depth < 300m)**		136.27	35.80	12.90
	Underground (depth 300m-600m)		52.00	42.10	84.15

The Measured and Indicated Resources are inclusive of those Resources modified to produce the Reserves, i.e. Reserves are not additional to Resources.

MMC has completed a Preliminary Feasibility Study (PFS), which is the basis of this Reserves estimate.

Some key assumptions used for the Reserves estimate are:

1. The Reserves estimates do not include any Inferred Resources, even though the open cut pits include Inferred Resources. For the PFS, the Inferred Coal has been treated as waste (i.e. costs have been assumed for mining of Inferred Resources but no revenue has been assumed for the Inferred Resources).

2. The open cut pit limits will extend across the lease boundary into the adjacent lease held by Mongolyn Alt Corporation (MAK). SGQ and MAK have a memorandum of understanding to allow

mining across the boundary. The Reserves estimate does not include any coal within the MAK lease that must be extracted as part of the SGQ mining operation. For the PFS, waste and coal within the pit and within the MAK lease has been treated as waste (i.e. costs have been assumed for mining of the MAK waste and coal but no revenue has been assumed for the MAK coal).

3. The Sunset open cut pit was initially designed to 300m below the original ground surface. Examination of the initial design revealed that some the nominal underground Resources (approximately 20 m) which would be exposed in the floor of the open pit and could easily be mined by open cut mining method. The final pit shell was extended to include this coal in the pit shell and hence some of the Underground Resources have been included in the Open Cut Reserves estimates.

4. The Reserves estimates account for coal and waste that was mined up to 11 December, 2010.

Based on this PFS, Reserves are estimated to total 106.8 million tonnes, comprising 70.6 million tonnes at Sunset at a strip ratio of 2.7 bank cubic metres/tonne and 36.2 million tonnes at Sunrise at a strip ratio of 4.5 bank cubic metres/tonne. The Proven Reserves for the 5U and 5L Seams are derived from Measured Resources only. The Probable Reserves for the 5U and 5L Seams are derived from Indicated Resources only. All Reserves for the upper seams (8, 9 and 10 at Sunset and 570, 580, 590 at Sunrise) are classified as Probable, even though these include some Measured Resources, due to uncertainties regarding the geological model and coal processing.

Table 1.2 shows the Proven and Probable Reserve estimate separated by pit and seam.

Table 1.2

Reserves Estimate - MMC 11 December 2010

Deposit	Seam	Proven		Probable		TOTAL	
		M tonnes	Ash (%)	M tonnes	Ash (%)	M tonnes	Ash (%)
Sunset	10			6.5	24.4	6.5	24.4
	9			19.7	22.4	19.7	22.4
	8			4.2	19.1	4.2	19.1
	5U	24.2	10.4	2.6	10.1	26.7	10.4
	5L	11.2	13.5	2.3	13.6	13.5	13.5
	TOTAL	**35.3**	**11.4**	**35.3**	**20.9**	**70.6**	**16.1**
Sunrise	590			2.0	16.5	2.0	16.5
	580			0.7	30.9	0.7	30.9
	570			0.6	19.5	0.6	19.5
	5U	10.4	14.8	1.2	14.4	11.6	14.8
	5L	17.0	14.6	4.3	14.8	21.3	14.6
	TOTAL	**27.5**	**14.7**	**8.7**	**16.8**	**36.2**	**15.2**
GRAND TOTAL		**62.8**	**12.8**	**44.0**	**20.1**	**106.8**	**15.8**

The MMC Reserve estimate is less than the NORWEST estimate, even though the pit depth has been increased to 300m. The main reason for this reduction appears to be a reduction in Resources due to the revised geological model following recent drilling.

Open cut mining utilising hydraulic excavators and trucks is proposed. Mining will occur in horizontal benches that will contain both waste and coal. Material along the steeply dipping interface between the waste and coal will need to be dozed down the benches. A production rate of 8 million tonnes per year of run-of mine coal (ROM coal) has been evaluated in this PFS. The ROM coal will be transported to the coal processing plant that is about to be constructed. Coal processing will consist of crushing and screening through a rotary breaker and followed by upgrade through air jig. The product coal will then be loaded onto trucks for transport to markets in China.

MMC is currently working with SGQ to review additional data (including higher received prices for some coal types), which could result in a larger pit-shell and larger run of mine coal production scenario for the Ovoot Tolgoi Mine.

2 INTRODUCTION AND TERMS OF REFERENCE

2.1 BACKGROUND AND SOURCES OF INFORMATION

MMC was requested by SouthGobi Resources Ltd (SGQ) to provide a Technical Report that meets the requirements of the Canadian National Instrument 43-101 ("NI 43-101"), for the Ovoot Tolgoi Complex ("Complex") in Mongolia. This report has been prepared in accordance with the guidelines provided in the NI 43-101, Standards of Disclosure for Mineral Projects, dated December 23, 2005. The Qualified Person responsible for the Resource estimate in this report is Ms Merryl Peterson, Principal Geologist for MMC. The Qualified Person responsible for the Reserve estimate in this report is Mr Robert Mackenzie, Executive Consultant for MMC. The Qualified Person responsible for the coal processing aspects in this report is Mr Peter Goodman, Consultant for Process and Engineering Technology. The Qualified Person responsible for the geotechnical aspects in this report is Mr Ross Seedsman, Consultant for Seedsman Geotechnical. Ms Peterson visited the Ovoot Tolgoi site from 18 – 22 November 2010. Mr Mackenzie visited the Ovoot Tolgoi site from 15 – 16 December, 2010 and inspected the mining operations at both Sunset and Sunrise pits, the coal handling operation and the coal haulage to Ceke. Mr Goodman visited the site 2nd December 2010, Mr Seedsman visited the site from 11 – 12 January, 2011 and inspected the mining operations at both Sunset and Sunrise pits together with rock exposures in the pit walls.

This Technical Report relies on data collected on the Ovoot Tolgoi property through to November 2010 by the following entities:

- SGQ in conjunction with Sapphire Geo Ltd (Sapphire);
- Norwest Corporation (Norwest), of Salt Lake City, USA;
- Ivanhoe Mines Ltd(IVN); and
- McElroy- Bryan Geological Services (MBGS).

Additional data has been gathered from previous Government of Mongolia studies for the Nariin Sukhait area. Portions of this report that do not require updating have been extracted from previous Norwest and SGQ NI 43-101 reports. Norwest was present during 2005 to 2006 exploration programs and has provided QP verification of that data, whilst The Americas Group (TAG) was present during the 2007 to 2008 exploration programs and has provided QP verification of that data. The QP (Resources) has reviewed and evaluated all geological and technical information currently available, and summarised this information within this technical report prepared in accordance with NI 43-101. SGQ has provided the authors with all geological, geotechnical, and quality data information, including previous technical reports prepared by Norwest, TAG and SGQ.

2.2 TERMS OF REFERENCE

The following terms of reference are used in the Technical Report:

- SGQ refers to SouthGobi Resources Ltd;
- MMC refers to Minarco-MineConsult and its representatives; and
- Project refers to the Ovoot Tolgoi Complex located in Mongolia.

Resource and Reserve definitions are as set forth in the "Canadian Institute of Mining, Metallurgy and Petroleum, CIM Standards on Mineral Resource and Mineral Reserves – Definitions and Guidelines" adopted by CIM Counsel on December 11, 2005.

2.3 QUALIFIED PERSONS AND RESPONSIBILITIES

The estimation and reporting of Mineral Resources in this Technical Report complies with the requirements of the Canadian NI 43-101 of the Canadian Securities Administrators. Therefore it is suitable for public reporting.

The information in this Technical Report that relates to Mineral Resources is based on information compiled by Ms Merryl Peterson who is a full time employee of Runge Limited, of which MMC is a trading division, and she is a Member of the Australasian Institute of Mining & Metallurgy ("AusIMM"). Ms Peterson has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration, as well as the work she has undertaken, to qualify as a Qualified Person as defined by NI 43-101.

The information in this Technical Report that relates to Mineral Reserves is based on information compiled by Mr Robert Mackenzie who is a full time employee of MMC, a trading division of Runge Limited, and he is a Member of the Australasian Institute of Mining & Metallurgy ("AusIMM"). Mr Mackenzie has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration, as well as the work he has undertaken, to qualify as a Qualified Person as defined by NI 43-101.

The information in this Technical Report that relates to Coal Processing (coal process assumptions (yield and quality) together with capital and operating cost estimates) is based on information compiled by Mr Peter Goodman who is a full time employee of PEAT (Aust) Pty Ltd - Process Engineering and Technology. He is a Member of the Australasian Institute of Mining & Metallurgy ("AusIMM"). Mr Goodman has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration, as well as the work he has undertaken, to qualify as a Qualified Person as defined by NI 43-101.

The information in this Technical Report that relates to Geotechnical Mine Design is based on information compiled by Mr Ross Seedsman who is a full time employee of Seedsman Geotechnics Pty Ltd and he is a Member of the Australasian Institute of Mining & Metallurgy ("AusIMM"). Mr Seedsman has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration, as well as the work he has undertaken, to qualify as a Qualified Person as defined by NI 43-101.

2.4 LIMITATIONS AND EXCLUSIONS

This Technical Report has been produced by MMC using information made available to MMC as at the date of this Technical Report and the findings, information and conclusions therein only apply as at this date. MMC has not been engaged to update its Technical Report in relation to any information that may have been provided or changed subsequent to the date of this Technical Report.

MMC only accepts responsibility for the content of this Technical Report in relation to those parts prepared by MMC.

MMC has relied upon other reports, opinions or statements of other qualified persons and other experts, for information concerning relevant issues and factors relevant to this Technical Report. The extent of MMC's reliance and the relevant portions/sections of the Technical Report the subject of this reliance are detailed in Section 3 below.

The work undertaken for this Technical Report is that required for the preparation of a technical report including reviews of technical information, coupled with such inspections as deemed appropriate by MMC. Inspections were conducted by Ms. Peterson on the 18th to 22nd of November 2010 and by Mr. Mackenzie on the 15th and 16th of December 2010.

MMC has also specifically excluded any analysis or opinion of the competitive position of the Project compared with other similar and competing coal producers around the world.

Intellectual Property

All copyright and any other intellectual property rights in this Technical Report are retained by and are the property of MMC.

Mining Unknown Factors

The ability of the operator, or any other related business unit, to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond the control of MMC and cannot be fully anticipated by MMC. These factors included site-specific mining and geological conditions, the capabilities of management and employees, availability of funding to properly operate and capitalise the operation, variations in cost elements and market conditions, developing and operating the mine in an efficient manner, etc. Unforeseen changes in legislation and new industry developments could substantially alter the performance of any mining operation.

2.5 CAPABILITY AND INDEPENDENCE

MMC provides advisory services to the mining and finance sectors. Within its core expertise it provides independent technical reviews, resource evaluation, mining engineering and mine valuation services to the resources and financial services industries.

All opinions, findings and conclusions expressed in this Technical Report are those of MMC and its specialist advisors as outlined in chapter 2.3.

Drafts of this report were provided to SGQ, but only for the purpose of confirming the accuracy of factual material and the reasonableness of assumptions relied upon in this Technical Report.

MMC has been paid, and has agreed to be paid, professional fees based on a fixed fee estimate for its preparation of this Report.

This Technical Report was prepared on behalf of MMC by the signatories to this Technical Report.

3 RELIANCE ON OTHER EXPERTS

MMC in the preparation of this Technical Report has relied on other reports, opinions or statements of other qualified persons and other experts, for information concerning relevant issues and factors relevant to this Technical Report. The extent of MMC's reliance and the relevant portions/sections of the Technical Report the subject of this reliance are detailed below.

- **Norwest Corporation** and **The Americas Group**:

Ovoot Tolgoi Preliminary Feasibility Study (Volume I of III – Executive Summary) dated October 23, 2009, Ovoot Tolgoi Preliminary Feasibility Study (Volume II of III – Pre-Feasibility Study - Technical) dated October 23, 2009 and Ovoot Tolgoi Preliminary Feasibility Study (Volume III of III – Pre-Feasibility Study – Economic) dated October 23, 2009 which were drafted and prepared by Richard Tifft of Norwest Corporation and Patrick Riley of The Americas Group as footnoted and referenced within this Technical Report and detailed in the List of References to this Technical Report.

- **McElroy Bryan Geological Services Pty Ltd** and **The Americas Group**:

The Geological Models on which the Resource Estimation, Pit Optimization, Design and Reserves Estimates were based upon:

  - The Geological Model for Sunset was created by Marcos Axelsson of McElroy Bryan Geological Services Pty Ltd; and
  - The Geological Model for Sunrise is a combined model, which was created in part by Marcos Axelsson of McElroy Bryan Geological Services Pty Ltd with remainder being created by Ms. A. Lorraine Livingston of The Americas Group.

MMC was not retained to undertake any geological modelling work. The above Geological Models were provided to MMC by SGQ.

MMC was not retained to audit the above Geological Models and accordingly, MMC has not audited those Geological Models.

- **SGQ:**

Verbal and visual geological information, geological data and geological studies were provided to MMC by SGQ staff.

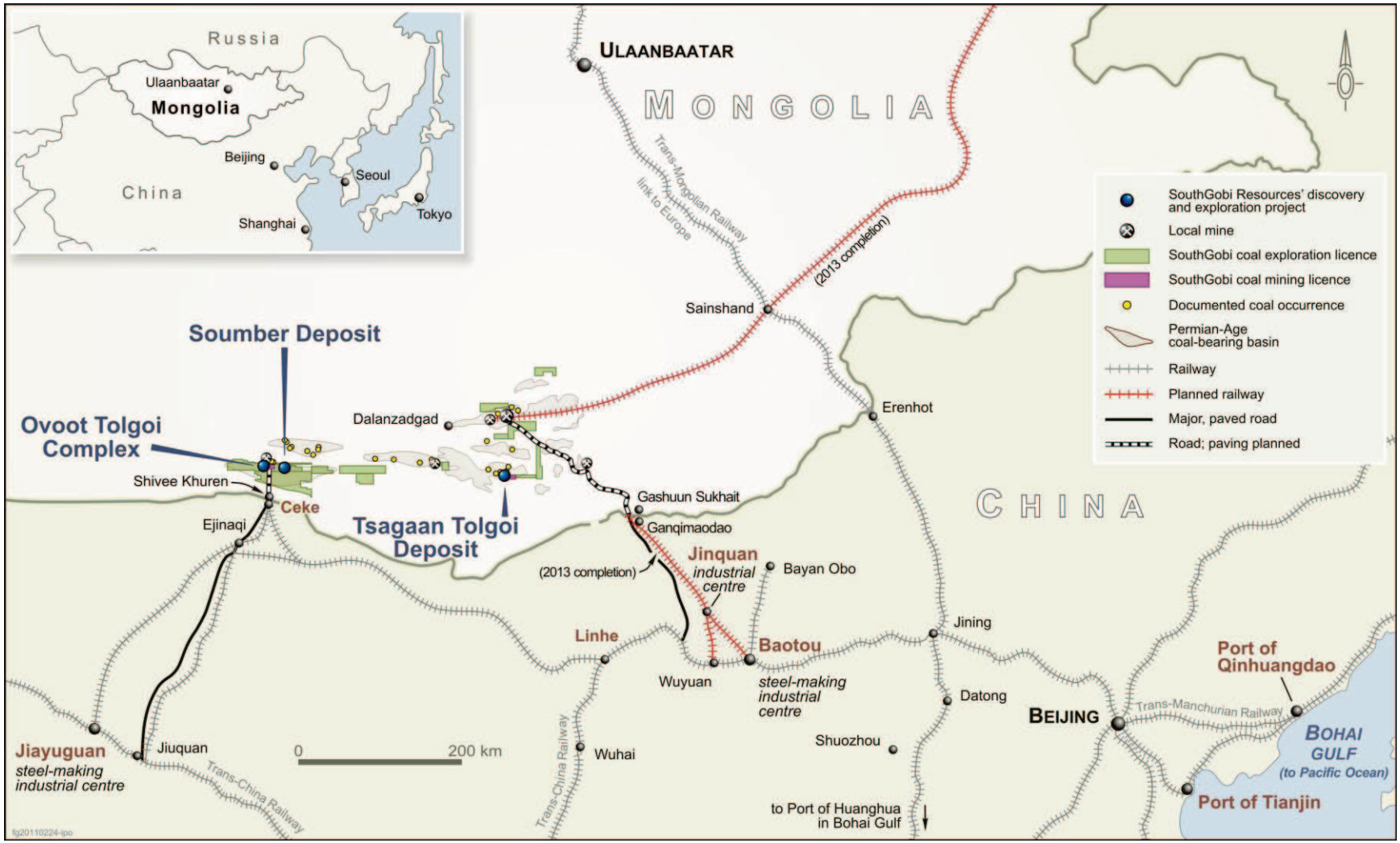
4 PROPERTY DESCRIPTION AND LOCATION

4.1 LOCATION

The Ovoot Tolgoi Complex (comprising the Ovoot Tolgoi Coal Mine and Ovoot Tolgoi Underground Deposit) is located in the southwest corner of the Umnugobi Aimag (South Gobi province), approximately 320 kilometres southwest of the provincial capital of Dalanzadgad and 950 km south of the nation's capital Ulaanbaatar (Figure 4.1). Ovoot Tolgoi is approximately 45 kilometres north of the Mongolia-China border and the Ceke border crossing. Ceke, in the People's Republic of China, is the main distribution centre for Ovoot Tolgoi coal.

Figure 4.1

Ovoot Tolgoi Location Plan



4.2 OWNERSHIP

Previous work at Ovoot Tolgoi was conducted under the property control of Ivanhoe Mines Ltd (IVN). The coal division of IVN and all its coal exploration licences (including the exploration licenses at Ovoot Tolgoi) were sold to SouthGobi Resources Ltd (SGQ) (formerly Asia Gold Corporation (Asia Gold)) in 2007.

SGQ holds its interest in the Ovoot Tolgoi Complex through its 100% owned subsidiary SouthGobi Sands LLC (SGS), the operating company under SGQ, which is a Mongolian-registered company that holds the licenses and permits to the Ovoot Tolgoi.

The Mongolian government grants Exploration Licenses 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. Following a successful exploration program, an exploration license holder can apply for a mining license over any portion of the exploration license. 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.

SGQ's Mine License 12726A was granted September 20, 2007 for the development of an open-pit coal mine. MMC has sighted a copy of the Mine License. The SGQ lease is adjacent to Mine License held by Mongolyn Alt Corporation (MAK). The coal deposits extend across the lease boundary. The Resource and Reserve estimates are limited to the SGQ lease, even though the open cut pits are assumed to develop across the lease boundaries in order to extract all economic coal within the SGQ lease. SGQ and MAK have a Memorandum of Understanding, dated 24th May, 2007, covering mining across the lease boundary. For the PFS, a series of rules have been developed for practical mining across the boundary.

The primary requirements to maintain Mining Licenses in Mongolia are:

- Pay annual renewal fee of $5.00/ha;
- Submit and have approved an Annual Mine Plan;
- Report mining quantities and pay appropriate royalties;
- Submit and have approved annual Environmental Protection Plan for mining activities; and
- Submit annual report on mining activities by February 15 of following year.

SGS has advised that all of these requirements have currently been met.

The Sunset (formerly named West) Field occupies the area southwest of the MAK license boundary and encompasses the Sunset Pit of SGQ's Ovoot Tolgoi surface mine operation (Figure 4.2), whilst the underground Resource area is the down dip extension of the Sunset Field. The Sunrise (formerly named South-East) Field occupies the area southeast of the MAK license area. All Resource areas set out in this

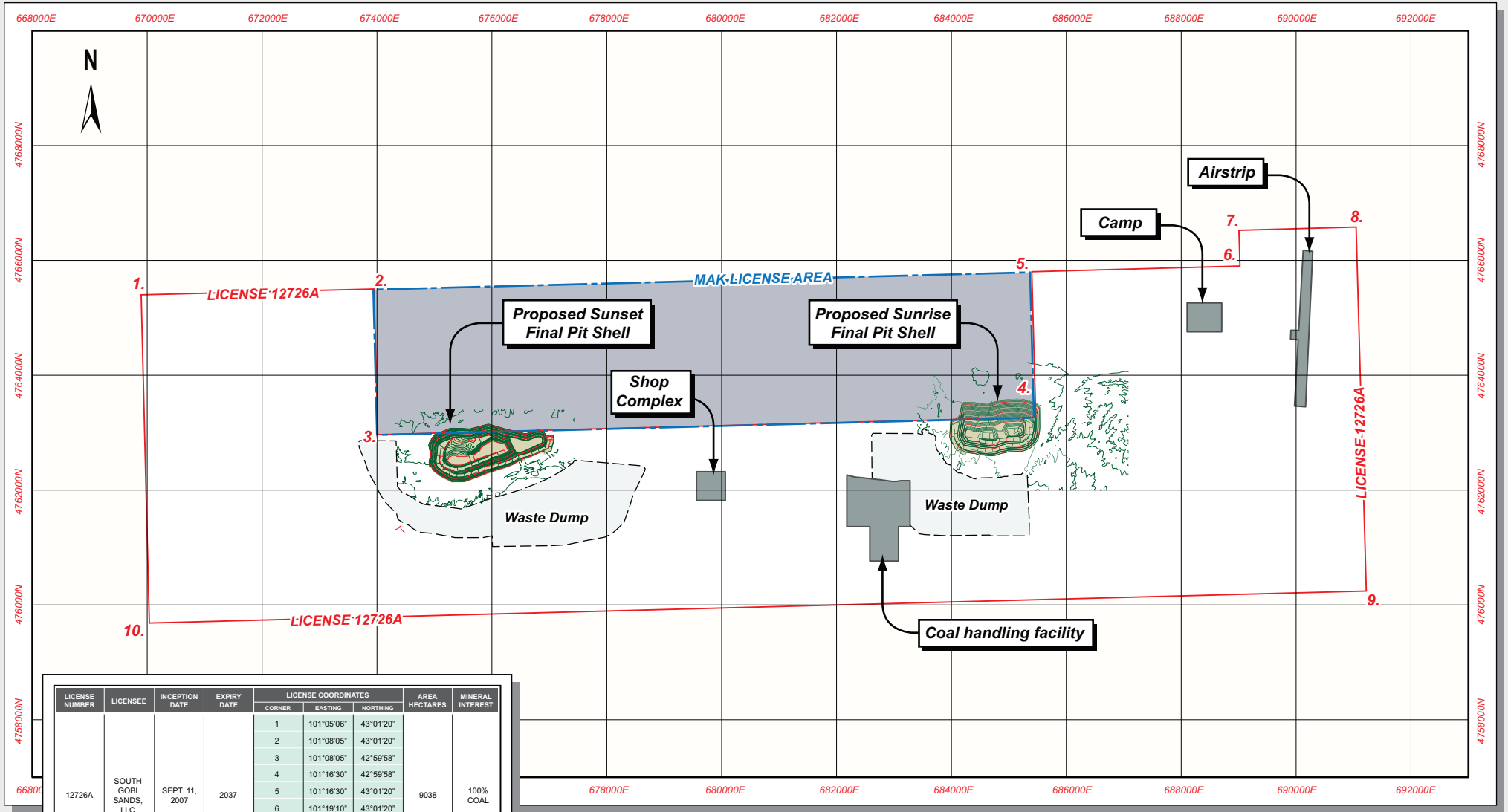
Technical Report are within the SGQ mine license between Northings 4,762,000 and 4,763,500 and between Eastings 674,000 and 677,200. Resources occurring on exploration licences 9443X, 6359X, and 11187X, which are outside of the Mine License, are not included in this technical report.

The Government of Mongolia approved the coordinates obtained from survey. Coordinates of the SGQ mine license are presented in Table 4.1.

Table 4.1

SGQ Mine License Description

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	101º05'06"	43º01'20"	9305	100% Coal
				2	101º08'05"	43º01'20"		
				3	101º08'05"	42º59'58"		
				4	101º16'30"	42º59'58"		
				5	101º16'30"	43º01'20"		
				6	101º19'10"	43º01'20"		
				7	101º19'10"	43º01'40"		
				8	101º20'40"	42º01'40"		
				9	101º20'40"	42º58'15"		
				10	101º05'06"	42º58'15"		



LICENSE NUMBER	LICENSEE	INCEPTION DATE	EXPIRY DATE	LICENSE COORDINATES			AREA HECTARES	MINERAL INTEREST
				CORNER	EASTING	NORTHING		
12726A	SOUTH GOBI SANDS, LLC	SEPT. 11, 2007	2037	1	101°05'06"	43°01'20"	9038	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"	42°01'40"		
				9	101°20'40"	42°58'15"		
				10	101°05'06"	42°58'15"		

minarco mineconsult

SouthGobi Resources

Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
Project : **OVOOT TOLGOI**	Date : March 2011
Figure : **SITE LAYOUT**	FIGURE No. 4.2

4.3 ENVIRONMENTAL LIABILITY AND PERMITTING

The Mongolian Minerals Law (2006) and Mongolian Land Law (2002) govern SGQ's exploration, mining, and land use rights for the Ovoot Tolgoi Complex. 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.

The Company is paying a 5% royalty on all coal sold from the Ovoot Tolgoi Mine based on a set reference price per tonne published monthly by the Government of Mongolia. The specific price per tonne varies according to the category of coal sold, which is split into two categories of raw and processed coal. The raw coal category has three tiers based on a combination of kcal and other coal characteristics such as volatility, ash and sulphur while characteristics for the processed coal category are yet to be announced by the Government of Mongolia. The Company's coal is tested by the Mongolian Customs laboratory every 3 months to establish the coal characteristics which are used to determine the appropriate category and tier of coal for the quarter. As of February 17th, 2011 the Company's coal from Seam 5 has been categorized as coking coal (which is comparable to 3rd tier of Raw coal category) while the coal from Seams 8,9, and 10 has been categorized as hard coal (comparable to 2nd tier of Raw coal category). Table 4.2 below shows the applicable reference prices set by the Government of Mongolia for the past four months:

Table 4.2: Mongolian Reference Price for Royalty Calculations

Table 4.2

Mongolian Reference Price for Royalty Calculations

Month	Raw Coal			Processed Coal ($/tonne)
	Tier 1 ($/tonne)	Tier 2 ($/tonne)	Tier 3 ($/tonne)	
March 2011	$62.5	$64.70	$70	$202.7
February 2011	$62	$64	$70	$200.6
January 2011	$50	$53	$57	$146.9
December 2010	$49.80	$51.40	$54	$131.1

The Company is also subject to a sliding scale royalty payment of up to 5% based on the set reference price of coal sold. The sliding scale royalty has taken effect as of January 1, 2011. Under the current sliding royalty scale the Company would be subject to an additional 2% royalty based on the reference price for the coal sold from the Ovoot Tolgoi Mine.

The key environmental reports are titled *Detailed Environmental Impact Assessment for the Nariin Sukhait Coal Deposit Mining Project*, prepared by Environmental Consulting Company (ENCO), Ltc, 2006, and the *Addendum,* prepared in 2006. MMC has sighted a copy of the signed Addendum, which was recognized by the Governor, Gurvan Tes soum (B Dabaatseren). Further changes will be required to permit the mine plan proposed by MMC in the PFS, as discussed in section 19.5.

Currently, MMC is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political, or other relevant issues that may materially affect the potential mining of coal exist within the confines of the SGQ mine license area.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 LOCATION

The Ovoot Tolgoi Complex is located in south-central Mongolia, approximately 45 km north of the Mongolia - China border. The deposit is within the administrative unit of Gurvantes Soum, Umnugobi Aimag (South Gobi Province).

Population centres and transportation infrastructure in proximity to Ovoot Tolgoi are illustrated in Figure 4.1. The Umnugobi Aimag is the most sparsely populated province in Mongolia with less than one person/km ^{2}.

5.2 CLIMATE AND PHYSIOGRAPHY

The region experiences a continental desert climate. Temperatures range from 0° to -30°C in the winter and from 30° to 35°C in the summer. High winds frequently occur throughout the spring. Average rainfall is 133mm, ranging from 100mm to 200mm, with most precipitation (70%-80%) occurring during July and August. The weather is acceptable for exploration activities from mid-March through October. The climate allows year-round mining operations.

The Umnugobi Aimag is within the physiographic region of the Gobi Desert. The topography of the deposit varies 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 area currently supports a traditional subsistence economy focused on raising sheep, goats, and camels.

5.3 ACCESSIBILITY AND INFRASTRUCTURE

All parts of the property are accessible with four-wheel-drive vehicles.

A regular air service is available from Ulaanbaatar to Dalanzadgad and to Ovoot Tolgoi. Travel from Dalanzadgad to the property takes approximately seven hours over unpaved roads. In September 2006, SGQ acquired a permit for an on-site airport which was constructed and completed in 2007. Ovoot Tolgoi is now accessible via daily week day chartered aircraft from Ulaanbaatar for crew rotation and bringing in supplies.

There are two primary sources of mining labour – Ulaanbaatar and the local soum. Currently, approximately 35% of SGG employees are local. The remaining employees are flown to and from Ulaanbaatar. All employees work on a two-week on, two-week off rotation.

A rail line connects the Ovoot Tolgoi area with the interior of China. The railroad terminus is situated at Ceke, approximately 45 km south of the Ovoot Tolgoi Complex. Coal trucks travel overland from the Ovoot Tolgoi Mine and neighbouring MAK coal mine to the railroad terminus and coal distribution areas located just south of the Chinese border.

Electrical power for the camp and shop complexes was initially supplied by diesel generators. The camp and shop complexes are now connected to a powerline that runs from China to Gurvantes Soum, supplying electrical power to the area (Figure 4.1).

No surface water is currently available in the immediate area of the Ovoot Tolgoi Complex. Water for the camp and shop complexes is being supplied from water supply wells drilled near each location as part of hydrological investigations. The infrastructure plans include water treatment to allow well water to be used for potable purposes. Until the treatment plant is complete, bottled water is being used for potable purposes. Water for dust suppression is available from the pit dewatering. No significant ground water supply. Exploration for ground water is ongoing; however, so far, sufficient ground water capable of supporting a wet coal processing plant has not been found in the area.

Waste disposal areas have been identified and approved in the mining permit. A key feature of the coal seams is their friable nature which allows separation by crushing and screening. MMC understands that SGQ proposes to install a coal processing plant, comprising a dump hopper, divergator, rotary breaker and air jig in 2011. The plant will have a capacity of 1,440 tonnes per hour. As an interim step, the run of mine coal is being crushed and screened to remove dilution in portable screening plants.

On September 20, 2007, SGQ received a Mine License for the development of surface coal mining at Ovoot Tolgoi. The mine began operation in April, 2008 after receiving a Permit to Mine from the Mongolian Government. Detailed mine planning is on-going, including:

- Design waste disposal areas;
- Equipment acquisition;
- On-site housing;
- Water usage;
- Mine staffing requirements; and
- Mine management.

The permanent shop, office, and housing facilities have been completed, but construction of other facilities is ongoing.

Some coal is sold “at the mine gate”, and some coal is sold directly to customers in China. Coal is hauled by trucks to the Chinese border crossing at Ceke. A new sealed road is under construction to replace the unpaved road currently used for coal transportation.

6 HISTORY

The first geologic investigation at Nariin Sukhait took place in 1951 and 1952 and was led by V.S. Volkhonina (1952). Results included geologic mapping at a scale of 1:500,000.

Coal was first identified in the Nariin Sukhait area in 1971 by a Mongolian exploration survey led by D. Dashtseren (1971).

A study of the Nariin Sukhait coal deposit was undertaken by Exploration Unit No.15 of Ulaanbaatar Geological Research Group in 1991. This study included field mapping, trenching, drilling of 34 boreholes, analysis of coal quality, and calculation of resources for the two most promising resource areas, now controlled by MAK. Based on standards from the former Soviet Union, inferred resources (categories A+B+C1+C2+P1) were reported to the +1,450m level, corresponding to 75 to 90m depth. Total inferred resources were reported at 125,519,900 tonnes.

The former Soviet Union generally divided a mineral deposit into 4 primary ratings depending on phases of exploration works and survey levels. The four ratings are:

- Category A = Confirmed reserves;
- Category B = Indicated/Actual reserves;
- Category C = Inferred/Potential reserves; and
- Category P = Preliminary assessed resources.

Since this estimate was reported, substantial exploration has been undertaken and the estimate cannot therefore be relied upon. The Russian resource categories differ from the NI43-101 categories, and thus cannot be directly compared to subsequent NI43-101 resource estimates. These categories differ from NI 43-101 Resources classifications. NI 43-101 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 Resources and Reserves.

The history of the deposit is included in a publicly available summary report produced by the Mongolian State Geological Centre (Dashkhoral et al, 1992). This study defined the seam nomenclature currently employed at Nariin Sukhait[1].

Norwest completed and updated comprehensive studies of the deposit area based upon their management of exploration programs executed from 2005 through 2006, and mine planning studies through to 2009.

[1] *The Americas Group, Technical Report: Surface Coal Geology and Resources, Ovoot Tolgoi – West Field, Omnogovi Aimag, Mongolia, September 2008, p.18*

7 GEOLOGICAL SETTING

7.1 REGIONAL GEOLOGY

The South Gobi region of Mongolia has a geologic history of continental accretion and Basin and Range style crustal extension followed by compressional folding and faulting. The region is dominated by elongate, east-west trending mountain ranges and intervening basins, which comprise sedimentary rocks of Late Cretaceous to Permian age, overlain by a relatively thin Quaternary gravel layer or thin aeolian deposits. Mountain ranges between the basins comprise mostly crystalline basement rocks dominated by intermediate to high angle faults that show evidence for both compressional and extensional movement. The most prominent structure relating to the Ovoot Tolgoi coal deposit is the arcuate, east-west-trending, moderately-dipping Nariin Sukhait fault where the Late Permian coal-bearing section is exposed in a window adjacent to it in the MAK Mine West Pit.[2]

7.2 COAL OCCURRENCES

Initial geological work at Nariin Sukhait was undertaken by the Exploration Unit No.15 of Ulaanbaatar Geological Research Group in 1991 and a summary report by the Mongolian State Geological Centre (Dashkhoral et. al., 1992) described the existence of 10 coal seams. The overall estimated thickness of the coal-bearing section is 1,370 m with the cumulative thickness of the coal ranging from 68 to 250m, which is mostly within the No. 5 Seam.

Exploration by SGQ focused on the No. 5 Seam and defined additional coal in packages of “upper seams” located above this horizon. This work showed that what was previously named as a single seam often contains a number of discrete seams separated by rock partings of highly variable thickness and extent. Interburden between the coal seams is dominated by sandstones and conglomerates, whereas partings within the seams are mostly mudstones and carbonaceous mudstones. Modelling organized the coal seams into the coal series shown in Figure 7.1. The original No. 5 seam has retained that designation, but with the discovery of correlatable splits above and below they were included into the No. 5 Series. [3]

No. 5 Seam dips at about 30 to 60 degrees and is 20 to 50m in true thickness, averaging 47m in apparent thickness. The projected depth of overburden reaches 650m in the underground No. 5 Seam Resource block. Additional potential coal exists in the No. 5L Seam below the No. 5 Seam, which is present within the Sunset open pit area. Current data indicates the No. 5L Seam averages 53m in thickness and is 79m on average below the No. 5 Seam, but varies between 0m (coalesces with 5 Seam) and 157m. In the west of the Sunrise Field the No. 5 Seam has an upper split.

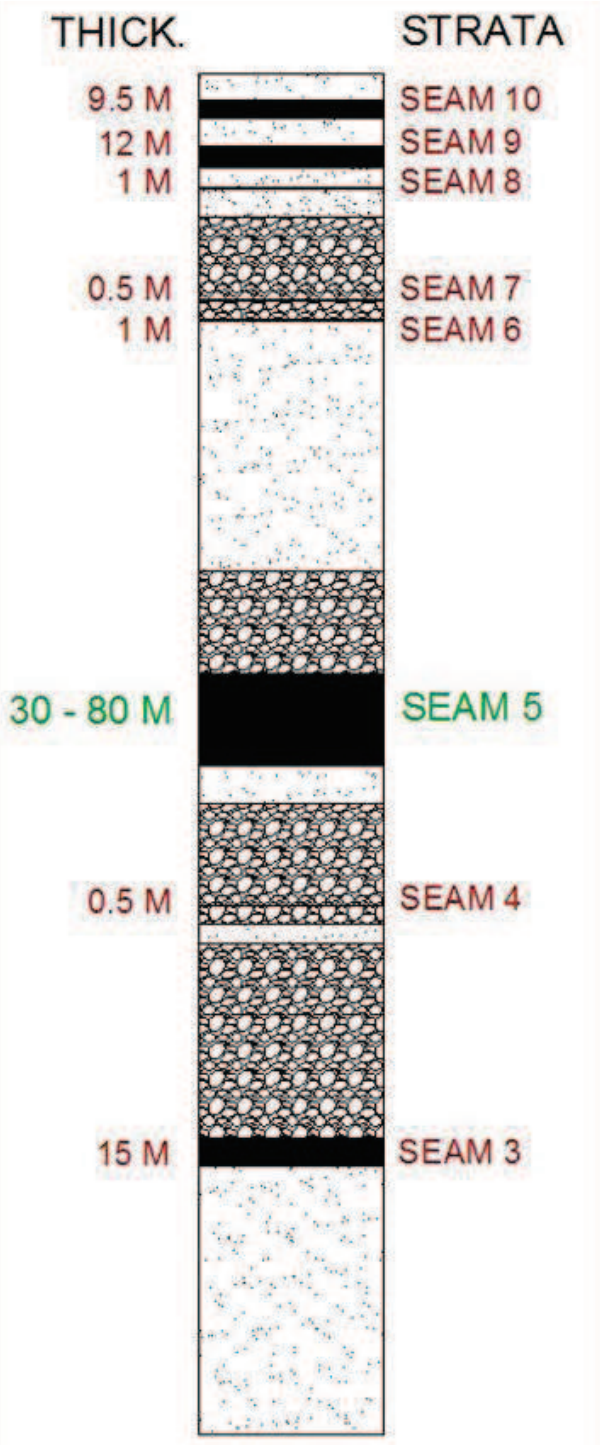
[2] *The Americas Group, Technical Report: Surface Coal Geology and Resources, Ovoot Tolgoi – West Field, Omnogovi Aimag, Mongolia, September 2008, p.18*

[3] *As above*

The remainder of the Resource in the Sunset Field is found in the Nos. 8, 9, and 10 Series that each contains multiple discrete seams. Nos. 4 and 7 Seams are recognized in drill holes, but are not included in the Resources. In the Sunrise Field. Nos. 1, 2, and 3 Seams that were described in the early work at Nariin Sukhait, have not been identified on the SouthGobi Sands property.

Figure 7.1

Generalised Stratigraphy with Seam Nomenclature



7.3 STRUCTURAL GEOLOGY

Sunset Field

The Sunset Field is on SGQ land near the southwest corner of the MAK mining license. Coal Resources occur west of the MAK open pit mine (refer to plans in Section 22). Previous interpretations by Norwest indicated that a thrust fault system controls the distribution of coal, dividing the Sunset Field into a southern and a northern Resource block. The more steeply dipping rocks of the southern block have moved over the northern block, which contains a repeat of the upper series (Nos. 8, 9, and 10 Seams).[4] Re-correlation of the seams and structural modelling by McElroy Bryan (MGBS) in 2010 suggest that there is no thrust fault here, and the current geological model contains no faulting.

In the north of the Field the seams dip south-east at around 20 degrees, however further south the dip increases to around 45 degrees.

The majority of Resources are in the No. 5 Series, but significant Resources also occur in the Nos. 8, 9, and 10 Series.

Sunset Field Underground

The Underground Resources in the Sunset Field area represent the down dip extension of the stratigraphy discussed for the Sunset Field. Current exploration has been focussed on the delineation of No. 5 Seam Resources. Overburden above the No. 5 Seam can reach up to 650 metres and consists of sandstones and conglomerates. The apparent average thickness for the No 5 Seam is 53m.

Sunrise Field

The Sunrise Field is on SGQ land surrounding the southeast corner of the MAK mining license. The No. 5 Seam is currently being mined by MAK in this area. The coal-bearing section is a southeast-dipping homocline as shown in plans in Section 22. Average dip is around 35 degrees. Minor Seams 570, 580 and 590 occur above the No. 5 Seam. These seams are probably equivalent to the Nos. 8, 9 and 10 Seams at Sunset, but correlation has not been undertaken.

[4] *The Americas Group, Technical Report: Surface Coal Geology and Resources, Ovoot Tolgoi – West Field, Omnogovi Aimag, Mongolia, September 2008, p.25*

8 DEPOSIT TYPES

The definition of Deposit and Geology Types for coal properties is different from that applied to other types of mineral deposits and is outlined by the Geological Survey of Canada (GSC) Paper 88-21. Deposit and Geology Types are generally based on the best extraction method and amount of geological complexity that reflects the degree of tectonic deformation. These determine the approach to be used for the Resource/Reserve estimation procedures and define the confidence that can be placed in the extrapolation of data values.

The Ovoot Tolgoi Complex has been subjected to a relatively high degree of tectonic deformation comprising an east-west-trending regional thrust fault with hanging wall strata modified by secondary folding, as well as normal and reverse faulting. Coal seams are typically inclined in excess of 35°, but fold segments and fault-bounded blocks generally retain normal stratigraphic thicknesses and continuity. Based on these characteristics, the deposit is “Complex”.

Where the coal seams are close to or at surface they are considered to be “Surface” mineable deposits, whereas at depths greater than approximately 300m they are considered to be “Underground” mineable deposits.

9 MINERALISATION

Mineralized zones on the SGQ Ovoot Tolgoi Sunset Field mining license area occur primarily within a zone of upper Permian sediments exposed in the hanging wall of the Nariin Sukhait Fault, as described in Section 7.

Early work adopted the seam nomenclature presented by Dashkhoral et al (1992), with the thickest seam in the middle of the sequence designated the 5 Seam, and upper seams named in ascending order. Re-organization into a series basis was done following additional discoveries.

Thicknesses reported are based on drill intercepts and represent apparent thickness. Table 9.1 lists data for the Sunset Field and Table 9.2 lists data for the Sunrise Field.

Table 9.1

Sunset Field Coal Seam Characteristics

Seam	Mean (m)	Maximum (m)
10	3.69	28.80
9	10.78	54.80
8	2.05	13.90
5U	25.96	204.26
5L	7.48	139.72

Table 9.2

Sunrise Field Coal Seam Characteristics

Seam	Mean (m)	Maximum (m)
5U2	6.17	70.70
5U1	4.63	87.11
5L2	19.98	124.00
5L1	10.52	86.93

10 EXPLORATION

10.1 INTRODUCTION

Exploration by IVN began in late 2004 with the completion of five boreholes in the Ovoot Tolgoi Complex area now within the mine license controlled by SGQ. Exploration continued in 2005 and in 2006 with the emphasis on delineating surface resource potential, but also included general exploration activities along the entire Nariin Sukhait trend. Exploration in 2008 at Ovoot Tolgoi focused on expanding the underground resource potential in the Sunset Field. The 2010 exploration program included infill drilling and extended drillhole coverage in the west of the Sunrise Field.

Exploration activities have included:

- Field reconnaissance mapping;
- Satellite Imagery;
- Surface-resistivity geophysical surveying;
- Trenching; and
- Drilling.

10.2 CONTRACTOR

Exploration geology fieldwork, including reconnaissance mapping, trenching, geologist descriptions of drilling returns, geotechnical data field logs, and database development, was contracted primarily to Sapphire Geo Ltd. (Sapphire), supervised initially by IVN, then later by SGQ. Norwest provided assistance in the review of activities and interpretation of results in 2005 and 2006, while SGQ directly supervised and provided assistance to Sapphire in the review of activities and interpretation of results in 2007 and 2008. McElroy Bryan supervised the 2010 exploration program.

Sapphire has a five year service record of providing competent exploration geologists for mapping, drilled lithology description records, rock quality determination (RQD), fracture frequency, field point-load testing records, field free swelling index (FSI) tests, sampling, sample preparation, and sample security in accordance with quality assurance procedures implemented in 2005. Standardized log forms for recording all geologic data and laboratory instruction forms are in English and have been employed since 2005.

10.3 GEOLOGICAL MAPPING

Reconnaissance geological mapping has been carried out to locate surface exposures of coal and identify structures.

10.4 SATELLITE IMAGERY

Satellite imagery has been used to identify coal seam outcroppings and interpret the trend of the coal seams.

10.5 GEOPHYSICAL SURVEYS

3-D and 2-D surface resistivity surveys have been used to locate mineralization in areas of thin surficial cover. The area was also covered by BHP's Falcon combined gravity, magnetic and radiometric survey.

10.6 TRENCHING

Back hoe trenching has been carried out across the interpreted trend of the coal seams. Trenching has been useful in exploring for coal seams in areas of shallow cover and has aided the placement of exploratory drill holes. Coal seam thickness and structures observed in the trenches are generally greatly affected by near-surface erosion, alteration, and deformation. Therefore, trenching intercepts have been found to be unreliable sources of seam characteristics and structure, and are not used in Resource estimation.

10.7 DRILLING

Exploratory drilling was conducted as a follow up to trenching, and is detailed in Section 11.

10.8 COORDINATES AND DATUM

Ovoot Tolgoi lies in UTM Zone 48, Northern Hemisphere, (WGS 48). Drill hole collars are surveyed by the UTM grid whereas license co-ordinates are surveyed by longitude and latitude.

10.9 RESULTS

Geological mapping, analysis of satellite imagery, 3-D and 2-D surface resistivity surveys were used to define the trend of the coal seams and interpret structure and geology. Potential targets identified with these techniques were tested with trenches cut perpendicular to the apparent strike, exposing coal seams near the surface. Coal seams were subsequently tested by drilling.

Exploration work has identified five different coal zones, or packages, consisting of one 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-Zone, with additional resources in the 8-, 9-, and 10-Zones above this.

11 DRILLING

11.1 INTRODUCTION

Limited drilling took place under the Soviet/Mongolian government-sponsored exploration programs.

From 2004 to 2006 IVN conducted an exploration program over both the Sunset and Sunrise Fields. A section line spacing of approximately 150m to 200m was generally employed, with a borehole spacing on the section lines approximating 50m. Drilling by SGQ from 2007 to 2010 expanded the coverage. In 2008 the target was the deeper areas of Sunset, with the aim of proving up the underground resource. Similarly deeper areas of Sunrise were drilled in 2010, as well as areas outside the initial target zone, in order to increase the Resource status.

The summary of exploration drilling at Ovoot Tolgoi is shown in Table 11.1. Drilling in 2008 in the underground area is included in the Sunset Field metres.

Table 11.1

Drilling History at Ovoot Tolgoi

Field	Year	Reverse Circulation		Rotary		Core		Combination		Total		Management Company/
		No. Holes	Metres Drilled	No. Holes	Metres Drilled	No. Holes	Metres Cored	No. Holes	Metres Drilled /Cored	No. Holes	Metres Drilled	Field Geologist Company
Sunrise	2004					5	750			5	750	IVN
	2005	76	14,425	18	2,807	34	5,525			128	22,757	IVN
	2006	11	4,855	12	1,999	5	1,860			28	8,714	SGQ/Sapphire
	2007			17	3,542	1	254			18	3,796	SGQ/Sapphire
	2010	35	6,671	16	3,486	6	993			57	11,150	McElroy Bryan / Tanan Impex
	Total	**122**	**25,951**	**63**	**11,834**	**51**	**9,382**	**0**	**0**	**236**	**47,167**	
Sunset	2005	70	12,861	17	2,223	13	2,034			100	17,118	Norwest/Sapphire
	2006	48	10,203			25	5,737			73	15,940	Norwest/Sapphire
	2007			23	5,430	7	2,699			30	8,129	SGQ/Sapphire
	2008							41	23,189	41	23,189	SGQ/Sapphire
	Total	**118**	**23,064**	**40**	**7,653**	**45**	**10,470**	**41**	**23,189**	**244**	**64,376**	
TOTAL		**240**	**49,015**	**103**	**19,487**	**96**	**19,852**	**41**	**23,189**	**480**	**111,543**	

11.2 EXPLORATION DIAMOND DRILLING

Core drilling was utilized to collect complete representative samples of the Sunset Field and Sunrise Field coal seams, observe structural details, and to measure more accurately the depths of lithologic contacts. All quality analyses used for modelling were restricted to core samples. Table 11.2 details core hole drilling at the project.

Table 11.2

Cored Drill Holes

Resource Area	Total Number of Exploration Holes	Number of Core Holes used for Quality Analysis	Percentage of Quality Holes
Sunrise Field	236	51	22%
Sunset Field	244	86	35%
Totals	**480**	**137**	29%

11.3 CORE DRILLING PROCEDURES

Some of the initial core holes at Nariin Sukhait were drilled with single-tube Russian made core equipment. The bulk of the core drilling at Nariin Sukhait 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 Geo Ltd. under Norwest supervision. Triple-tube coring completed during 2007 and 2008 was performed under SGQ supervision, whilst McElroy Bryan supervised the 2010 drilling program.

11.4 COLLAR SURVEYS

Drill hole collars are located using a GPS.

11.5 DOWNHOLE SURVEYS

No downhole surveys, ie verticality logging, are conducted on the drill holes. As some of the holes are quite deep (in the order of 300-400m) it is recommended that in future exploration programs, verticality is measured.

11.6 CORE RECOVERY AND RQD

Core recovery (reported in percent) is recorded after comparing the recovered core length with the core run length recorded by the driller. Recovered core is then also measured and compared to the coal interval thickness determined from the geophysical log suite.

11.7 BULK DENSITY

Relative Density (specific gravity) was performed on many of the samples to determine accurate tonnage calculations. No conversion of laboratory measured relative density to an in situ figure (using for example the Preston-Sanders equation) has been made.

11.8 LOGGING

Core logging and sample handling was performed by Sapphire under Norwest supervision during the 2005 and 2006 drilling program, under SGQ supervision for the 2007 and 2008 drilling programs, and by Tanan Impex under McElroy Bryan supervision for the 2010 drilling program.

Core was retrieved, logged, and sealed according to Norwest conventions established in 2005. Each core run was measured for total core cut versus core 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 core box length. When zones of core loss greater than 0.1m were encountered, separate samples were collected both above and below the zone. Intercept depths and seam thickness are reported in apparent thickness.

A number of holes have been geophysically logged except where holes have caved. Depending on the equipment used, logs were either examined visually, or interpreted using the Elogger software developed by Norwest. Drillhole depths were then incorporated into the geologic model.

11.9 DATABASE MANAGEMENT

Database management protocols employed by Norwest, TAG and McElroy Bryan included:[5]

- All field geology data was electronically forwarded to the relevant office on a daily basis;
- The geologic and geophysical logs were reviewed by a contractor geologist;
- Exploration management comments and procedural instructions were electronically forwarded on a daily basis;
- Data entry of all geologic data was managed by Sapphire at the project site;
- All geologic, geophysical, and sampling data forwarded by Sapphire was reviewed and verified by a contractor geologist;
- Verified data was entered and maintained in an electronic database and geological modelling software;
- Periodic cross-section and digital modelling development were employed for in-progress analyses;
- Results from the coal quality testing were then added into the database in the office; and
- All mapping was entered and maintained in CAD system formats.

[5] *Southgobi Energy Resources, 2009. Technical Report: Coal Geology and Resources, Ovoot Tolgoi Project, Omnogovi Aimag, Mongolia, p.37*

Intercept depths and seam thickness reported are based on the apparent thickness of the beds as seen in the drill hole data.

It is envisaged that future exploration programs will employ similar protocols to those shown above although it is important that SGQ maintain ownership of their exploration data to ensure data integrity and provenance is maintained.

11.10 EXPLORATION RC DRILLING AND COMBINED RC/CORE DRILLING

In 2005 and 2006 reverse circulation drilling provided cuttings samples of good integrity. Samples were collected at 1m intervals, and cuttings were laid out in rows on the ground for examination and logging by the Sapphire on-site geologist. A number of holes were drilled with a conventional air-rotary system. Cuttings were laid out and logged in a similar fashion as for reverse circulation drilling. In 2007, 2008 and 2010 all holes were drilled with conventional air-rotary or were cored.

12 SAMPLING METHOD AND APPROACH

12.1 INTRODUCTION

The majority of exploration holes at Ovoot Tolgoi have been drilled with rotary techniques, which means that only drill cuttings have been sampled. All quality analyses used for modelling were taken from core samples, which were obtained using triple-tube coring equipment. Distribution of drilling techniques in the Sunrise and Sunset Fields is as shown in Table 12.1.

Table 12.1

Number of Holes by Drilling Method

Field	RC	Rotary	TT Core	ST Core	Combination Holes (RC, PCD Rotary, Core)	Total Drilling
Sunrise	139	46	30	21		**236**
Sunset	107	39	10	3	44	**203**
Sunset Underground	-	-	-	-	41	**41**
Exploration	62	78	0	21	-	**161**
Totals	**308**	**163**	**40**	**45**	**85**	**641**

*RC = Reverse Circulation, TT = Triple Tube, ST = Single Tube, PCD = Poly-crystalline Diamond

12.2 CORE SAMPLING

Core drilling was used to collect complete representative samples of the coal seams, observe structural details, and to accurately measure the depths of lithologic contacts. Although some of the initial holes were drilled with single-tube Russian made core equipment, the majority of core drilling was done with wireline drilling systems and triple-tube core barrels. Work was conducted by Sapphire under Norwest supervision during the 2005 and 2006 programs, whereas in 2007 and 2008 it was under SGQ supervision, and in 2010 it was under McElroy Bryan supervision.

Core was retrieved, logged, and sealed according to Norwest conventions established in 2005. Each core run was measured for total core cut versus core 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 core box length. When zones of core loss greater than 0.1m were encountered, separate samples were collected both above and below the zone. [6]

12.3 CUTTINGS SAMPLING

A large number of reverse circulation and a minor amount of conventional air-rotary holes were drilled. Samples of cuttings were collected at 1m intervals and laid out in rows on the ground for examination and logging. A portion of the reverse circulation samples were used for basic proximate and thermal analysis as

[6] *Southgobi Energy Resources, 2009. Technical Report: Coal Geology and Resources, Ovoot Tolgoi Project, Omnogovi Aimag, Mongolia, p.38-39*

a comparison to the core samples. The remaining portion of the samples has been stored in Ulaanbaatar. Analytical results from these samples have not been included in the geological model.

12.4 STATEMENT

The QP (Resources) has examined the logging and sampling procedures developed and provided by Norwest, and believes that in general they represent best practice. However, since many of the holes are quite deep, and the seams are dipping relatively steeply, it is likely that at least some of the holes have deviated from the vertical, and thus the modelled thickness may not be entirely accurate. It is recommended that in future drilling programs a verticality log is run to measure hole deviation.

The QP (Resources) is unaware of any other drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results.

13 SAMPLING PREPARATION, ANALYSES AND SECURITY

13.1 CORE SAMPLES

Core recovery (reported in percent) is recorded after comparing the recovered core length with the core run length recorded by the driller. Additionally, the geophysical log suite thickness is compared to the recovered core measurement. Recovered coal intervals are sampled using the following criteria and quality control measures:

- Coal samples were broken out based on lithologic changes.
- In zones of uniform coal appearance, samples were bagged about every 0.60m as per the capacity of the core boxes.
- In-seam partings up to 0.10m were 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.
- A parting was sampled separately if it is a non-coal lithology type >0.10m thickness; carbonaceous shale, bone or interbedded coal/mudstone; or comprises >50% coal.
- Samples were cleaned of any contaminants.
- Core was placed in individual, core-sleeve style, plastic bags.
- Bags were sealed with plastic tape to prevent excessive moisture loss and labelled on the outside with drillhole and sample number.
- Samples were placed in-sequence into waxed-cardboard core boxes.
- Core boxes were sealed with tape.
- Core was transported to the company offices in Ulaanbaatar.
- Core was shipped for coal quality or rock strength analyses to a certified and accredited laboratory.
- Laboratory instructions and shipment manifests were forwarded to the company's offices and compared with contents upon arrival at the accredited laboratory.
- Samples were submitted for analysis using methods that are standard for the coal industry. Laboratories used were SGS Mineral Labs in Denver, Colorado (ISO-9000 certified, accredited by NQA in the United States of America), and SGS Laboratories in Tianjin, China (currently holds ISO-17025 certification, accredited by the CNAS, China National Accreditation Service for Conformity Assessment).

- Core samples underwent a full suite of coal quality testing including short proximate, full proximate, thermal tests, ash analysis, washability testing, and metallurgical testing.
- Additional special security methods for the shipping and storage of samples were not used as coal is a relatively low-value bulk commodity. [7]

13.2 REVERSE CIRCULATION SAMPLES

Recovered coal intervals are sampled using the following criteria and quality control measures:

- Samples were collected at 1.0m intervals and placed into plastic bags.
- Bags were sealed with plastic tape to prevent excessive moisture loss and labelled on the outside with drill hole and sample number.
- Samples were grouped by holes into larger bags, packaged, and transported to the company's offices in Ulaanbaatar.
- A portion of these samples was sent to the Mining Institute Laboratory in Ulaanbaatar for proximate and thermal analysis.
- The remainder of the samples has been stored at the company's facilities.
- Additional special security methods for the shipping and storage of samples were not used as coal is a relatively low-value bulk commodity.

13.3 STATEMENT

In the QP (Resources) opinion, sample preparation and analysis was performed adequately and securely so as to provide unbiased and accurate results.

[7] *Southgobi Energy Resources, 2009. Technical Report: Coal Geology and Resources, Ovoot Tolgoi Project, Omnogovi Aimag, Mongolia, p.40*

14 DATA VERIFICATION

14.1 INTRODUCTION

Data collection verification and storage at Ovoot Tolgoi has been managed by various independent consultants employed by SGQ since 2005.

Between 2005 and 2006, Norwest directly managed the exploration program from conceptual planning of exploration targets, through data collection, to interpretation and analysis. Norwest provided on-site management throughout the majority of the exploration project during those two years. All data collection was done under a defined set of protocols established in 2005 by Qualified Persons (QP) Patrick P. Riley, and Richard Tifft, consultant/QPs for Norwest at Ovoot Tolgoi during 2005 and 2006. Patrick P. Riley is owner and operator of TAG, an independent geological consulting company based in Lakewood, Colorado. 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 the exploration program, and the QP visited these operations and reviewed these procedures. The steps included in these written procedures are described in the preceding sections under drilling, coring, sampling methodology and sample preparation.

During 2007, 2008 and 2010, although Norwest was no longer involved at Ovoot Tolgoi, those field protocols established by Norwest and implemented by Sapphire field geologists were continued, supervised by SGQ and McElroy Bryan geological personnel. [8]

The QP (Resources) was not able to personally verify that the protocols set up by Norwest for the logging of rotary and percussion holes were being followed in any of the field season 2005 to 2010 as the QP Resources was not present during logging and did not visit while drilling was in progress . However the Qualified Persons involved in the previous Technical Reports made statements that they were satisfied protocols were adequate and were being followed. The QP (Resources) has reviewed the protocols set up by Norwest for the collection of geological data and considers them reasonable for this style of deposit.

14.2 DATABASE REVIEW

All geologic, geophysical, and sampling data was entered and maintained on site in an electronic database maintained by Norwest and/or Sapphire. 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 was forwarded on a routine basis to Norwest's office in Salt Lake City. Results from coal quality testing were added into the database in the Salt Lake office. From 2006 onwards similar procedures were in place with data routinely sent through to TAG's office in Lakewood Colorado. During the 2010 field season, data was managed at site by McElroy Bryan personnel.

[8] *Southgobi Energy Resources, 2009. Technical Report: Coal Geology and Resources, Ovoot Tolgoi Project, Omnogovi Aimag, Mongolia, p.42*

14.3 DATABASE VERIFICATION

The QP (Resources) was not in a position to verify the data used in the Resource estimates since this information was stored in individual databases maintained by Norwest and TAG and at present does not reside with SGQ. This approach of relying on third party consultants to maintain and to verify SGQ's database has inherent risks in terms of data provenance and integrity. In each of the individual technical reports produced on the project, the data has been independently verified and signed off but this verified data has not been incorporated into a central SGQ database that can then be cross checked against original records. It is intended that in future SGQ will maintain its own database incorporating the data stored at TAG and Norwest together with soft copies of original logs and a record of all coal quality information.

However the QP (Resources) has audited a subset of the data. Scanned field lithology logs and geophysical logs were provided to MMC. A representative number were checked against the seam picks used to generate the geological model. Drillhole collars were also compared to elevations in the DTM (Digital Terrain Model). No material errors were encountered.

15 ADJACENT PROPERTIES

SouthGobi's Ovoot Tolgoi Complex surrounds and is adjacent to the west, south and east of the Nariin Sukhait deposit with separate mining operations of the Mongolyn Alt Corporation (MAK) and a joint-venture between MAK and Inner Mongolia Qinghua Company (Qinghua-MAK JV). The Qinghua-MAK JV currently mines coal from the No. 5 Seam from an open pit mine, referred to as the West pit, which commenced in 2003. MAK operates a separate pit which started in 2008. This pit has expanded to include a pit referred to as the East Pit, formerly operated by Qinghua-MAK JV, which is immediately north of the SGQ Sunrise Field, mining the same seams. Annual production from these mines is estimated to be in excess of 5 million tonnes per year (Mtpy) of coal, transported to customers in China. A publicly available summary report produced by the Mongolian State Geological Centre (Dashkhoral et al, 1992) reports coal resources of 125.5 million tonnes (Mt) within the MAK-controlled lease.

Mine operations employ a workforce of approximately 400 miners. Coal and overburden are removed with excavators and front-end loaders. Night shift activities focus on the removal of overburden. Daytime activities typically involve the arrival of up to 200 – 300 road-hauling trucks from China, which are driven directly into the mines and loaded. The trucks then return across the border each night, where most of the coal is offloaded at Ceke.

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

A Memorandum of Understanding (MOU) between MAK and Southgobi sands LLC (SGS) covering mining across the lease boundary was signed on 24th May, 2007. MMC understands that an operational agreement is still being negotiated. For the purposes of the PFS, the rules shown in Table 15.1 below have been assumed after discussion with SGS.

Table 15.1

Mining Rules across SGS/MAK lease boundary

No	Rule	Comment
1.	The division between SGS coal/waste and MAK coal/waste will be a vertical projection down from the lease boundary	
2.	The SGS pit crest and associated access ramps etc can extend into the MAK lease to allow safe & efficient access for extraction of SGS coal up to the lease boundary	Note this may mean that some MAK coal in the northern pit wall will not be included in the SGS pit design (e.g. if the MAK seams flatten to less than the recommended pit wall batter).
3.	For mine pit design purposes, the MAK coal will be considered as coal.	This will ensure that SGS pit wall within the MAK lease is consistent with geotechnical requirements.
4.	For SGS mine scheduling and costing purposes, the MAK coal will be considered as waste.	This is a conservative assumption; compared to the alternative of SGS paying a royalty for MAK coal.
5.	For SGS mine scheduling and costing purposes, the MAK waste will be mined by SGS.	This is a conservative assumption compared to the alternative of MAK paying for this waste.
6.	There are no limitations on timing of SGS mining within MAK lease	This ensures that SGS pit can be developed in the optimal timing that suits SGS
7.	All MAK waste from the SGS pit will be dumped in the SGS ex-pit dump.	This will only be a relatively small amount and is operationally simpler than having separate waste dumps.
8.	All MAK coal from the SGS pit will be dumped adjacent to the SGS pit on a separate coal dump located on the MAK lease for later rehandle by MAK into highway trucks.	This is operationally simpler than having to rely on MAK to mine the coal from the SGS pit when required to meet SGS schedule.
9.	SGS will be responsible for all operational, environmental and statutory management within the SGS pit.	This is operationally simpler than having responsibility split along the lease line. This would need to be agreed with MAK and government authorities.

The Resource and Reserve estimates in this report do not include any coal within MAK lease, even though the geological models and mining pits extend into the MAK lease.

16 MINERAL PROCESSING AND METALLURGICAL TESTING

16.1 REGIONAL COAL QUALITY

Composite quality analyses previously performed in 2005 and 2006 on SGQ's Ovoot Tolgoi mining license area indicate the coal rank to be high volatile B to high volatile A bituminous, based on the ASTM D388 standard. Previous Soviet-Mongolian government 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 7212 to 7785 kcal/kg and high volatile A produces greater than 7785 kcal/kg heat output.

The 2007 and 2008 exploration drilling results continue to indicate potential coking (HCC) and semi-soft (SSC) coals at Sunset Field, as well as lower ranked thinner coals.

Detailed sample analyses have identified the coal at Ovoot Tolgoi in its unprocessed form to be a mixture of thermal and metallurgical grade coal.

Regionally, the coal is generally low ash (less than 20 percent, air-dried basis) with sulphur approximately one percent. Inherent (or residual moisture) in the coal is less than 2 percent of the coal. Free Swelling Index ranges in values from non-coking (less than 2) to coking (greater than 4).

16.2 COAL QUALITY

To date, 88 core holes have been used for analysis of Coal Quality. The total number of quality holes for each area is shown in Table 16.1.

Table 16.1

Cored Holes with Quality Data

Core Quality Holes			
Resource Area	**Total Number of Exploration Holes**	**Number of Core Holes used for Quality Analysis**	**Percentage of Quality Holes**
Sunrise Field	236	51	22
Sunset Field	244	86	35
Totals	**480**	**137**	**29**

Cored holes were subjected to the analyses listed below:

- Proximate analysis:
  - Moisture
  - Ash
  - Volatile matter
  - Fixed carbon
- Sulphur

- Thermal value
- Relative density
- Free Swell Index (FSI or CSN)

A summary of the coal quality on a seam by seam basis is given in Table 16.2 and Table 16.3, whilst more detail on the individual plies is shown in Appendix B.

Table 16.2

Sunset - Summary of Drillhole Quality Data

Seam	Total Moisture % ar	Inherent Moisture % ad	Ash % ad	Volatile Matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI	Relative density
10	5.2	1.2	19.7	31.8	1.25	6273	2.8	1.46
9	5.3	1.2	20.5	31.1	1.28	6290	3.5	1.45
8	6.1	1.1	19.7	30.3	1.09	6451	4.2	1.44
5U	4.1	1.0	12.1	31.0	0.78	7100	3.6	1.38
5L	3.0	0.7	13.3	32.0	1.01	7060	4.6	1.38

Table 16.3

Sunrise – Summary of Drillhole Quality Data

Seam	Total Moisture % ar	Inherent Moisture % ad	Ash % ad	Volatile Matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI	Relative density
570	8.4	1.7	18.6	31.2	1.17	6385	3.0	1.40
5U2	9.2	1.1	14.9	30.5	1.15	6740	2.2	1.42
5U1	6.8	0.9	13.0	31.9	0.87	6975	2.1	1.40
5L2	7.8	1.2	12.7	32.2	1.02	6810	3.2	1.37
5L1	8.1	1.2	14.9	30.7	0.92	6767	3.0	1.40

16.3 METALLURGICAL TESTING

Metallurgical test work to evaluate the coking characteristics of the coal has been completed on those seams in the Sunset Field that demonstrate coking coal characteristics, including:

- Gieseler plastometer
- Audibert-Arnu dilatometer
- Phosphorus
- Free swell index (Crucible swell number)
- Trace element analysis

- Hardgrove grindability index (HGI)
- Reactive maceral analysis (petrography)

A summary of results is listed in Table 16.4.

Table 16.4

Coking Coal Characteristics

		No. samples	FSI	Gieseler plastometer Max. fluidity (1ddpm)	Dilatation		HGI	Petrography	
					Max contraction %	Max dilatation %		Vitrinite %	Vitrinite reflectance R_O
Sunrise	Mean	22	3.2	9	-35	-34	91	60.3	0.91
	Minimum		1	0	-38	-38	77	48.6	0.82
	Maximum		7	517	-20	49	129	68.5	1.10
Sunset	Mean	14	4.8	30	-20	-15	51	61.1	0.91
	Minimum		2	1	-30	-25	53	56.0	0.85
	Maximum		8	190	-6	26	59	66.1	0.97

Dry ash percentage, sulphur percentage, and Free Swelling Index (FSI) are employed as indicators for coal product type.

Table 16.5 shows the four coal product categories that are currently marketed by SGQ.

Table 16.5

SGQ Coal product categories

Coal Product	Pit	Seam	Other
Product A	Sunset	5	ROM
Product B	Sunrise	5	ROM
Product C	Sunset & Sunrise	8, 9, 10, 570, 580, 590	ROM
Product D	Sunset & Sunrise	8, 9, 10, 570, 580, 590	Screened

High ash (>45%) coal is designated as WASTE.

Geologic reviews indicate the distribution of the product types is not uniform throughout individual or between separate coal seams.

16.4 COAL BENEFICIATION

The run of mine (ROM) coal product is inevitably a combination of coal and dilution by waste rock due to the inability of the mining equipment to precisely follow the interfaces between coal and waste, especially at Ovoot Tolgoi due to the mining method (horizontal benches that intersect the steeply dipping coal seams with multiple coal plies and thin parting.

A feature of the ROM coal is that the coal component is more friable than the waste component. If the ROM coal is crushed and screened at 50 mm, some of the waste can be screened out, thus reducing the ash content, and improving product coal quality.

For 5 Seam, which is the thickest coal with the lowest ash and thin partings, upgrading by crushing and screening will deliver a marketable product. For the other Seams (8, 9, 10, 570, 580, 590) further ash reduction is desirable, as these seams are thinner and thus have a higher proportion of dilution. Ideally, this would be in a coal washing plant, which would separate coal (lower density) from waste (higher density) using various density separation equipment, depending on material size; however, SGQ has not located a suitable source of water in the vicinity of the mine, although water exploration is on going.

To achieve, further ash reduction in these Seams (8, 9, 10, 570, 580, 590), SGQ propose to use FGX air separators. Test work has been done on bulk samples of Ovoot Tolgoi ROM coal, which concludes that “dry separation of the Ovoot Tolgoi 8/9/10 coals, appears to be a suitable process to remove coarse stone and lower ash content by 1-2%”.

SGQ has some portable crushing and screening plants on site, as an interim step prior to the commissioning of a permanent coal handling plant later in 2011.

The coal handling plant that will be constructed in 2011 will consist of:

- A rotary breaker for removal of large waste (greater than 50 mm). A rotary breaker is a horizontally mounted rotating drum with screens (in this case 50 mm opening) on the outside. As the coal passes through the rotary breaker, the coal being more friable, breaks away from coal/waste lumps and falls through the outer screens and the large lumps of waste are rejected from the end of the rotary breaker.

- For 5 Seam from Sunset pit, the coal from the rotary breaker will go directly to form the Product A (Sunset 5 Seam).

- For the other seams, the coal from the rotary breaker will be processed in the dry separators to remove further ash. The product from the dry separators will form either Product B (Sunrise 5 Seam) or Product D (Seams 8, 9 and 10 from Sunset and Seams 570, 580 and 590 from Sunrise).

Further upgrading of coal to reduce ash is possible through wet processing. MMC understands that SGQ is considering a wet processing plant; however this is dependent on identifying a suitable source of ground water. Ground water investigations are on-going.

17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

17.1 INTRODUCTION

The classification, estimation, and reporting of Resources and Reserves for the Ovoot Tolgoi Complex are in accordance with National Instrument 43-101. In addition, use has been made of the following referenced documents, the Canadian Institute of Mining, Metallurgy and Petroleum's CIM "Definition Standards on Mineral Resources and Reserves" adopted by CIM Council on December 11, 2005, and the Geological Survey of Canada Paper 88-21 "A Standardized Coal Resource/Reserve Reporting System for Canada" (GSC Paper 88-21) for the Resource and Reserve estimates summarized in this technical report.

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. Additionally, Resources are 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 17.1.

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.

Table 17.1

Criteria used to define assurance of existence for coals of 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

17.2 GEOLOGICAL MODELLING

The QP (Resources) was provided with geological models for both the Sunset and Sunrise Fields by SGQ. These models had been created by McElroy Bryan Geological Services (MBGS) in 2010 using *Minex* software. The Sunset model was adequate for use in estimating Resources. Table 17.2 shows the seam nomenclature used in the model.

Table 17.2

Sunset Seam Nomenclature

Seam 10		Seam 9		Seam 8		Seam 5U				Seam 5L			
106	1062	95	952	8	82	5U	5U3		5U33	5L	5L3		5L32
	1061		951		81				5U32				5L31
105		94	94U		80				5U31		5L2	5L23	5L23U
104	1042		942				5U2	5U22	5U222				5L232
	1041		941						5U221				5L231
103	103U		940						5U220				5L230
	1032	93	932					5U21	5U212			5L22	5L222
	1031		931						5U211				5L221
102	1022	92	92U						5U210			5L21	5L21U
	1021		922				5U1	5U12	5U122				5L212
101	1012		921						5U121				5L211
	1011		920					5U11	5U112				5L210
		91							5U111		5L1	5L12	5L122
		90	902						5U110				5L121
			901									5L11	5L112
													5L111
													5L110

The Sunrise 2010 geological model only covered the area planned for initial years of mining and did not cover the extent of the drillhole data. An earlier 2006 *Minex* model was provided by SGQ. However MBGS had undertaken considerable seam re-correlation in their model area, thus the seam nomenclature in the two models was different. This was reconciled by assigning a 2010 model name to the equivalent seam in the 2006 model, as shown in Table 17.3. Post-2006 holes were incorporated in the area of the Sunrise model which had been generated in 2006.

The MBGS geological models were accompanied by a disclaimer, emphasizing the status of the models:

"The models relating to this data release were created using geological data (largely drill hole data). Where data has been provided to MBGS, MBGS accepts no liability for the accuracy or completeness of the data. This model is a model of the geological data and geological interpretation based on the data available. Due to data densities and geological complexities not all geological changes may be apparent in the model.

Some known geological features (such as small scale faults) may not be incorporated in the model due to lack of continuation of the feature, limited data to interpret the feature or feature size and modelling parameters. Some modelled geological features may not fully represent the geologist's interpretation due to data or software limitations."

Table 17.3

Reconciliation of Seam Nomenclature Sunrise Model

2010 Model			2006 model
83 82 81 73 72 71			
6U3 6U2 6U1 6U0 6M 6L2 6L1 6L0			
			590U 580 570
5U23 5U22 5U21 5U20	5U2		5U (modelled as 5U22)
5U122 5U121	5U12	5U1	5UB (modelled as 5U121)
5U11			
5U0			5 (modelled as 5L122)
5L23 5L22 5L21	5L2		
5L122 5L121	5L12	5L1	
5L11			
5L0U 5L0L			5B (mod as 5L0L)
			4

In order to verify the models, the QP (Resources) recreated models for both Fields in *Minescape.* Graphical output – contours and sections - were created from both sets of models and compared. In general comparison was good, allowing for differing modelling techniques. A subset of the drillhole data was also checked against original field lithology and geophysical logs. The drillhole collars were also compared against the topographic model. No material errors were found.

Thickness and structure floor contours of the main seam groups are included in Section 22, along with representative cross sections.

The same *Minex* geological models, as used for the Resources estimates, have been used for the PFS to estimate the Reserves. While no gross errors have been found in the models, the models do not incorporate some desirable information that would improve confidence in the Reserves estimate. Some of the missing information includes fault interpretation (the models have no faults interpreted, even though faults are evident in the mine faces), consistent ply correlation (the Sunrise model has different ply names for the same ply in different areas) and limited coal quality data.

Complete revisions of the geological models are recommended for future mining studies. These revisions should incorporate the results of additional drilling suggested above.

The mine is using different geological models, based on *Minesight* software, for operational mine planning. The *Minesight* models use a completely different modelling technique (block modelling) compared to gridded surface modelling is *Minex*. MMC recommends the use of a common model for both the operational and long term mine planning to simplify translation of the PFS mine plan to operations and for ease of reconciliation between plan and actual quantities.

17.3 RESOURCE ESTIMATION

Resources have been estimated in December 2010 using the *Minex* models. The Resources have been classified in the same manner as previous estimates, using the existence criteria listed in Table 17.1. Recent pit optimization studies have shown that open cut mining is possible to depths up to 300m, whilst previous estimates limited open cut Resources to a depth of 250m.

Other criteria used to limit the Resource are:

- Minimum coal thickness = 0.3m (previous estimates used 0.6m)
- Minimum coal parting = 0.3m (previous estimates used 0.6m)
- Base of weathering = 4m
- Open cut Resources limited to a depth of 300m,
- Underground Resources limited to depth range of 300-600m
- Volumes converted to tonnages using laboratory air dried relative density analytical results
- Resources limited to mining licence boundary
- Resources depleted by mined out tonnage (as of 11 December 2010)

GSC Paper 88-21 indicates that 0.6m minimum thickness should be used for Complex coal deposits. MMC interprets this as total seam thickness rather than individual ply thickness. Since the Deposit has been modelled as a ply model, with a number of plies composited to the geological seam, which during mining will

be aggregated to a working section, it was felt that the use of 0.3m as a minimum thickness for individual plies was justified.

A summary of Resources for Ovoot Tolgoi Complex is given in Table 17.4, whilst plans showing the Resource polygons are given in Section 22. Detailed Resource tables are given in Appendix B.

The Measured and Indicated Resources are inclusive of those Resources modified to produce the Reserves, i.e. Reserves are not additional to Resources.

Table 17.4

Summary of Resources Ovoot Tolgoi Complex 11 December 2010

Field	Type	Seam group	Measured Mt	Indicated Mt	Inferred Mt
Sunset	**Open Cut (depth < 300m)**	10	10.13	2.11	0.24
		9	26.60	2.56	0.23
		8	6.99	0.41	0.06
		5U	24.96	6.54	0.24
		5L	13.15	4.26	1.10
		Total	**81.82**	**15.88**	**1.86**
	Underground (depth 300m-600m)	5U	42.91	12.75	1.64
		5L	3.67	8.14	11.72
		Total	**46.58**	**20.89**	**13.35**
Sunrise	**Open Cut (depth < 300m)**	570/580/590	2.58	6.32	5.76
		5U2	8.19	4.08	1.83
		5U1	4.12	0.82	0.94
		5L2	13.55	2.13	0.00
		5L1	26.01	6.57	2.51
		Total	**54.45**	**19.92**	**11.04**
	Underground (depth 300m-600m)	5U2	0.00	0.65	6.03
		5U1	0.21	0.49	1.27
		5L2	1.34	0.90	0.00
		5L1	3.88	19.17	63.49
		Total	**5.42**	**21.21**	**70.80**
Grand total	**Open Cut (depth < 300m)**		136.28	35.81	12.89
	Underground (depth 300m-600m)		52.00	42.10	84.16

17.4 RESERVE ESTIMATION

MMC has completed a Preliminary Feasibility Study (PFS), which is the basis of the Reserves estimate.

Some key assumptions used for the Reserves estimates are:

1. The Reserves estimates do not include any Inferred Resources, even though the open cut pits include Inferred Resources. For the PFS, the Inferred Coal has been treated as waste (i.e. costs have been assumed for mining of Inferred Resources but no revenue has been assumed for the Inferred Resources).

2. The open cut pit limits will extend across the lease boundary into the adjacent lease held by Mongolyn Alt Corporation (MAK). SGQ and MAK have a memorandum of understanding to allow mining across the boundary. The Reserves estimate does not include any coal within the MAK lease that must be extracted as part of the SGQ mining operation. For the PFS, waste and coal within the pit and within the MAK lease has been treated as waste (i.e. costs have been assumed for mining of the MAK waste and coal but no revenue has been assumed for the MAK coal).

3. The Sunset open cut pit was initially designed to 300m below the original ground surface. Examination of the initial design revealed that some the nominal underground Resources (approximately 20 m) which would be exposed in the floor of the open pit and could easily be mined by open cut. The final pit shell was extended to include this coal in the pit shell and hence some of the Underground Resources have been included in the Open Cut Reserves estimates.

4. The Reserves estimates account for coal and waste that was mined up to 11 December, 2010.

Based on this PFS, Reserves are estimated to total 106.8 million tonnes, comprising 70.6 million tonnes at Sunset at a strip ratio of 2.7 bank cubic metres/tonne and 36.2 million tonnes at Sunrise at a strip ratio of 4.5 bank cubic metres/tonne. The Proven Reserves for the 5U and 5L Seams are derived from Measured Resources only. The Probable Reserves for the 5U and 5L Seams are derived from Indicated Resources only. All Reserves for the upper Seams (8, 9 and 10 at Sunset and 570, 580, 590 at Sunrise) are classified as Probable, even though these include some Measured Resources, due to uncertainties regarding the geological model and coal processing. The proposed installation of a wet processing plant would provide more confidence in coal processing and allow Measured Resources in the upper Seams (8, 9 and 10 at Sunset and 570, 580, 590 at Sunrise) to be classified as Proven.

Table 17.5 shows the Reserve estimate separated by pit and seam.

Table 17.5

Reserves Estimate - MMC 11 December 2010

Deposit	Seam	Proven		Probable		TOTAL	
		M tonnes	Ash (%)	M tonnes	Ash (%)	M tonnes	Ash (%)
Sunset	10			6.5	24.4	6.5	24.4
	9			19.7	22.4	19.7	22.4
	8			4.2	19.1	4.2	19.1
	5U	24.2	10.4	2.6	10.1	26.7	10.4
	5L	11.2	13.5	2.3	13.6	13.5	13.5
	TOTAL	**35.3**	**11.4**	**35.3**	**20.9**	**70.6**	**16.1**
Sunrise	590			2.0	16.5	2.0	16.5
	580			0.7	30.9	0.7	30.9
	570			0.6	19.5	0.6	19.5
	5U	10.4	14.8	1.2	14.4	11.6	14.8
	5L	17.0	14.6	4.3	14.8	21.3	14.6
	TOTAL	**27.5**	**14.7**	**8.7**	**16.8**	**36.2**	**15.2**
GRAND TOTAL		**62.8**	**12.8**	**44.0**	**20.1**	**106.8**	**15.8**

18 OTHER RELEVANT DATA AND INFORMATION

Currently there are no known mining, metallurgical, infrastructure, environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors that would materially affect the Resource and Reserve estimate.

Sections of this report are derived from the previous NI 43-101 reports compiled by Norwest Corporation and TAG and include information provided to the Qualified Persons by SouthGobi Resources Ltd.

MMC is currently working with SGQ to review additional data (including higher received prices for some coal types), which could result in a larger pit-shell and larger run of mine coal production scenario for the Ovoot Tolgoi Mine.

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

19.1 MINING OPERATIONS

Mining Method

The mining method employed at Ovoot Tolgoi could be described as open cut terrace mining utilizing large scale hydraulic excavators and shovels and trucks. Terrace mining is utilized where coal seams dip steeply and operating machinery on the coal seam roof and floor is not possible, due to the steep seam dips. Terraces, or benches, are excavated along fixed horizontal horizons and these benches intersect both coal and waste. Coal and waste are mined separately on each bench with dozers being used as needed to push coal or waste down to the excavator for loading onto trucks. This mining method allows large scale open pit mining to occur productively in steeply dipping coal seam environments. All waste will be dumped ex-pit, as the steep dips preclude in pit dumping.

The run of mine (ROM) coal will be hauled to a soon to be constructed coal handling plant, comprising a rotary breaker and dry separators, which will remove some of the stone within the ROM coal thus reducing the ash in the Saleable product coal.

Mine Planning

Separate mine plans have been considered by MMC for Sunrise and Sunset with an overall aim of producing a total of 8 million tonnes of ROM coal annually and by mining in both pits at the same time. Consequently, Sunset has been scheduled at an annual rate of 5.2 million tonnes and Sunrise at an annual rate of 2.8 million tonnes. Production in 2011 is assumed to total 5.0 million tonnes.

The mine planning process consisted of the following steps:

1. Determination of a potential economic mining pit shell using the Minex mine planning software “Pit Optimiser” module

2. Designing a practical pit shell, based on the Optimiser results but addressing practical mining issues, such as, access and geotechnical requirements provided by the QP (geotechnical).

3. Scheduling waste and coal mining within the practical pit to achieve the annual target quantities.

4. Designing suitable waste dumps and scheduling waste and coal quantities to estimate waste and coal haulage distances on an annual basis.

5. Estimating mining fleet equipment requirements to achieve the required annual waste and coal schedule quantities.

6. Estimating annual product coal quantities and qualities based on annual run of mine (ROM) coal quantities and qualities, and yield and product quality regression equations, provided by the QP (coal processing)

7. Estimating capital and operating costs for the mining equipment on an annual basis.

8. Economic modelling by combining the mining costs and physical quantities with cost estimates for the other parts of the Ovoot Tolgoi Complex and revenue assumptions to determine annual economic parameters (costs, margin etc) and project Net Present Value (NPV)

Each step is described in more detail below:

Pit Optimisation

The economic mining limits were estimated using the Minex mine planning software “Pit Optimiser” module. The pit optimisation software uses a three-dimensional Lerchs-Grossman algorithm which works by sub-dividing the geological model into blocks and placing a value on each block. The “value” placed on a block is an estimate of its net margin, that is, the difference between the revenue generated from selling the contained product coal and the costs of realising that revenue.

The pit optimisation software does many scans through the geological model to calculate the value of blocks within three-dimensional pit shells. Each scan attempts to expand the pit shell by identifying more positive value blocks to include while maintaining the pit shape. The final pit limit is defined when no additional blocks can be added which contribute a positive value. The resulting three dimensional shape is considered the “optimal” economic shell for mining for the assumed revenue. The process is repeated for increments of revenue, starting below the assumed revenue and continuing above, to identify not only the optimal pit shell for the assumed revenue but also to indicate the preferred starting location and mining direction.

The pit slope design assumptions used in the software were provided by Seedsman Geotechnics. Mining coal loss was applied on a percentage basis for each seam to determine ROM coal. The yield assumptions to convert ROM coal to product tonnes was estimated based on test results on dry separators provided by SGS. The mining costs were estimated by MMC based on the MMC cost database. Revenue assumptions were provided by SGS (USD 50/t for 5 Seam product coal and USD 40/t for other seam product coal with a reduction of 5% in revenue to account for government royalty).

The outcome of this task was optimal pit shells for both Sunset and Sunrise, which were used to guide the design of the final pit shells.

Pit Design

Pits have been designed for Sunrise and Sunset based on a combination of pit optimisation, geotechnical design requirements and practical limitations. The pits are nominally 300 m deep, although the Sunset pit depth was increased by approximately 20 m to excavate some coal which would have been exposed in the pit floor.

For Sunset the geotechnical design criteria are:

- Footwall - 60 metre bench heights with 60° batter angles on benches and 15 metre wide benches.
- Hanging wall - 60 metre bench heights with 70° batter angles on benches and 15 metre wide benches.

For Sunrise the geotechnical design criteria are:

- Footwall - 50 metre bench heights with 35° batter angles on benches and 20 metre wide benches.
- Hanging wall - 50 metre bench heights with 70° batter angles on benches and 15 metre wide benches.

Access to the pit is by switchback ramps, of 50 metres width and at grades of 8%. The ramps have been designed on the hanging wall, due to the improved geotechnical stability in the hanging wall.

Figure 22.30 shows the Sunset pit and dump design, Figures 22.31 and 22.32 show sections through the Sunset pit, and Figures 22.33 to 22.37 show annual stage plans for the Sunset pit and dump. Figure 22.38 shows the Sunrise pit and dump design, Figures 22.39 and 22.40 show sections through the Sunrise pit, and Figures 22.41 to 22.35 show annual stage plans for the Sunrise pit and dump. These pit designs are based on the optimiser results and incorporate the slope design recommendations provided by Seedsman Geotechnical.

Waste and Coal Scheduling

Several iterations of scheduling were needed to determine the preferred mining sequence. The preferred sequence has a series of nested pit shells within the ultimate pit, which enabled strip ratio to be lowered and a higher proportion of higher value 5 Seam coal to be mined in the early years, compared with simply mining the ultimate pit from top to bottom. Table 19.1 shows the annual waste and coal quantities scheduled from Sunset and Sunrise. The waste quantities have been smoothed to utilise some surplus equipment capacity in early years to avoid short term peaks in later years.

The considered production rate is 8 million tonnes per annum of ROM coal, comprising 5.2Mtpa from Sunset and 2.8Mtpa from Sunrise. MMC has checked that there is adequate working room in the pit for this production rate.

Table 19.1 shows the annual waste and coal quantities together with strip ratio for Sunset and Sunrise and the Total.

Table 19.1

Annual Waste, Coal Qualities and Strip Ratio – Sunset and Sunrise

	Sunset			Sunrise			Total		
Year	Waste (kbcm)	ROM Coal (kt)	Strip Ratio (bcm/t)	Waste (kbcm)	ROM Coal (kt)	Strip Ratio (bcm/t)	Waste (kbcm)	ROM Coal (kt)	Strip Ratio (bcm/t)
2011	5,661	3,000	1.9	15,544	2,000	7.8	21,204	5,000	4.2
2012	10,118	5,200	1.9	13,582	2,800	4.9	23,700	8,000	3.0
2013	12,608	5,200	2.4	13,553	2,800	4.8	26,161	8,000	3.3
2014	15,109	5,200	2.9	13,595	2,800	4.9	28,704	8,000	3.6
2015	17,118	5,200	3.3	19,571	2,800	7.0	36,688	8,000	4.6
2016	18,117	5,200	3.5	19,561	2,800	7.0	37,679	8,000	4.7
2017	18,122	5,200	3.5	19,568	2,800	7.0	37,690	8,000	4.7
2018	18,613	5,200	3.6	13,567	2,800	4.8	32,180	8,000	4.0
2019	18,613	5,200	3.6	10,568	2,800	3.8	29,181	8,000	3.6
2020	18,605	5,200	3.6	8,564	2,800	3.1	27,169	8,000	3.4
2021	14,110	5,200	2.7	6,056	2,800	2.2	20,167	8,000	2.5
2022	9,118	5,200	1.8	4,158	2,800	1.5	13,276	8,000	1.7
2023	8,129	5,200	1.6	2,652	2,800	0.9	10,781	8,000	1.3
2024	6,667	5,176	1.3	592	552	1.1	7,259	5,728	1.3
TOTAL	**190,707**	**70,576**	**2.7**	**161,132**	**36,152**	**4.5**	**351,839**	**106,728**	**3.3**

The quantities of waste and coal within the Sunset and Sunrise pits have been calculated using the Minex software.

The assumptions adopted in the PFS to estimate ROM quantities are shown in Table 19.2 below.

Table 19.2

Ovoot Tolgoi ROM Coal Loss/Dilution Assumptions

Sunset			Sunrise		
Seam	Loss (% mass)	Dilution (% Mass)	Seam	Loss (% mass)	Dilution (% Mass)
10	9	10	590	9	2
9	9	10	580	9	2
8	9	2	270	9	2
5U	4	2	5U	4	2
5L	4	2	5L	4	2

Dilution density is assumed to be 2.2 t/cum and dilution ash is assumed to be 85%.

This process for estimating ROM quantities is not typical; however is appropriate for the Ovoot Tolgoi Complex, due to the features of the deposit (thick seams with multiple coal plies, steep dips and folding),

mining method (horizontal benches intersecting both, which will contain both waste and coal) and the rudimentary nature of the geological models.

Waste dump design and scheduling

All waste is assumed to be dumped ex-pit, as the pits do not reach their ultimate depth until the final year of the schedule. This also allows for potential future expansion of the pits to greater depth, if economic. The assumptions used in the dump design are:

- A swell factor of 1.2
- All dumping was kept within the SGS lease boundary.
- Dump is 100m offset from a potential larger pit to 400m depth to allow for possible future cut back of the hanging wall to allow mining of the deeper coal.
- A maximum dump height of 100m above the surface (RL1620) was allowed.

For both Sunset and Sunrise pit, the pit excavation face for each year was determined from the schedule and annual dumping plans were created to accommodate all the waste. Based on these annual plans, waste truck haul distances were estimated. The pit excavation plans were also used to estimate annual coal haulage distances.

Fleet estimation

MMC was able to estimate the mining equipment fleet requirements needed to achieve the physical quantities determined in the mine planning steps above.

The excavator/truck fleets assumed in each pit are:

- 1 large excavator (Liebherr 996) with ~240t trucks (Terex MT 4400) (rock bodies)
- 1 small excavator (Liebherr 9250) with ~100t trucks (Terex TR100) (coal bodies)
- Up to 2 additional small excavators (Liebherr 9250) with ~100t trucks (Terex TR 100) (rock bodies)

The annual production rate assumptions for these fleets are shown in Table 19.3.

Table 19.3

Fleet Productivities

Equipment	Waste (kbcm/year)	Coal (ROM ktonnes/year)
Large excavator	9,900	14,040
Small excavator	4,919	7,500

The allocations of these fleets to the waste and coal tasks are shown in Table 19.4.

Table 19.4

Fleet Allocations

Equipment	Waste	Coal
Large excavator	Thicker waste	5U coal
Small excavator	Thinner waste	Remaining coal

Truck requirements have been estimated based on annual quantities and haul distances.

Table 19.5 shows the annual excavator and truck numbers for Sunset.

Table 19.5

Excavator and Truck Numbers - Sunset

	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Large exc	1	1	1	1	1	1	1	1	1	1	1	1	1	1
240 t truck	5	6	6	7	7	7	7	8	9	9	9	11	11	11
Small exc	1	1	1	1	3	3	3	2	2	2	1	1	1	1
100 t trucks	6	7	7	8	20	24	25	20	20	20	12	12	12	12

Table 19.6 shows the annual excavator and truck numbers for Sunrise.

Table 19.6

Excavator and Truck Numbers - Sunrise

	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Large exc	1	1	1	1	1	1	1	1	1	1				
240 t truck	6	6	6	7	7	7	7	8	8	8				
Small exc	2	2	2	2	2	2	2	2	2	2	2	2	2	1
100 t trucks	13	16	16	18	17	20	12	12	14	15	15	17	18	15

Product Coal estimation

MMC has also estimated Product Coal, which is the coal that is sold to customers, after processing at the mine. Based on this PFS, Product Coal is estimated to total 95.5 million tonnes, comprising 63.1 million tonnes at Sunset and 32.4 million tonnes at Sunrise.

Table 19.7 shows the Product Coal tonnes and ash estimates separated by pit and seam.

Table 19.7

Product Coal Estimate - MMC 11 December 2010

Deposit	Seam	TOTAL	
		M tonnes	Ash (%)
Sunset	10	5.4	22.5
	9	16.5	19.6
	8	3.6	18.3
	5U	25.1	9.6
	5L	12.7	12.9
	TOTAL	63.1	14.5
Sunrise	590	1.6	15.3
	580	0.6	27.0
	570	0.5	18.7
	5U	10.5	13.7
	5L	19.2	13.5
	TOTAL	32.4	14.0
GRAND TOTAL		95.5	14.3

The assumptions used to estimate Product Coal from ROM coal were estimated by the QP (coal Processing) and are shown in Table 19.8.

Table 19.8

Product Coal Estimation Assumptions

Pit	Seam	Breaker Yield (%)	Breaker & Dry Separator Yield (%)	ROM to Prod Ash Regression Factor
Sunset	10	94	81.9	0.924
	9	94	83.7	0.8757
	8	92	85.3	0.9565
	5	93.9	90.2	0.925
Sunrise	590	92.3	81.8	0.924
	580	92.3	83.5	0.8757
	570	92	85.3	0.9565
	5	93.9	90.2	0.925

The 5 Seam product coal from Sunset pit is assumed to be breaker product. The product for the other seams in Sunset and all seams in Sunrise is assumed to be dry separator product.

SGQ plans to install a coal wash plant, provided a suitable ground water source is located. This would reduce product coal ash, resulting in a higher value product. The quantity of product coal would also be reduced, which would give transport cost benefits in transportation to customers.

Mining cost estimation

MMC has estimated the mining capital and operating costs based on the physical equipment fleet numbers estimates, described above. (fleet numbers and operating costs).

Mining equipment is assumed to operate on a 4 panel, 7 day/week, 24 hours/day.

Economic Modelling

The mining cost estimates are combined with the costs for other parts of the operation (coal handling etc) and revenue assumptions to estimate cash flow and net present value.

19.2 RECOVERABILITY

The active mining operations are currently ramping up to full development, and pit surveys and tracking of actual recoverability are being developed as the mine progresses. Therefore, actual experience is not available to confirm or refute assumptions utilised in the Pre-Feasibility Study (PFS), although the assumptions are reasonable based on MMC experience with similar mining operations. As systems are developed to reconcile plan/actual production, the assumptions should to be reviewed.

19.3 MARKETS

All coal from the Ovoot Tolgoi mine is currently sold into China; MMC has assumed that China will continue to be the market, as there is no infrastructure to transport significant quantities of coal into Mongolia. Most coal is sold at the mine gate with the customer responsible for shipping of coal from the mine site, across the border and into China. However, some coal is sold directly in China, where Ceke is the point of delivery.

SGQ has coal supply contracts with seven companies and is currently negotiating contracts with a number of other companies.

An advantage of Mongolian coal in supplying this market is the ability to distribute coal to the markets via the recently established rail line from Ceke, approximately 45 kilometres from the Ovoot Tolgoi mine site. In addition, coal processing facilities at Ceke, where water supplies are available, enable upgrading of the coal to meet customers' specifications and reducing the volume of coal to be transported with consequent transport cost savings. This is likely to make Mongolian coal relatively attractive compared to imported sea borne coal for supply to certain inland areas of China.

Market Growth

There is anticipated to be rapid growth in China over the next decade, with a particular emphasis on China's western regions (investment growth more than three times that of China's eastern coastal regions). This growth will be driven by additional steel-making capacity, 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 will become a key supplier of metallurgical and thermal coal.

SGQ sell three different products and the quality specifications for these Products are shown in Table 19.9:

Table 19.9

Product Coal Quality Specifications

	Kcal/kg	ash	sulphur	FSI	moisture	vm
Product A	7000-7300	8-9.5%	1.0%	3-6	8%	30-33%
Product B	6300	10-15%	1.3%	1-3	7%	30-33%
Product D	5800-6200	15-18%	1.7%	1-3	7%	30-33%

Sales contracts for 2011 could total 8.9 million tonnes (7.4 million tonnes already signed and a further 1.5 million tonnes being negotiated), comprising 4.7 Mt of Product A, 1.5 Mt of Product B and 2.7 Mt of Product D. The proportion of higher ash Product B and Product D will increase over the mine life and SGQ will need to obtain additional contracts for higher ash coal.

Pricing Forecast

MMC price forecast is based on information provided by SGQ regarding historical product pricing. All prices quoted are “mine gate” prices, which is the basis of most contracts.

Product A & B

Products A and B, which have ash levels between 8% and 15%, require limited processing to be used for metallurgical coal and thus have a higher price than higher ash Product D coal. MMC has assumed a coal sales price of USD75/t for 10.5% ash coal in the economic analysis (see Section 19.8). MMC has assumed a price reduction of USD0.25/t for each 1% increase in ash above 10.5% up to 15%, for example, the sales price for 12.5% ash coal is assumed to be 75 – 2x0.25 = USD74.50/t.

All coal from 5 Seam is assumed to be sold as either Product A (Sunset) or Product B (Sunrise).

Product D

MMC has assumed a coal sales price of USD40/t for Product D coal (nominal ash of 18%), which requires additional processing to be used for metallurgical purposes. For different ash coal, MMC has assumed a bonus/penalty of USD0.25/t for each 1% variance above/below 18%, for example, the sales price for 20% ash coal is assumed to be 40 – 2x0.25 = USD39.50.

These prices are assumed to be constant over the mine life.

19.4 CONTRACTS

SGQ conducts all operations as owner/operator and thus there are no major contracts.

19.5 ENVIRONMENT

The key environmental reports are titled *Detailed Environmental Impact Assessment for the Nariin Sukhait Coal Deposit Mining Project*, prepared by Environmental Consulting Company (ENCO), Ltc, 2006, and the *Addendum,* prepared in 2006. MMC has sighted a copy of the signed Addendum, which was recognized by the Governor, Gurvan Tes soum (B Dabaatseren).

The main changes to the Ovoot Tolgoi coal mine that are addressed in the DEIA are:

- Annual volume of coal and waste rock extraction increased from 0.5 MT and 1.05 Mm3 to 4 MT and 15 Mm3 respectively;
- Area of mine pits increased to 319 ha (total area of all pits) and maximum depth increased from 70 m to 200 m;
- Area of waste rock dumps (WRD) increased to 331 ha (total of all WRDs) and height increased from 20 m to 60 m;
- Frequency of blasting increased from once per week to more than once per week;
- Increased fleet of heavy mining vehicles;
- Number of operating days increased from 260 days to 350 days per year;
- Workforce size increased from 126 to 292, with around 200 people on site at any one time;
- Projected mine life decreased from 20 years to 17 years;
- Change from operations during daylight hours only to continuous 24 hour operations (excluding blasting, which is in daylight hours only); and
- Relocation of the accommodation camp to a site that is situated near to airport, approximately 3 km east of the Sunrise field.

The Addendum reviewed the possible impact of each of these changes and concluded that “most of the impacts of the changed mining plan would be within the range of effects already described in the original DEIA”.

The Addendum identified the impact on groundwater of the deeper pits as a possible exception to being within the range of original impacts. As mining has progressed, the quantity of groundwater flowing into the pits has been less than originally anticipated and consequently, the impact of mining on groundwater is less. Aquaterra was commissioned by SGQ in 2010 to investigate ground water sources near Ovoot Tolgoi and concluded “Revised estimates of mine inflows at the Sunset pit suggest that dewatering production will be

sufficient for immediate mine water requirements, and may provide a supplementary water source" and "However, dewatering production cannot be considered a viable long term supply". For this reason, MMC considers that the increased pit depth proposed (approximately 320m below the surface) will not have significant additional impacts on groundwater compared to the currently approved mining plan with pit depth of 200m.

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. 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. Detailed plans for reclamation of the final mining pit have yet to be determined, as the final pit would provide possible access for future open cut or underground mining to extract some of the remaining coal, if economic. The PFS includes an allowance of USD 0.25/product tonne for annual environmental work, such as progressive rehabilitation of waste dumps, as dumps reach their final shape. A further allowance of USD 20 million has been assumed in the PFS for final rehabilitation, such as covering exposed coal seams with waste, securing the final pit walls by dozing the unconsolidated upper materials and constructing bunds to ensure public safety and rehabilitation (dozing and seeding) of final waste dumps.

The mine plan prepared by MMC for the PFS has the following changes relative to the currently approved mine plan:

- Annual volume of coal and waste rock extraction increased from 4.0 MT and 15 Mm3 to 8 MT and 40 Mm3, respectively,
- Area of mine pits increased to 355 ha (total area of all pits) and maximum depth increased from 200 m to 320 m,
- Area of waste rock dumps (WRD) increased to 970 ha (total of all WRDs) and height increased from 60 m to 100 m,
- Increased fleet of heavy mining vehicles,
- Workforce size increased from 292 to approximately 950, with around 400 people on site at any one time, and
- Projected mine life unchanged at 17 years (2008 to 2025).

As most of the changes in the mine plan prepared by MMC for the PFS are generally extensions of the existing mine plan rather than radical changes in location, size etc., MMC considers that the impacts of the latest mine plan would likely also to be within the range of effects in the original DEIA.

In summary, SGQ will need to obtain environmental approval for the PFS mine plan; however, based on past experience, it would appear likely that approval will be granted.

19.6 TAXES

The following lists taxes, royalties, and other government levies applicable to the Ovoot Tolgoi mining operation, as assumed in the PFS:

- Fixed Scale Royalty – 5% of revenue for export coal sales at Mine Gate, based on the reference price determined by the Mongolian government.
    - For 2011, the reference price is assumed to be USD70/t for all 5 Seam coal and USD64.70/t for the other seams.
    - From 2012, the reference price for Sunset 5 Seam coal, which is processed through the rotary breaker only, is assumed to be USD70/t. For all other coal, which is processed through the dry separator, the reference price is assumed to be USD 202.20/t.
- Variable Scale Royalty – 2 or 2.5% of revenue for export coal sales at Mine Gate, based on the reference price determined by the Mongolian government.
    - For 2011, the reference price is assumed to be USD70/t for all 5 Seam coal and USD64.70/t for the other seams and the royalty rate is assumed to be 2%.
    - From 2012, the reference price for Sunset 5 Seam coal, which is processed through the rotary breaker only, is assumed to be USD70/t and the royalty rate is assumed to 2%. For all other coal, which is processed through the dry separator, the reference price is assumed to be USD 202.20/t with a royalty rate of 2.5%.
- Property Tax – 0.6% on acquisition value.
- Mining License - $5/ha x 9,308 ha = $46,540/year.
- VAT – 10% on capital, materials and supplies. VAT is assumed to be refunded in the following year, based on SGS understanding of the Mongolian VAT refund for processed coal.
- Income Tax – 10% of the first 3B MNT, 25% thereafter.
- Depreciation – 10 years on equipment, 40 years on fixed assets, 3 years on minor assets.

19.7 CAPITAL AND OPERATING COST ESTIMATES

Total capital costs from 2011 to 2024 are estimated at USD 457M, including a contingency of 10% on most items and comprising:

- USD 232M for waste mining equipment,

- USD 38M for coal mining equipment,
- USD 26M for support mining equipment
- USD 26M for site overheads (miscellaneous equipment) (USD 2M annually to 2022 plus 10% contingency),
- USD 60M for coal handling facility (rotary breaker, dry separator and truck load out) (no contingency)
- USD 53M for transport road from Ovoot Tolgoi to the Chinese border at Ceke,
- USD 22M for additional mine infrastructure (workshops and accommodation to cover expansion in equipment and labour around 2015), and

The direct mining unit cash operating cost (before income tax) averages USD15.41/Reserve tonne (including 10% contingency), comprising:

- USD 12.07/Reserve tonne for waste removal,
- USD 1.83/Reserve tonne for coal mining, and
- USD 1.51/Reserve tonne for mining support.

The direct mining unit operating cost ranges from USD 20.44/Reserve tonne in 2011 to USD 10.91/Reserve tonne in 2021.

Table 19.10 shows a summary of the capital and operating costs on an annual basis.

CASH OUTFLOW SUMMARY

Option 1 8Mtpa

ITEM	ACTIVITY			UNITS	Y1 Jan 2011	Y2 Jan 2012	Y3 Jan 2013	Y4 Jan 2014	Y5 Jan 2015	Y6 Jan 2016	Y7 Jan 2017	Y8 Jan 2018	Y9 Jan 2019	Y10 Jan 2020	Y11 Jan 2021	Y12 Jan 2022	Y13 Jan 2023	Y14 Jan 2024	Y15 Jan 2025	Y16 Jan 2026	Y17 Jan 2027	Totals/ Ave
QUANTITIES		Quantity Schedule																				
	Waste	Total Waste		kbcm	29,600	28,500	28,500	28,500	37,500	39,250	34,300	29,400	29,400	29,400	15,700	15,100	15,100	15,100	0	0	0	375,350
		Total ROM Coal		kt	5,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	5,728	0	0	0	106,728
	Coal Sold	Total Product Coal		kt	4,458	7,087	7,006	6,944	7,042	7,066	7,127	7,215	7,323	7,281	7,079	7,260	7,275	5,322	0	0	0	95,486
	Strip Ratio (O/C Only)			bcm/Prod t	6.64	4.02	4.07	4.10	5.33	5.55	4.81	4.07	4.01	4.04	2.22	2.08	2.08	2.84	0.00	0.00	0.00	3.93
	Average Yield			%	89%	89%	88%	87%	88%	88%	89%	90%	92%	91%	88%	91%	91%	93%	0%	0%	0%	89%
QUALITIES		Quantity Schedule																				
	Energy	Not Used		none	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sulphur	Not Used		none	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WORKFORCE																						
	Operator Numbers			no.	248	264	275	292	369	412	369	329	352	357	255	271	283	281	0	0	0	277
	Maintenance Numbers			no.	78	82	85	90	116	128	114	101	108	109	73	77	81	80	0	0	0	95
	Staff & Supervisory Numbers			no.	427	427	427	427	427	427	427	427	427	427	427	427	427	427	0	0	0	297
	Estimated Contractor Workforce	input		no.	22	22	22	22	22	22	22	22	22	22	22	22	22	22	0	0	0	22
	Total Workforce Numbers			no.	775	795	810	831	934	990	932	880	909	916	777	798	813	810	0	0	0	855
CAPITAL																						
	OC Waste Removal			kUSD	31,061	8,796	0	13,957	26,349	14,392	28,086	12,178	27,105	18,359	0	30,041	783	0	0	0	0	211,109
	OC Coal Mining			kUSD	3,396	1,819	0	1,882	3,344	953	5,992	426	2,950	1,302	1,299	10,673	295	0	0	0	0	34,332
	OC Support			kUSD	5,108	0	0	1,076	3,178	1,076	1,076	4,027	5,103	1,076	0	2,127	0	0	0	0	0	23,846
	Site Overheads			kUSD	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	0	0	0	0	0	24,000
	Fragmentation			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CHPP			kUSD	45,000	15,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60,000
	Transport - Truck			kUSD	30,000	18,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48,000
	Transport - Rail			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Port and Loadout			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Admin & Marketing			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Royalty			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Property Tax			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VAT			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mine Closure			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mine Infrastructure			kUSD	0	0	0	0	10,000	10,000	0	0	0	0	0	0	0	0	0	0	0	20,000
	Main Rd Development			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Gate Rd Development			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pillar Extraction			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Longwall			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare CC 20			kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contingency	10%	excl CHPP	kUSD	7,157	3,062	200	1,892	4,487	2,842	3,715	1,863	3,716	2,274	330	4,484	108	0	0	0	0	36,129
	Total Capital Cost			kUSD	123,722	48,677	2,200	20,807	49,358	31,263	40,869	20,494	40,874	25,010	3,629	49,326	1,186	0	0	0	0	457,415
	Cumulative Capital Cost			kUSD	123,722	172,399	174,599	195,406	244,764	276,027	316,896	337,390	378,264	403,274	406,903	456,229	457,415	457,415	457,415	457,415	457,415	
OPERATING COST			USD/t Prod																			
	OC Waste Removal	13.50	3.12	12.27	kUSD	77,751	76,328	79,063	83,316	106,349	117,479	104,191	92,359	97,657	99,079	55,896	57,943	60,193	63,944	0	0	0	1,171,547
	OC Coal Mining	2.04	1.66	1.86	kUSD	7,434	11,832	12,209	12,281	12,221	11,788	12,560	12,800	13,526	13,462	13,835	15,088	15,698	12,532	0	0	0	177,265
	OC Support	1.68		1.53	kUSD	7,744	9,189	9,528	10,015	11,430	12,550	11,694	11,070	11,627	11,750	9,621	10,066	10,377	9,527	0	0	0	146,188
	Site Overheads	3.04		2.77	kUSD	15,907	19,194	19,092	19,014	19,137	19,167	19,243	19,354	19,488	19,436	19,184	19,410	19,428	16,986	0	0	0	264,039
	Fragmentation	0.00		0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CHPP	2.75		2.50	kUSD	11,145	17,718	17,515	17,359	17,604	17,666	17,816	18,038	18,308	18,203	17,699	18,151	18,188	13,304	0	0	0	238,714
	Transport - Truck	0.00		0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Transport - Rail	0.00		0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Port and Loadout	0.00		0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Admin & Marketing	1.65		1.50	kUSD	6,687	10,631	10,509	10,416	10,562	10,600	10,690	10,823	10,985	10,922	10,619	10,890	10,913	7,982	0	0	0	143,228
	Royalty			10.78	kUSD	21,390	84,810	90,143	90,771	89,175	88,585	83,428	74,997	66,241	70,916	87,724	73,831	73,259	34,398	0	0	0	1,029,668
	Property Tax			0.18	kUSD	699	932	881	930	1,128	1,204	1,315	1,293	1,370	1,337	1,202	1,320	1,153	994	861	739	0	17,357
	VAT			0.00	kUSD	23,810	-4,843	-3,944	2,014	5,106	-225	-686	-2,934	2,447	-1,177	-6,714	4,277	-3,651	-153	-12,228	-1,100	0	0
	Mine Closure			0.21	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	10,000	10,000	0	0	20,000
	Mine Infrastructure			0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Rd Development			0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Gate Rd Development			0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pillar Extraction			0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Longwall			0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare CC 20			0.00	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Contingency	10%		2.24	kUSD	12,667	14,489	14,791	15,240	17,730	18,925	17,619	16,444	17,159	17,285	12,685	13,155	13,480	12,428	0	0	0	214,098
	Total Operating Cost			35.84	kUSD	185,234	240,279	249,786	261,356	290,442	297,740	277,869	254,245	258,808	261,213	221,752	224,130	219,038	181,943	-1,367	-361	0	3,422,106
CASH OUT FLOW	(simplistic)			kUSD	308,956	288,956	251,986	282,163	339,801	329,002	318,738	274,739	299,681	286,223	225,381	273,455	220,224	181,943	-1,367	-361	0	3,879,521
OPERATING COST BY COST ELEMENT																						
	Labour		6%	kUSD	14,204	14,364	14,477	14,645	15,480	15,919	15,452	15,025	15,255	15,304	14,179	14,339	14,455	14,429	0	0	0	207,527
	Materials		32%	kUSD	57,124	74,189	75,113	76,729	86,037	90,885	86,397	82,537	85,829	86,185	69,832	72,557	73,960	73,526	11,000	0	0	1,101,899
	Energy		23%	kUSD	46,305	49,098	51,410	54,577	65,690	72,350	66,287	60,952	65,261	66,255	42,491	45,125	47,176	47,641	0	0	0	780,618
	Lease Charges		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Explosives		8%	kUSD	20,475	19,780	19,780	19,780	25,889	27,077	23,717	20,391	20,391	20,391	11,091	10,684	10,684	10,645	0	0	0	260,778
	Contractor		1%	kUSD	1,226	1,949	1,927	1,910	1,936	1,943	1,960	1,984	2,014	2,002	1,947	1,997	2,001	1,463	0	0	0	26,259
	Taxes		31%	kUSD	45,899	80,899	87,080	93,716	95,409	89,564	84,057	73,356	70,058	71,076	82,212	79,428	70,761	35,239	-12,504	-397	0	1,045,853
	Spare Element 8		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 9		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 10		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 11		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 12		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 13		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 14		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 15		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 16		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 17		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 18		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 19		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare Element 20		0%	kUSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total by Element		100%	kUSD	185,234	240,279	249,786	261,356	290,442	297,740	277,869	254,245	258,808	261,213	221,752	224,130	219,038	182,943	-1,504	-397	0	3,422,933
OPERATING COST BY COST CENTRE																						
	OC Waste Removal			USD/t Prod	17.44	10.77	11.29	12.00	15.10	16.63	14.62	12.80	13.34	13.61	7.90	7.98	8.27	12.02	0.00	0.00	0.00	12.27
	OC Coal Mining			USD/t Prod	1.67	1.67	1.74	1.77	1.74	1.67	1.76	1.77	1.85	1.85	1.95	2.08	2.16	2.35	0.00	0.00	0.00	1.86
	OC Support			USD/t Prod	1.74	1.30	1.36	1.44	1.62	1.78	1.64	1.53	1.59	1.61	1.36	1.39	1.43	1.79	0.00	0.00	0.00	1.53
	Site Overheads			USD/t Prod	3.57	2.71	2.73	2.74	2.72	2.71	2.70	2.68	2.66	2.67	2.71	2.67	2.67	3.19	0.00	0.00	0.00	2.77
	Fragmentation			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CHPP			USD/t Prod	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	0.00	0.00	0.00	2.50
	Transport - Truck			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transport - Rail			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Port and Loadout			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Admin & Marketing			USD/t Prod	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	0.00	0.00	0.00	1.50
	Royalty			USD/t Prod	4.80	11.97	12.87	13.07	12.66	12.54	11.71	10.39	9.05	9.74	12.39	10.17	10.07	6.46	0.00	0.00	0.00	10.78
	Property Tax			USD/t Prod	0.16	0.13	0.13	0.13	0.16	0.17	0.18	0.18	0.19	0.18	0.17	0.18	0.16	0.19	0.00	0.00	0.00	0.18
	VAT			USD/t Prod	5.34	-0.68	-0.56	0.29	0.73	-0.03	-0.10	-0.41	0.33	-0.16	-0.95	0.59	-0.50	-0.03	0.00	0.00	0.00	0.00
	Mine Closure			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.21
	Mine Infrastructure			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Main Rd Development			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Gate Rd Development			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pillar Extraction			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Longwall			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Spare CC 20			USD/t Prod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contingency			USD/t Prod	2.84	2.04	2.11	2.19	2.52	2.68	2.47	2.28	2.34	2.37	1.79	1.81	1.85	2.34	0.00	0.00	0.00	2.24
	Total Operating Cost			USD/t Prod	41.55	33.90	35.65	37.64	41.25	42.13	38.99	35.24	35.34	35.88	31.32	30.87	30.11	34.19	0.00	0.00	0.00	35.84

19.8 ECONOMIC ANALYSIS

All economic analysis has been done in constant 2011 US dollars. The project is assumed to continue until 2026, which is 2 years after mining is completed, to allow for rehabilitation. The remaining capital items are assumed to be sold at depreciated value, being USD41 million for mining equipment and USD 88 million for mining infrastructure.

Based on the costs, revenue and tax estimates described above, Net Present Value (NPV) is estimated at USD 806 million at a discount factor of 10% and varies between USD 929 million at a discount factor of 8% and USD 706 million at a discount factor of 12%.

The sensitivity of the base case NPV of USD 806 million to changes in the key components of revenue, operating costs and capital costs is shown in Table 19.11

Table 19.11

NPV Sensitivity Analysis

	+10% (USD million)	Base NPV (USD million)	-10% (USD million)
Revenue	1065	806	547
Operating Cost	710	806	902
Capital Cost	788	806	825

Table 19.12 shows a summary of the Net Present Value calculations.

NET PRESENT VALUE

Option 1 8Mtpa

ITEM	RATE	UNITS		Y1 Jan 2011	Y2 Jan 2012	Y3 Jan 2013	Y4 Jan 2014	Y5 Jan 2015	Y6 Jan 2016	Y7 Jan 2017	Y8 Jan 2018	Y9 Jan 2019	Y10 Jan 2020	Y11 Jan 2021	Y12 Jan 2022	Y13 Jan 2023	Y14 Jan 2024	Y15 Jan 2025	Y16 Jan 2026	Y17 Jan 2027	Y18 Jan 2028	Y19 Jan 2029	Y20 Jan 2030	Y21 Jan 2031	Y22 Jan 2032	Y23 Jan 2033	Y24 Jan 2034	Y25 Jan 2035	Y26 Jan 2036	Y27 Jan 2037	Y28 Jan 2038	Y29 Jan 2039	Y30 Jan 2040	Totals/
QUANTITIES	**Quantity Schedule**																																
Waste	Total Waste	kbcm		29,600	28,500	28,500	28,500	37,500	39,250	34,300	29,400	29,400	29,400	15,700	15,100	15,100	15,100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**375,350**
Coal Mined	Total ROM Coal	kt		5,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	5,728	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**106,728**
Total Product Coal	Total Coal Sold	kt		4,458	7,087	7,006	6,944	7,042	7,066	7,127	7,215	7,323	7,281	7,079	7,260	7,275	5,322	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**95,486**
REAL																																	
PROFIT & LOSS																																	
Total Revenue	(real)	**kUSD**		**289,463**	**439,327**	**406,904**	**379,862**	**414,159**	**427,659**	**447,159**	**478,905**	**518,574**	**505,221**	**434,116**	**499,392**	**503,132**	**387,328**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6,131,201**
less Operating Costs	(real)	kUSD		185,234	240,279	249,786	261,356	290,442	297,740	277,869	254,245	258,808	261,213	221,752	224,130	219,038	182,943	-367	-361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3,424,106**
less Salvage Balancing Adjustment	(real)	kUSD		0	0	-0	-0	-0	-0	-0	-0	-0	0	0	-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Profit Before Depreciation	(real)	**kUSD**		**104,229**	**199,048**	**157,118**	**118,506**	**123,716**	**129,919**	**169,290**	**224,661**	**259,766**	**244,008**	**212,364**	**275,263**	**284,095**	**204,385**	**367**	**361**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,707,096**
less Depreciation Allowance	(real)	kUSD		7,148	9,957	10,690	12,551	16,441	18,523	22,390	24,219	28,086	30,367	26,158	29,703	29,088	26,494	22,145	20,339	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**334,299**
Profit Before Tax	(real)	**kUSD**		**97,081**	**189,092**	**146,428**	**105,955**	**107,275**	**111,396**	**146,900**	**200,442**	**231,680**	**213,640**	**186,206**	**245,560**	**255,006**	**177,890**	**-21,778**	**-19,978**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,372,796**
losses carried forward	(real)	kUSD	USD:MNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-21,778	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	**-606,359**
Tax Rate (<=3Bln MNT)			1250	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Tax payable (<=3Bl MNT)		kUSD		240	240	240	240	240	240	240	240	240	240	240	240	240	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tax Rate (>3Bln MNT)		%		25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Tax payable (>3Bl MNT)		kUSD		23,670	46,673	36,007	25,889	26,219	27,249	36,125	49,510	57,320	52,810	45,952	60,790	63,152	43,873	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tax Payable	(real)	kUSD		23,910	46,913	36,247	26,129	26,459	27,489	36,365	49,750	57,560	53,050	46,192	61,030	63,392	44,113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**598,598**
Profit After Tax	(real)	**kUSD**		**73,171**	**142,179**	**110,181**	**79,826**	**80,816**	**83,907**	**110,535**	**150,691**	**174,120**	**160,590**	**140,015**	**184,530**	**191,615**	**133,778**	**-21,778**	**-19,978**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,774,198**
CASH FLOW																																	
Profit Before Depreciation	(real)	kUSD		104,229	199,048	157,118	118,506	123,716	129,919	169,290	224,661	259,766	244,008	212,364	275,263	284,095	204,385	367	361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2,707,096**
less Tax Payable	(real)	kUSD		23,910	46,913	36,247	26,129	26,459	27,489	36,365	49,750	57,560	53,050	46,192	61,030	63,392	44,113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**598,598**
less Working Capital Movement	(real)	kUSD		15,602	4,503	779	941	2,250	516	-1,571	-1,900	326	193	-2,950	162	-458	-3,050	-15,459	85	31	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
less Capital	(real)	kUSD		123,722	48,677	2,200	20,807	49,358	31,263	40,869	20,494	40,874	25,010	3,629	49,326	1,186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**457,415**
plus Salvage Values	(real)	kUSD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	129,116	0	0	0	0	0	0	0	0	0	0	0	0	0	**129,116**
Net Cash Flow	(real)	kUSD		-59,005	98,955	117,892	70,629	45,649	70,651	93,626	156,316	161,007	165,755	165,493	164,745	219,975	163,322	15,826	276	129,085	0	0	0	0	0	0	0	0	0	0	0	0	0	**1,780,198**
Cumulative Cash Flow	(real)	**kUSD**		**-59,005**	**39,950**	**157,842**	**228,471**	**274,120**	**344,771**	**438,397**	**594,713**	**755,720**	**921,475**	**1,086,968**	**1,251,714**	**1,471,689**	**1,635,011**	**1,650,837**	**1,651,113**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	**1,780,198**	
Discount Factor at	8.0%		1.00	1.00	0.93	0.86	0.79	0.74	0.68	0.63	0.58	0.54	0.50	0.46	0.43	0.40	0.37	0.34	0.32	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	
Present Value of Cashflow				**-59,005**	**91,625**	**101,073**	**56,068**	**33,553**	**48,084**	**59,001**	**91,209**	**86,987**	**82,919**	**76,655**	**70,657**	**87,355**	**60,053**	**5,388**	**87**	**37,679**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**929,387**
Cumulative NPV @ 8%				-59,005	32,620	133,694	189,761	223,315	271,398	330,399	421,608	508,595	591,513	668,169	738,825	826,180	886,233	891,622	891,709	929,387	929,387	929,387	929,387	929,387	929,387	929,387	929,387	929,387	929,387	929,387	929,387	929,387	929,387	
Discount Factor at	10.0%		1.00	1.00	0.91	0.83	0.75	0.68	0.62	0.56	0.51	0.47	0.42	0.39	0.35	0.32	0.29	0.26	0.24	0.22	0.20	0.18	0.16	0.15	0.14	0.12	0.11	0.10	0.09	0.08	0.08	0.07	0.06	
Present Value of Cashflow				**-59,005**	**89,959**	**97,431**	**53,065**	**31,179**	**43,869**	**52,850**	**80,215**	**75,111**	**70,296**	**63,805**	**57,742**	**70,091**	**47,308**	**4,168**	**66**	**28,093**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**806,242**
Cumulative NPV @ 10%				-59,005	30,954	128,386	181,450	212,629	256,498	309,347	389,562	464,673	534,969	598,774	656,516	726,607	773,916	778,083	778,149	806,242	806,242	806,242	806,242	806,242	806,242	806,242	806,242	806,242	806,242	806,242	806,242	806,242	806,242	
Discount Factor at	12.0%		1.00	1.00	0.89	0.80	0.71	0.64	0.57	0.51	0.45	0.40	0.36	0.32	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.05	0.05	0.04	0.04	
Present Value of Cashflow				**-59,005**	**88,352**	**93,983**	**50,272**	**29,011**	**40,089**	**47,434**	**70,709**	**65,028**	**59,773**	**53,284**	**47,360**	**56,462**	**37,429**	**3,238**	**50**	**21,057**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**704,529**
Cumulative NPV @ 12%				-59,005	29,348	123,331	173,603	202,614	242,703	290,137	360,846	425,874	485,647	538,932	586,292	642,754	680,183	683,422	683,472	704,529	704,529	704,529	704,529	704,529	704,529	704,529	704,529	704,529	704,529	704,529	704,529	704,529	704,529	

IRR (Real)	**%**	**168.5%**	
NPV (Real)	**kUSD**	**8.0%** 929,387	**10.0%** 806,242 **12.0%** 704,529

NOMINAL

ITEM	RATE	UNITS		Y1 Jan 2011	Y2 Jan 2012	Y3 Jan 2013	Y4 Jan 2014	Y5 Jan 2015	Y6 Jan 2016	Y7 Jan 2017	Y8 Jan 2018	Y9 Jan 2019	Y10 Jan 2020	Y11 Jan 2021	Y12 Jan 2022	Y13 Jan 2023	Y14 Jan 2024	Y15 Jan 2025	Y16 Jan 2026	Y17 Jan 2027	Y18 Jan 2028	Y19 Jan 2029	Y20 Jan 2030	Y21 Jan 2031	Y22 Jan 2032	Y23 Jan 2033	Y24 Jan 2034	Y25 Jan 2035	Y26 Jan 2036	Y27 Jan 2037	Y28 Jan 2038	Y29 Jan 2039	Y30 Jan 2040	Totals/
PROFIT & LOSS																																	
Total Revenue	(nominal)	**kUSD**		**289,463**	**439,327**	**406,904**	**379,862**	**414,159**	**427,659**	**447,159**	**478,905**	**518,574**	**505,221**	**434,116**	**499,392**	**503,132**	**387,328**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6,131,201**
Less Operating Costs	(nominal)	kUSD		185,234	240,279	249,786	261,356	290,442	297,740	277,869	254,245	258,808	261,213	221,752	224,130	219,038	182,943	-367	-361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3,424,106**
less Salvage Balancing Adjustment	(nominal)	kUSD		0	0	-0	-0	-0	-0	-0	-0	-0	0	0	-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Profit Before Depreciation	(nominal)	**kUSD**		**104,229**	**199,048**	**157,118**	**118,506**	**123,716**	**129,919**	**169,290**	**224,661**	**259,766**	**244,008**	**212,364**	**275,263**	**284,095**	**204,385**	**367**	**361**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,707,096**
less Depreciation Allowance	(nominal)	kUSD		7,148	9,957	10,690	12,551	16,441	18,523	22,390	24,219	28,086	30,367	26,158	29,703	29,088	26,494	22,145	20,339	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**334,299**
Profit Before Tax	(nominal)	**kUSD**		**97,081**	**189,092**	**146,428**	**105,955**	**107,275**	**111,396**	**146,900**	**200,442**	**231,680**	**213,640**	**186,206**	**245,560**	**255,006**	**177,890**	**-21,778**	**-19,978**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,372,796**
losses carried forward	(nominal)	kUSD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-21,778	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	-41,756	**-606,359**
Tax Rate		%		25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Tax Payable	(nominal)	kUSD		24,270	47,273	36,607	26,489	26,819	27,849	36,725	50,110	57,920	53,410	46,552	61,390	63,752	44,473	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**603,638**
Profit After Tax	(nominal)	**kUSD**		**72,811**	**141,819**	**109,821**	**79,466**	**80,456**	**83,547**	**110,175**	**150,331**	**173,760**	**160,230**	**139,655**	**184,170**	**191,255**	**133,418**	**-21,778**	**-19,978**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,769,158**
CASH FLOW																																	
Profit Before Depreciation	(nominal)	kUSD		104,229	199,048	157,118	118,506	123,716	129,919	169,290	224,661	259,766	244,008	212,364	275,263	284,095	204,385	367	361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2,707,096**
less Tax Payable	(nominal)	kUSD		24,270	47,273	36,607	26,489	26,819	27,849	36,725	50,110	57,920	53,410	46,552	61,390	63,752	44,473	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**603,638**
less Working Capital Movement	(nominal)	kUSD		15,602	4,503	779	941	2,250	516	-1,571	-1,900	326	193	-2,950	162	-458	-3,050	-15,459	85	31	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
less Capital	(nominal)	kUSD		123,722	48,677	2,200	20,807	49,358	31,263	40,869	20,494	40,874	25,010	3,629	49,326	1,186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**457,415**
plus Salvage Values	(nominal)	kUSD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	129,116	0	0	0	0	0	0	0	0	0	0	0	0	0	**129,116**
Net Cash Flow	(nominal)	kUSD		-59,365	98,595	117,532	70,269	45,289	70,291	93,266	155,956	160,647	165,395	165,133	164,385	219,615	162,962	15,826	276	129,085	0	0	0	0	0	0	0	0	0	0	0	0	0	**1,775,158**
Deflation Factor		factor		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Net Cash Flow	(real)	kUSD		-59,365	98,595	117,532	70,269	45,289	70,291	93,266	155,956	160,647	165,395	165,133	164,385	219,615	162,962	15,826	276	129,085	0	0	0	0	0	0	0	0	0	0	0	0	0	**1,775,158**
Cumulative Cash Flow		**kUSD**		**-59,365**	**39,230**	**156,762**	**227,031**	**272,320**	**342,611**	**435,877**	**591,833**	**752,480**	**917,875**	**1,083,008**	**1,247,394**	**1,467,009**	**1,629,971**	**1,645,797**	**1,646,073**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	**1,775,158**	
Discount Factor at	7.2%		1.00	1.00	0.93	0.87	0.81	0.76	0.71	0.66	0.61	0.57	0.53	0.50	0.46	0.43	0.40	0.38	0.35	0.33	0.30	0.28	0.27	0.25	0.23	0.21	0.20	0.19	0.17	0.16	0.15	0.14	0.13	
Present Value of Cashflow				**-59,365**	**91,940**	**102,202**	**56,979**	**34,245**	**49,563**	**61,324**	**95,623**	**91,851**	**88,183**	**82,101**	**76,213**	**94,946**	**65,698**	**5,950**	**97**	**42,199**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**979,748**
Cumulative NPV @ 7%																																	
Discount Factor at	9.2%		1.00	1.00	0.92	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41	0.38	0.35	0.32	0.29	0.27	0.24	0.22	0.20	0.19	0.17	0.16	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.08	
Present Value of Cashflow				**-59,365**	**90,257**	**98,494**	**53,907**	**31,805**	**45,189**	**54,889**	**84,021**	**79,229**	**74,672**	**68,249**	**62,195**	**76,064**	**51,669**	**4,593**	**73**	**31,398**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**847,337**
Cumulative NPV @ 9%																																	
Discount Factor at	11.2%		1.00	1.00	0.90	0.81	0.73	0.65	0.59	0.53	0.47	0.43	0.38	0.34	0.31	0.28	0.25	0.23	0.20	0.18	0.16	0.15	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.06	0.05	0.05	
Present Value of Cashflow				**-59,365**	**88,634**	**94,984**	**51,051**	**29,579**	**41,270**	**49,227**	**74,000**	**68,525**	**63,422**	**56,925**	**50,942**	**61,182**	**40,813**	**3,563**	**56**	**23,487**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**738,295**
Cumulative NPV @ 11%																																	

IRR (Real)	**%**	**166.8%**	
NPV (Real)	**kUSD**	**7.2%** 979,748	**9.2%** 847,337 **11.2%** 738,295

19.9 PAYBACK

This PFS shows payback of capital by 2012. This only covers the capital estimates included in this PFS and does not include capital expenditure prior to 2011.

19.10 MINE LIFE

Based on this PFS, the mine is estimated to have exhausted the Reserves by 2024.

20 INTERPRETATION AND CONCLUSIONS

Since 2004, IVN and then SGQ have been successful in delineating 176 million tonnes of measured and indicated near surface Resource plus a further 13 million tonnes of inferred near surface Resource. Surface Resources have been constrained to within 300m of the surface. In addition SGQ has successfully delineated potentially significant underground Resources on the No 5 Seam of 94 million tonnes of measured and indicated, plus a further 84 million tonnes of inferred.

Reporting of surface Resources has been constrained by the following parameters:

- 0.3m minimum seam thickness;
- 0.3m minimum separable parting thickness;
- 4m depth of weathering;
- 300m base depth limit for surface mine development; and
- Ovoot Tolgoi Mine Lease.

Reporting of underground Resources on the Sunset Field has been constrained by:

- 300m upper limit and 600m lower limit for Resources;
- No 5 Seam only was reported; and
- Ovoot Tolgoi Mine Lease.

The coal seams of the Ovoot Tolgoi Complex have been delineated as “Complex” Geology Type based on the criteria set forth in the Geological Survey of Canada Paper 88-21. The coal seams at Ovoot Tolgoi vary in quality both within and between seams but generally are high volatile bituminous B to A in rank.

This PFS shows Open Cut Reserves totalling 106.8 million tonnes, comprising 62.8 million tonnes of Proven Reserves and 44.0 million tonnes of Probable Reserves.

21 RECOMMENDATIONS

Database

A considerable amount of data has been obtained from the various exploration programs; however, the current filing system is poorly setup and the dependence on third party consultants has led to a fragmented geological database. A structured electronic directory filing system and a relational database should be created to achieve the following objectives.

- All documents filed by a primary category;
- All documents cross-referenced by sub-categories;
- All data entered into a database; and
- All data checked against original source.

A database manager should be appointed to oversee the above process and to maintain records. It is noted that a new Exploration Manager has recently been appointed, and that this will be one of his projects.

The estimated budget for setting up the database is US$100,000.

Exploration and Drilling

- Exploration drilling should continue both down dip of known coal occurrences and along strike to continue to develop the Ovoot Tolgoi property.
- Future deep drilling programs should include allowances for downhole surveying of hole deviation.

The exploration program for 2011 will consist of pre-production drilling for mine planning purposes. The 2011 budget is US$500,000. Exploration will be ongoing through subsequent years.

Metallurgy

- SGQ should continue to characterize the quality of individual seams on the property and develop an understanding of the spatial variability of coal quality within individual seams.
- SGQ should undertake preliminary investigations into coal beneficiation.

Coal quality testing as part of the 2011 exploration program is estimated to cost US$100,000. The testing program will continue in subsequent years.

Geological Modelling

- The geological models for both Sunset and Sunrise should be updated to provide better models for mine planning. In addition to the additional drilling recommended above, re-correlation of seam plies for all holes on a consistent basis and the inclusion of faults should be done as part of these new

models. It is unlikely that the total Resource estimates will change significantly as a result of this exercise.

- The complex faulting within these deposits is unlikely to be well defined by exploration drilling. Frequent in pit mapping is recommended to assist with operational mine planning.

The update of the geological model in 2011 is estimated to cost US$60,000. The model will require updating after each major exploration program.

All the above recommendations are part of the ongoing exploration program for the Ovoot Tolgoi Complex. Exploration in subsequent years is not contingent on the results obtained in the 2011 program, although targets for following programs may be modified as a result of the 2011 program.

Mine Planning

- When the updated geological models discussed above are updated, these models should be used for operational mine planning. No cost impact

- Currently, the mine is using different models for geology and mine planning, which means that the most recent geological information may not be available for mine planning. The use of a common model for geology and mine planning is recommended. No cost impact

- Reconciliation between plan and actual mining quantities is recommended in order to refine the assumptions used for mine planning. No cost impact

- Stability of the pit walls will be crucial to enable the pite to achieve the design depth of over 300 metres. Monitoring of the pit walls should be routine practice to ensure safety of the workers. US$50,000 to implement system. US$10,000 per annum to review data and report findings.

- The pit designs assume agreement to allow the pit to extend into the neighbouring MAK lease to allow extraction of SGS coal up to the lease boundary, based on the “guidelines” documented in Table 15.1. This agreement needs to be formalised to ensure that the mine can be developed in accordance with these pit designs. No cost other than legal expenses

- The proportion of product D will increase as the mine develops and SGQ will need to find the necessary additional markets. No cost

22 ILLUSTRATIONS

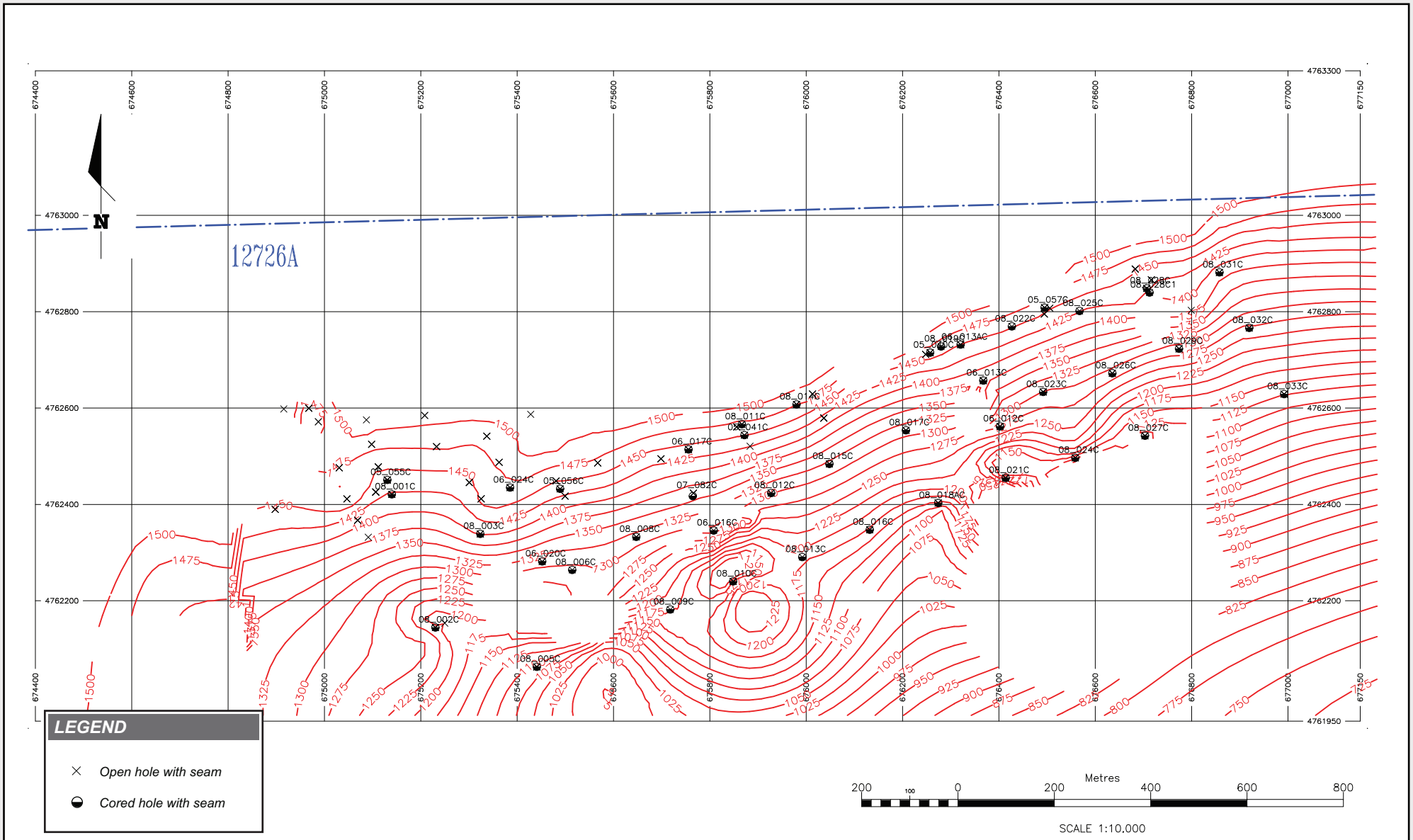


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FIGURE 1

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 10 Group Structure Floor

Project No : ADV-MN-10014

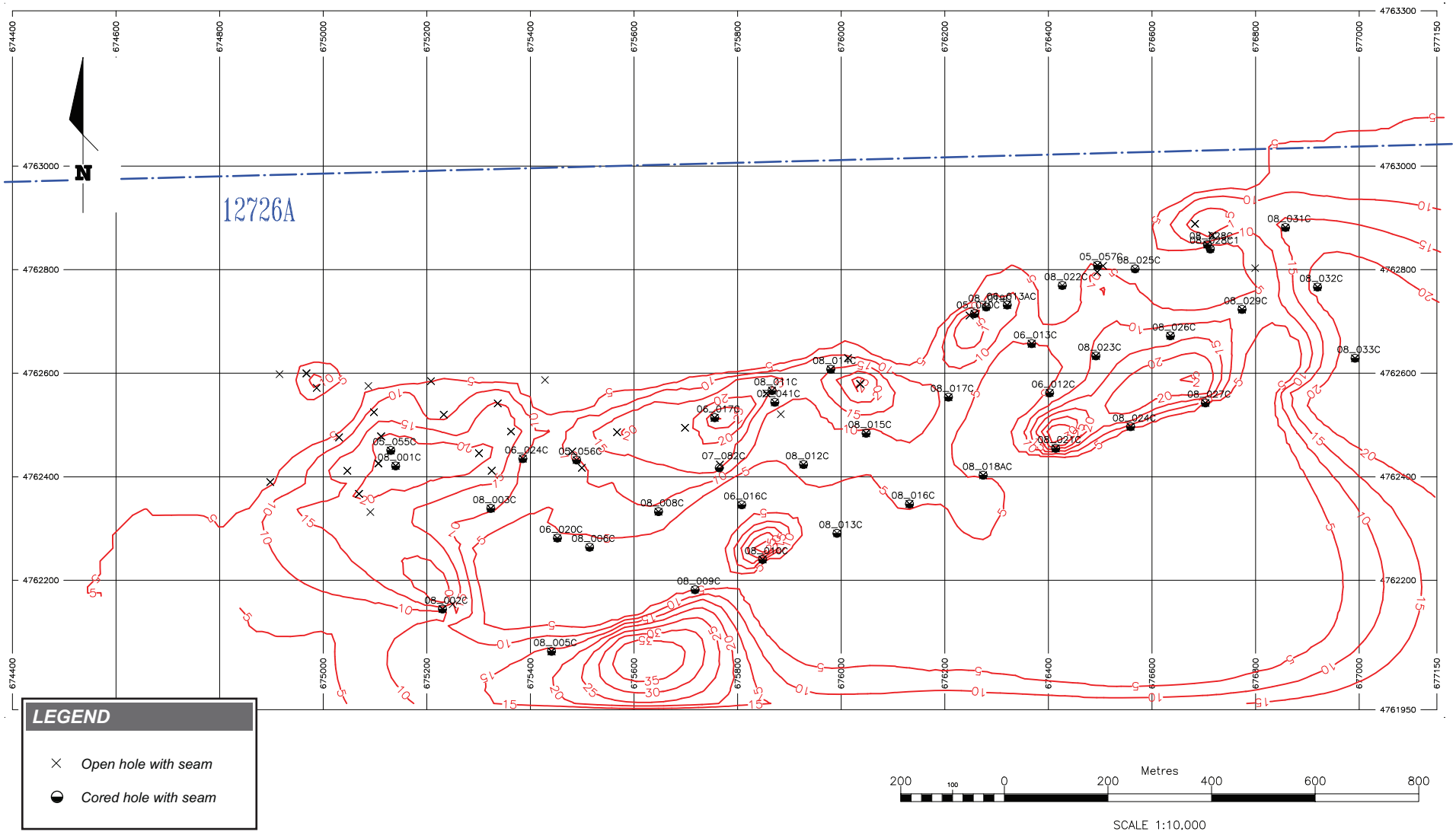

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FIGURE 2

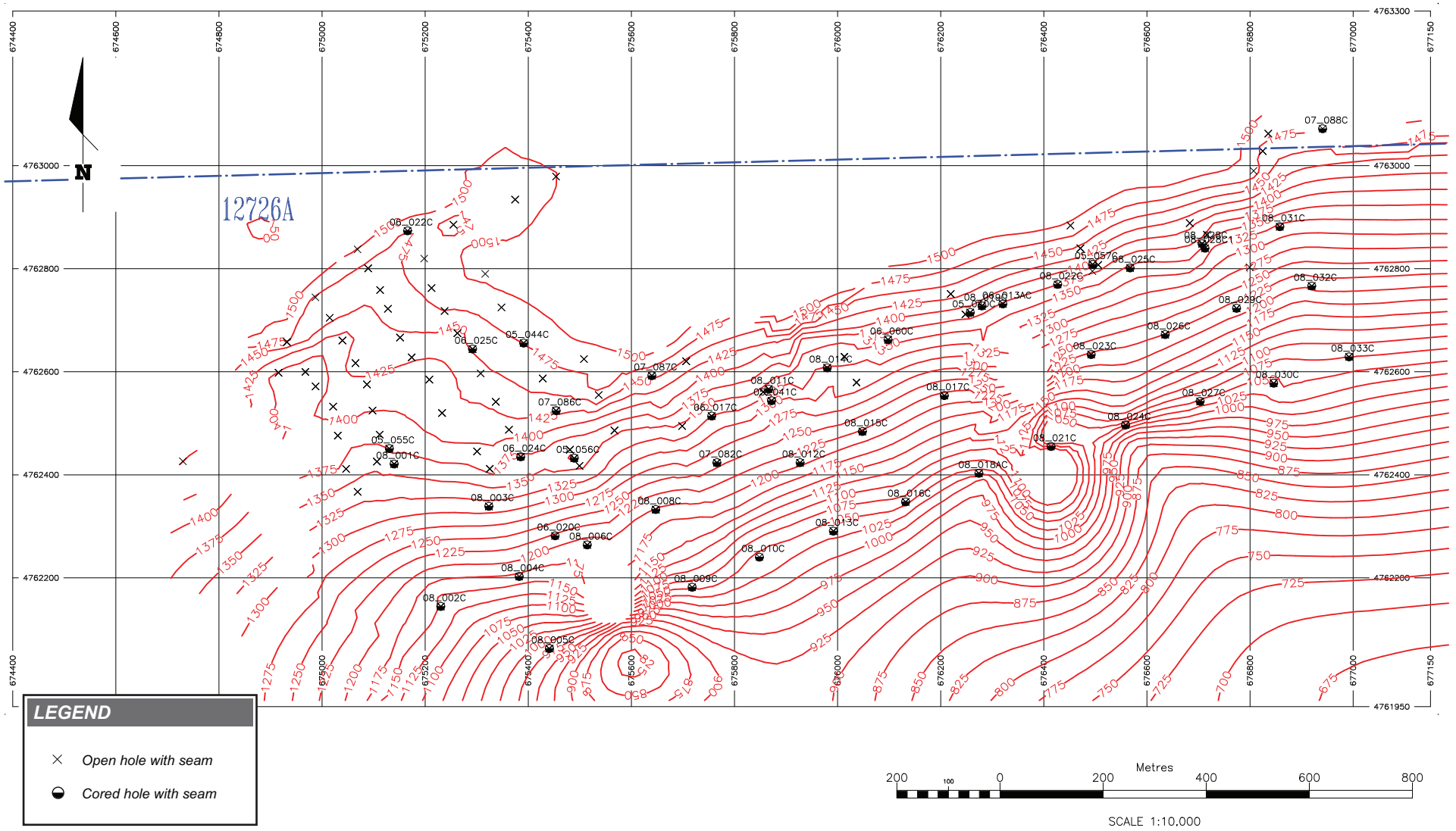
South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 10 Group Thickness

Project No : ADV-MN-10014



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Project No : ADV-MN-10014

FIGURE 3

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 9 Group Structure Floor

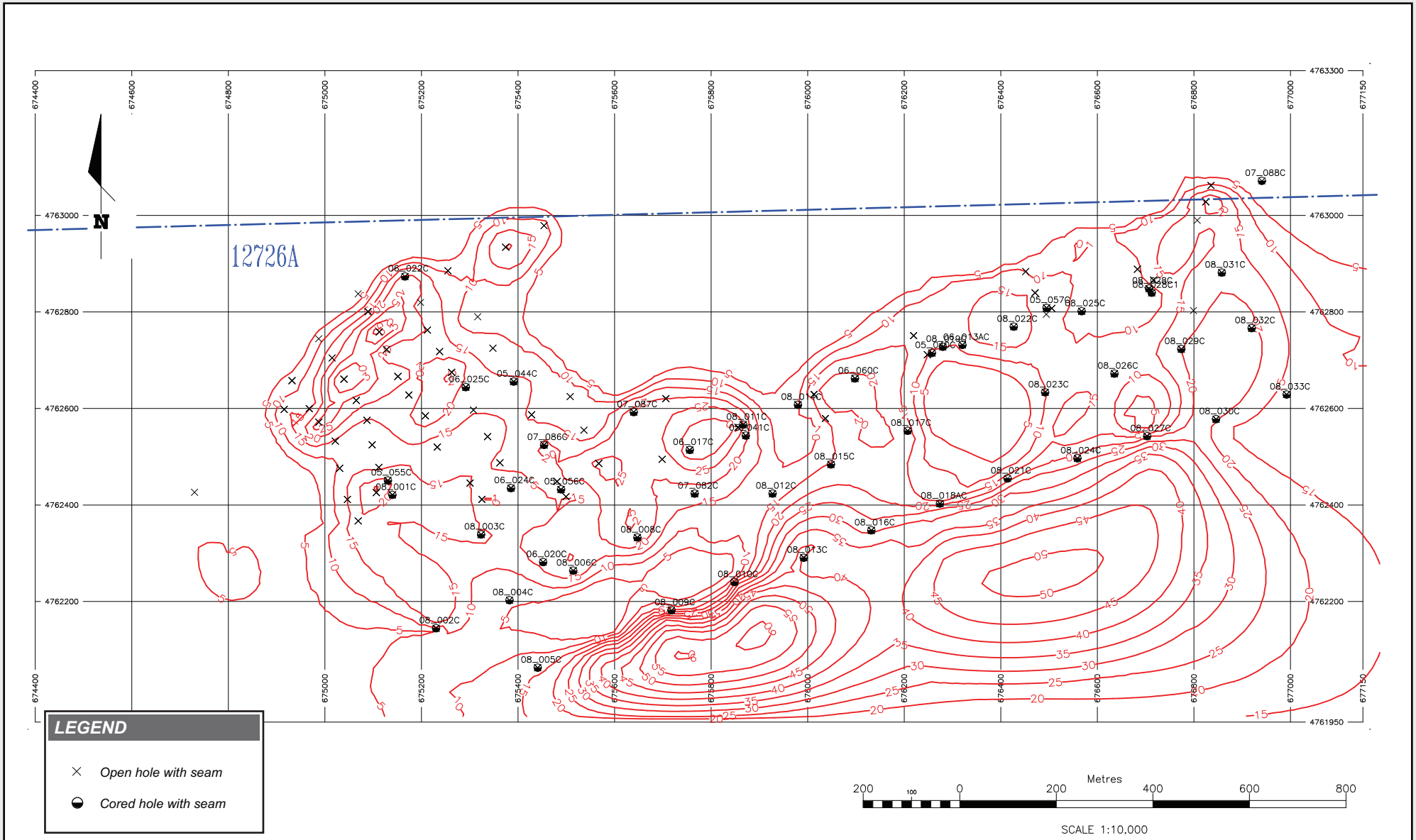

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FIGURE 4

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 9 Group Thickness

Project No : ADV-MN-10014

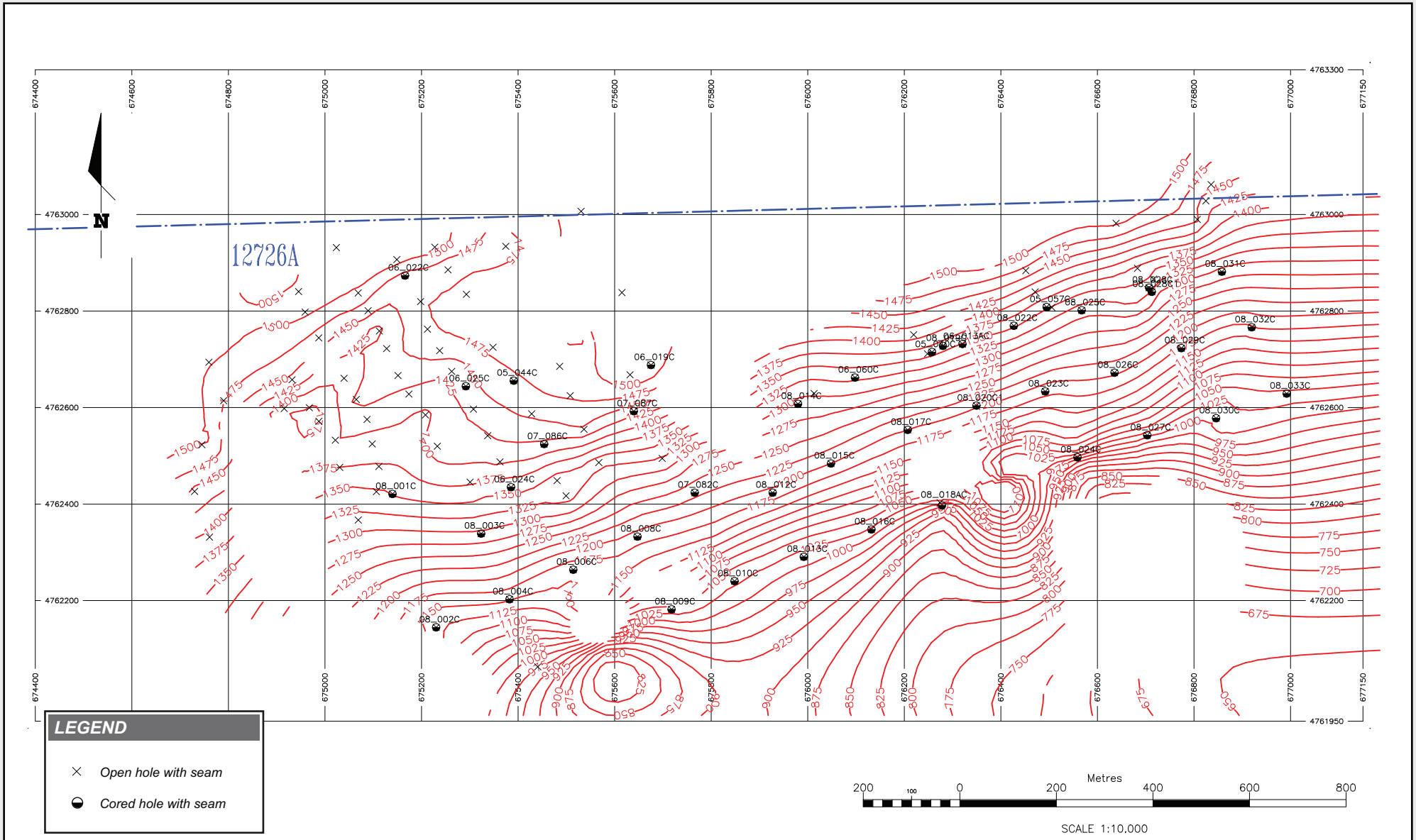

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FIGURE 5

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 8 Group Structure Floor

Project No : ADV-MN-10014

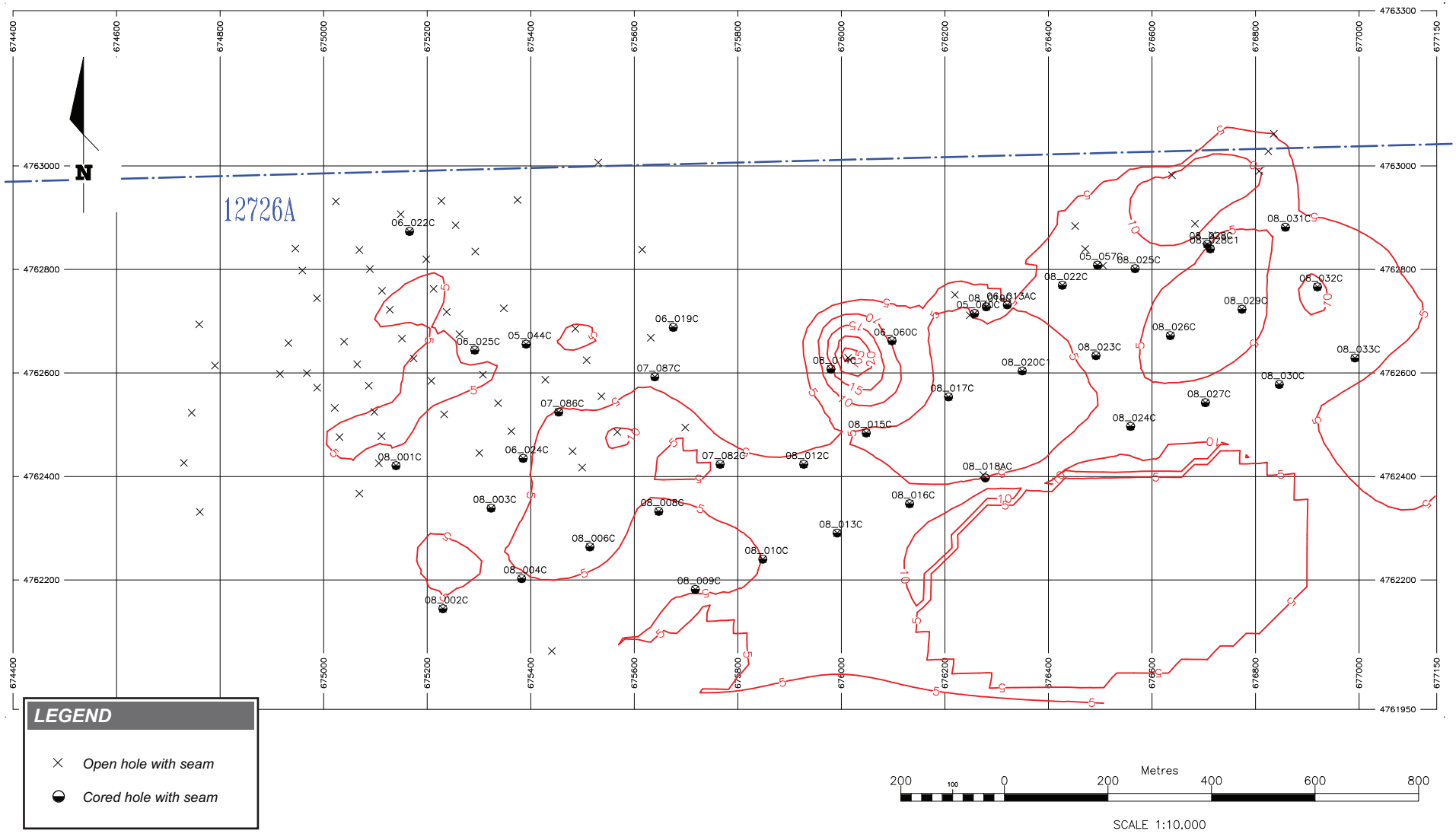

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FIGURE 6

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 8 Group Thickness

Project No : ADV-MN-10014

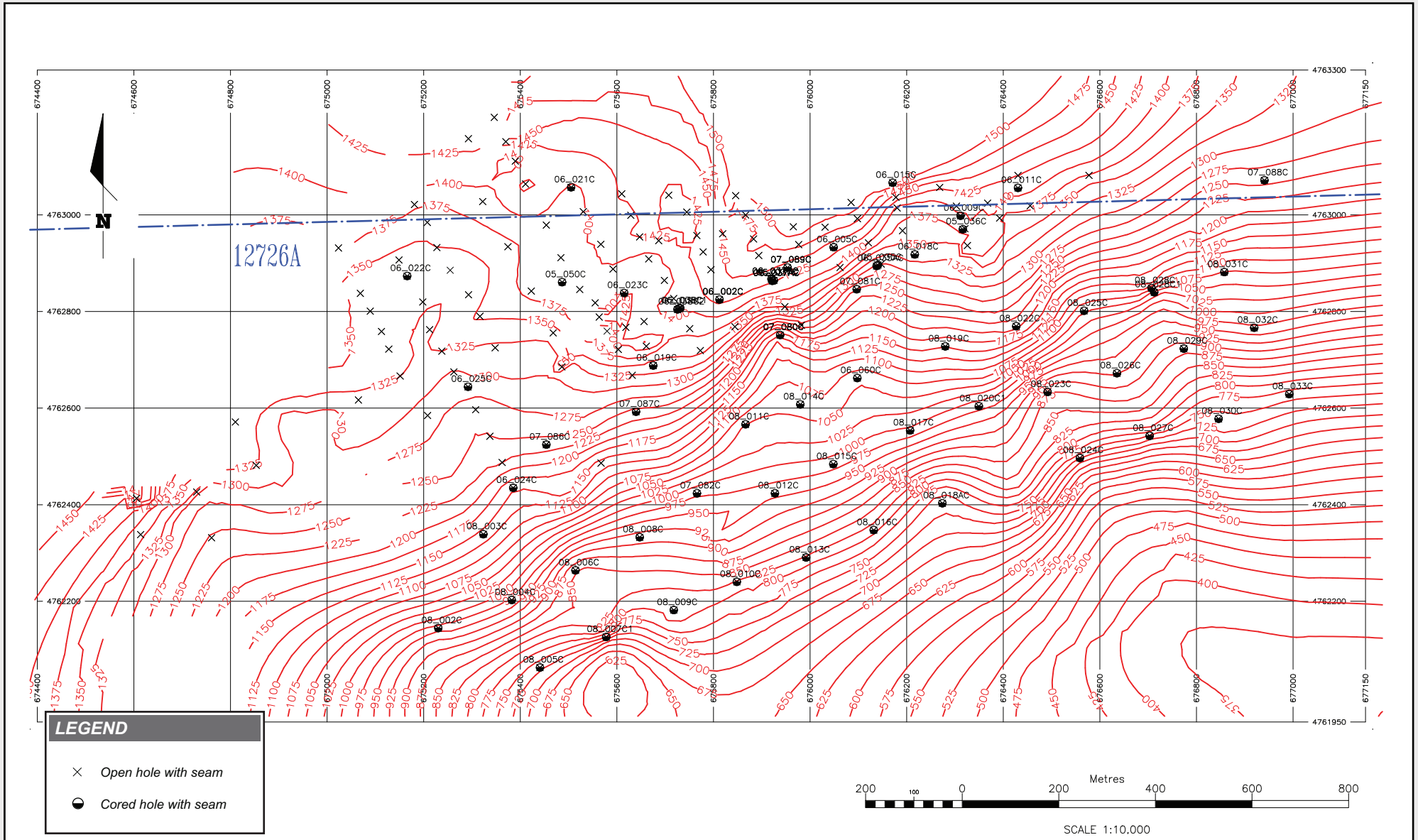

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FIGURE 7

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 5U Group Structure Floor

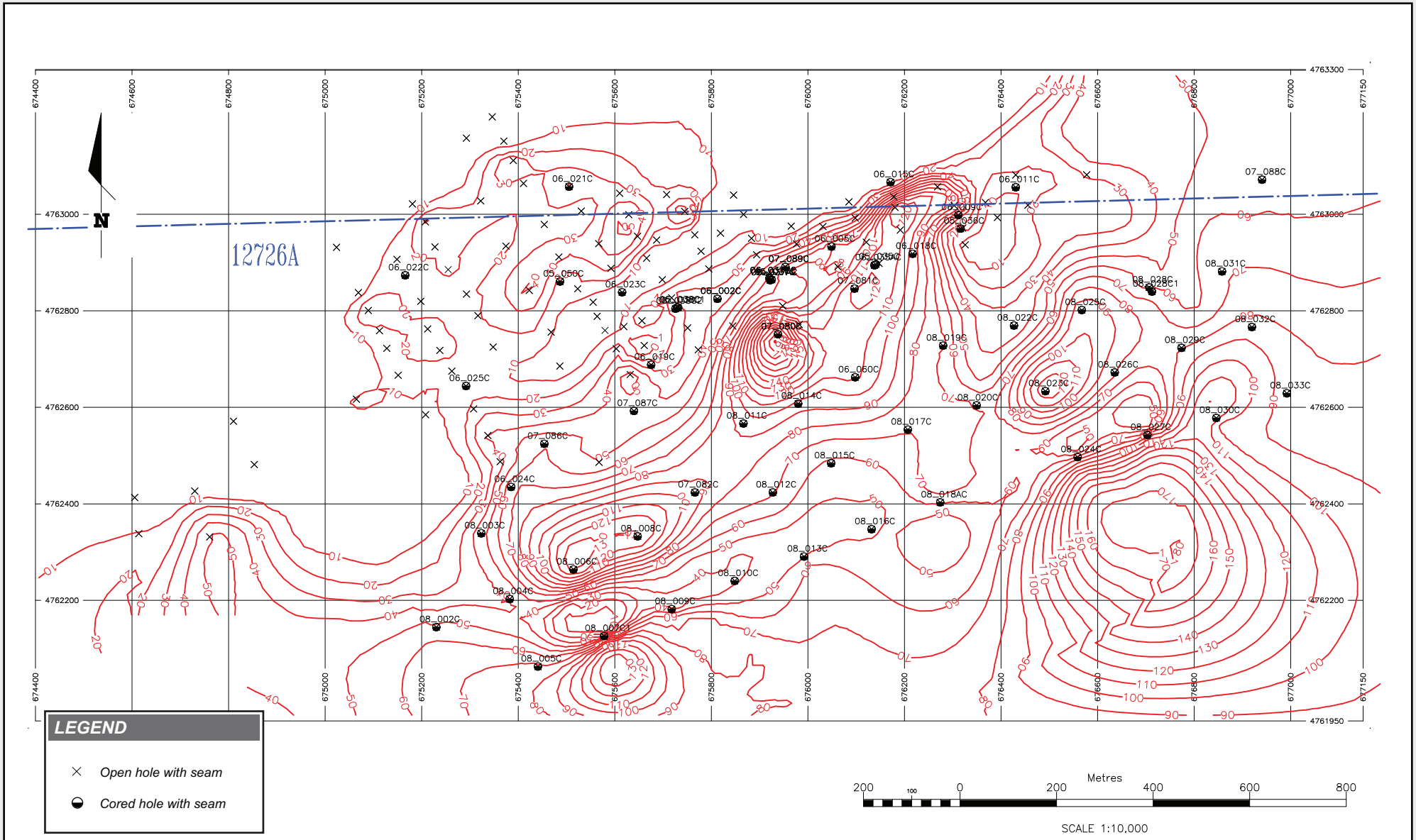

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FIGURE 8

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 5U Group Thickness

Project No : ADV-MN-10014

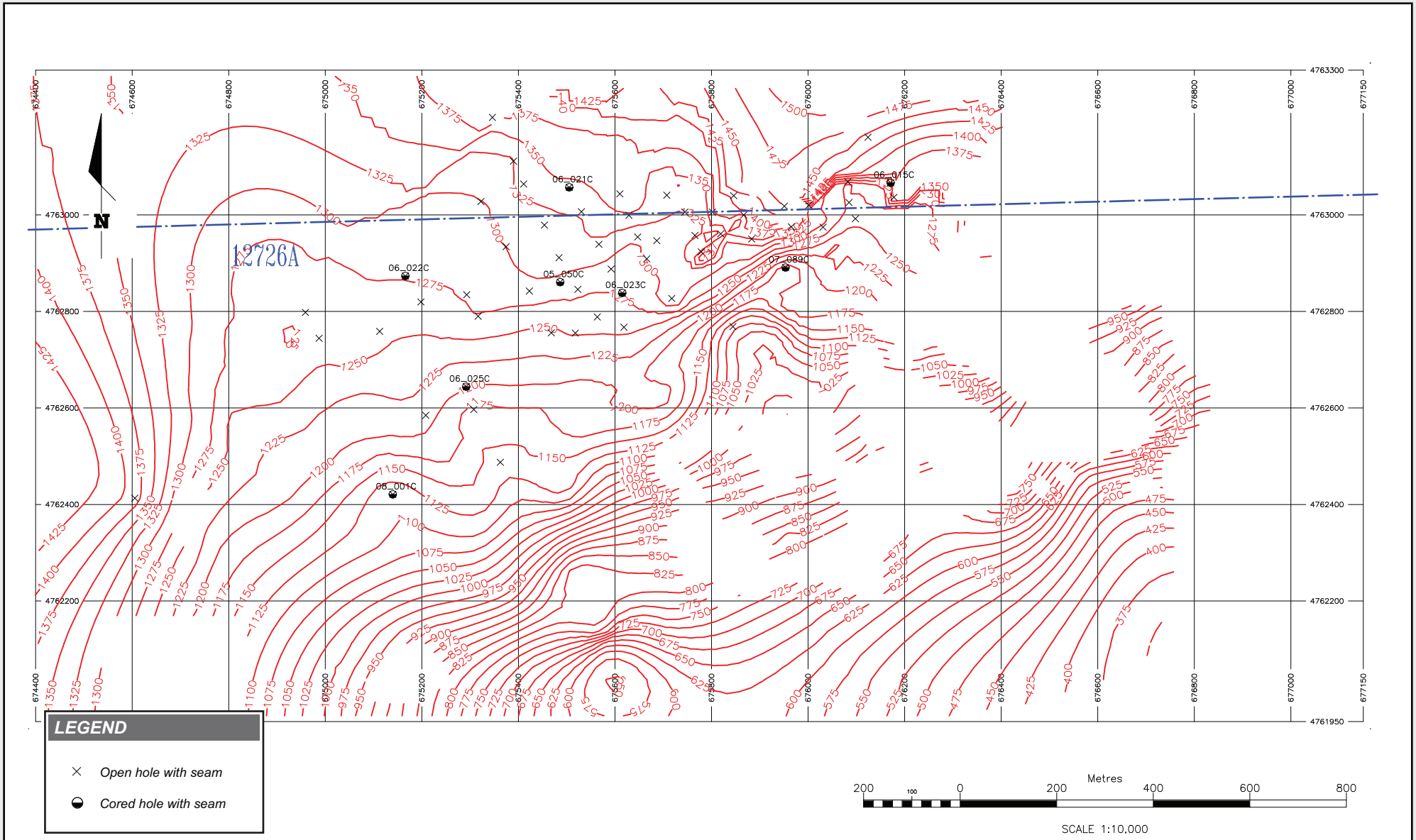

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FIGURE 9

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 5L Group Structure Floor

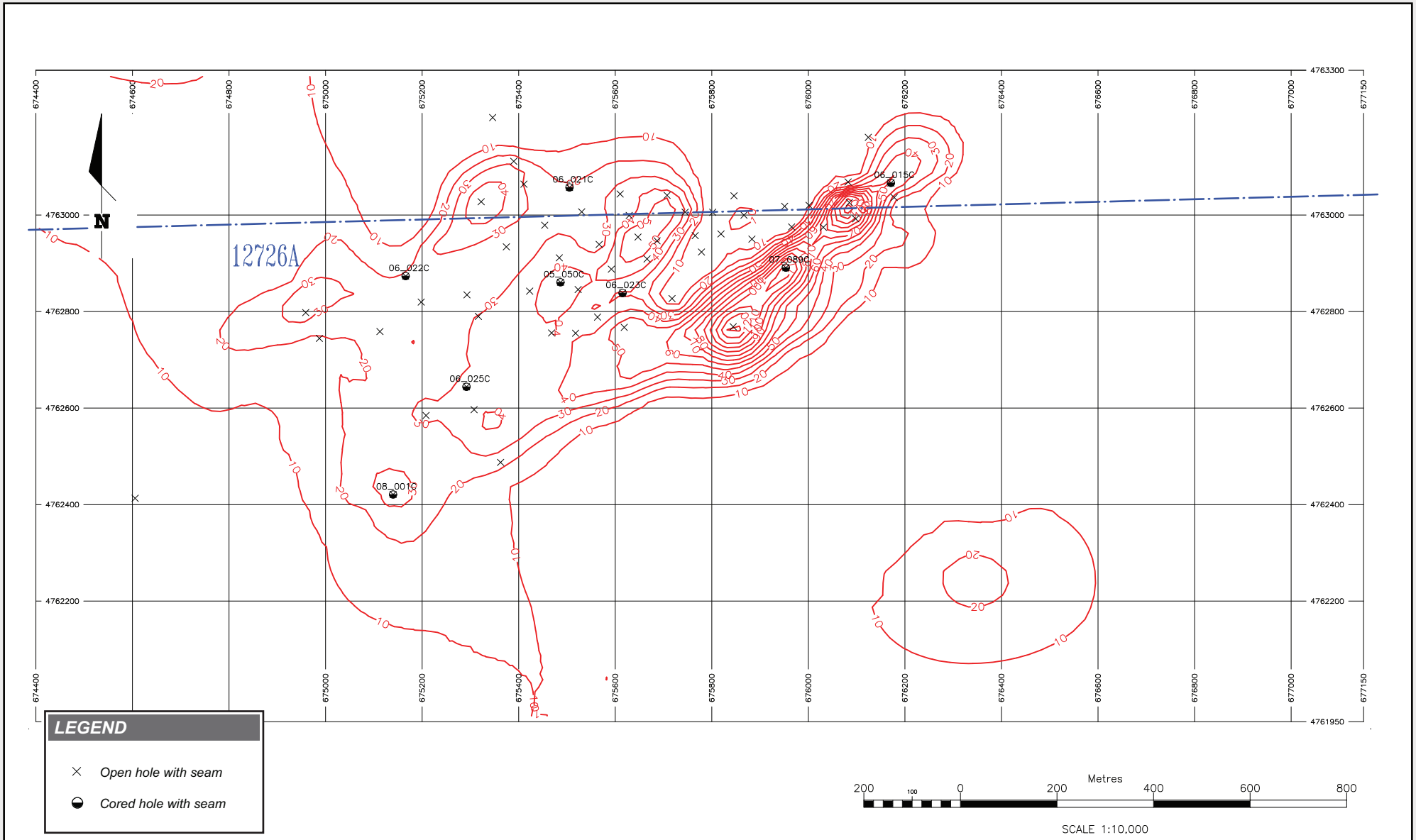

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FIGURE 10

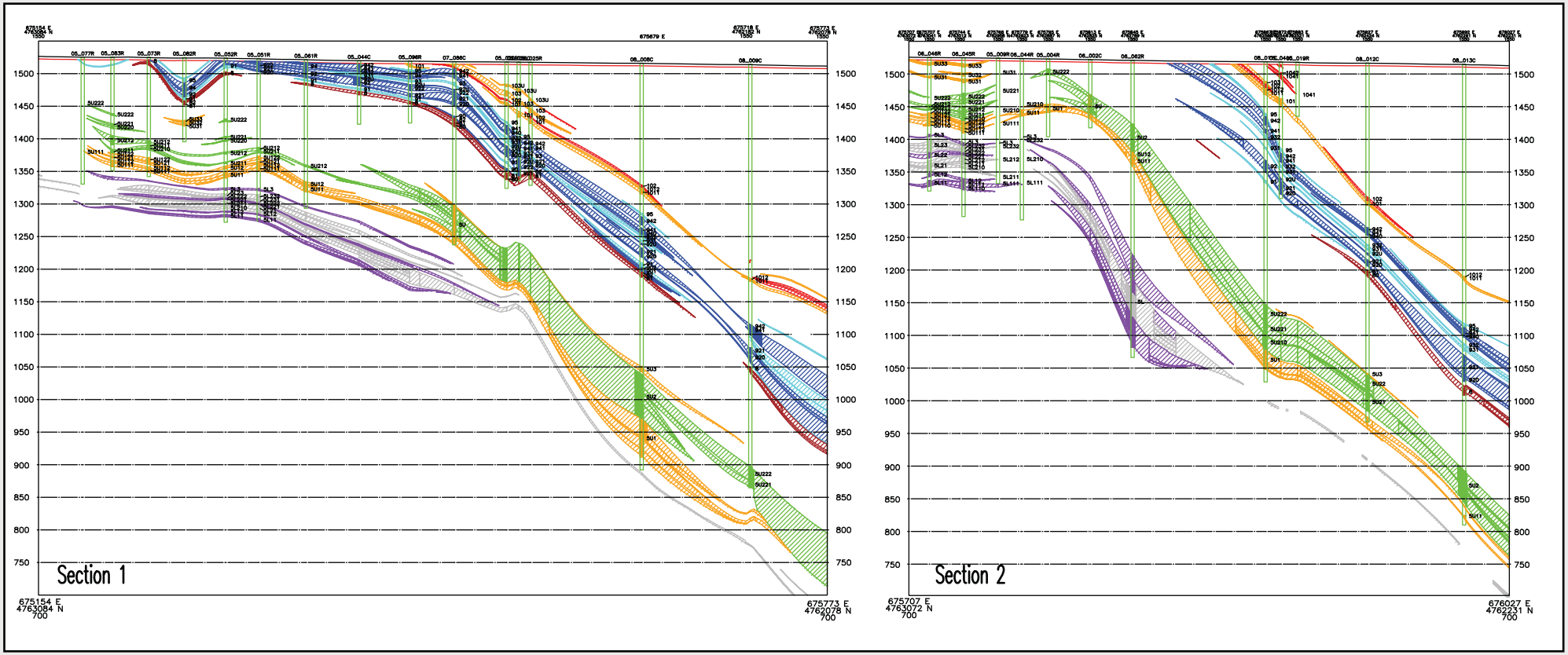
South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 5LGroup Thickness

Project No : ADV-MN-10014



Location Plan

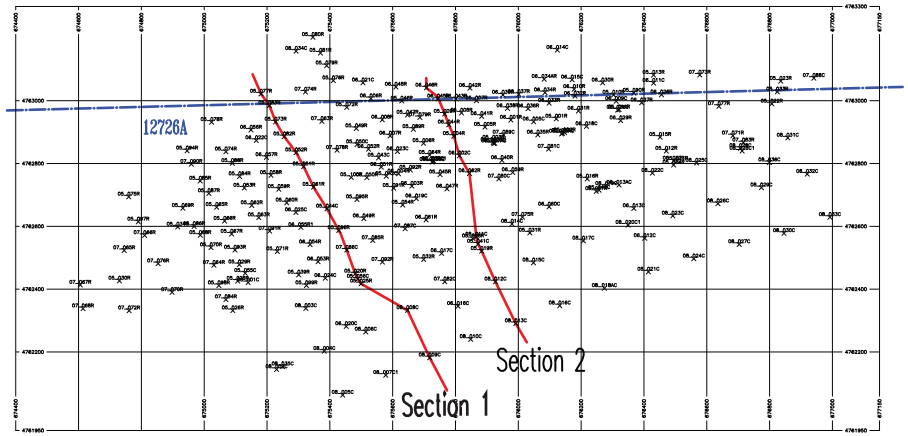


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FIGURE 11

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Typical Cross Sections

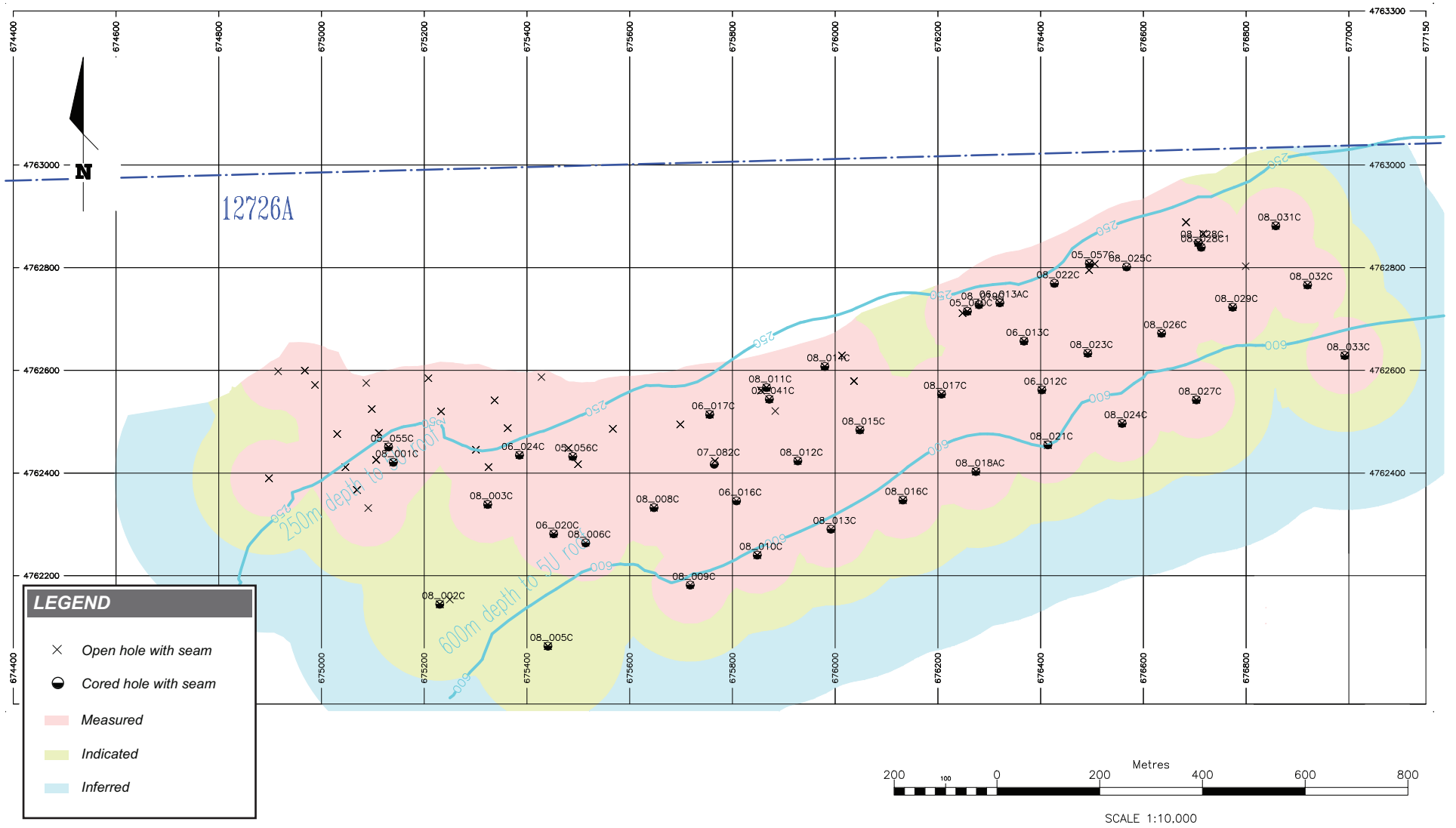

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FIGURE 12

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 10 Group Resource Polygons

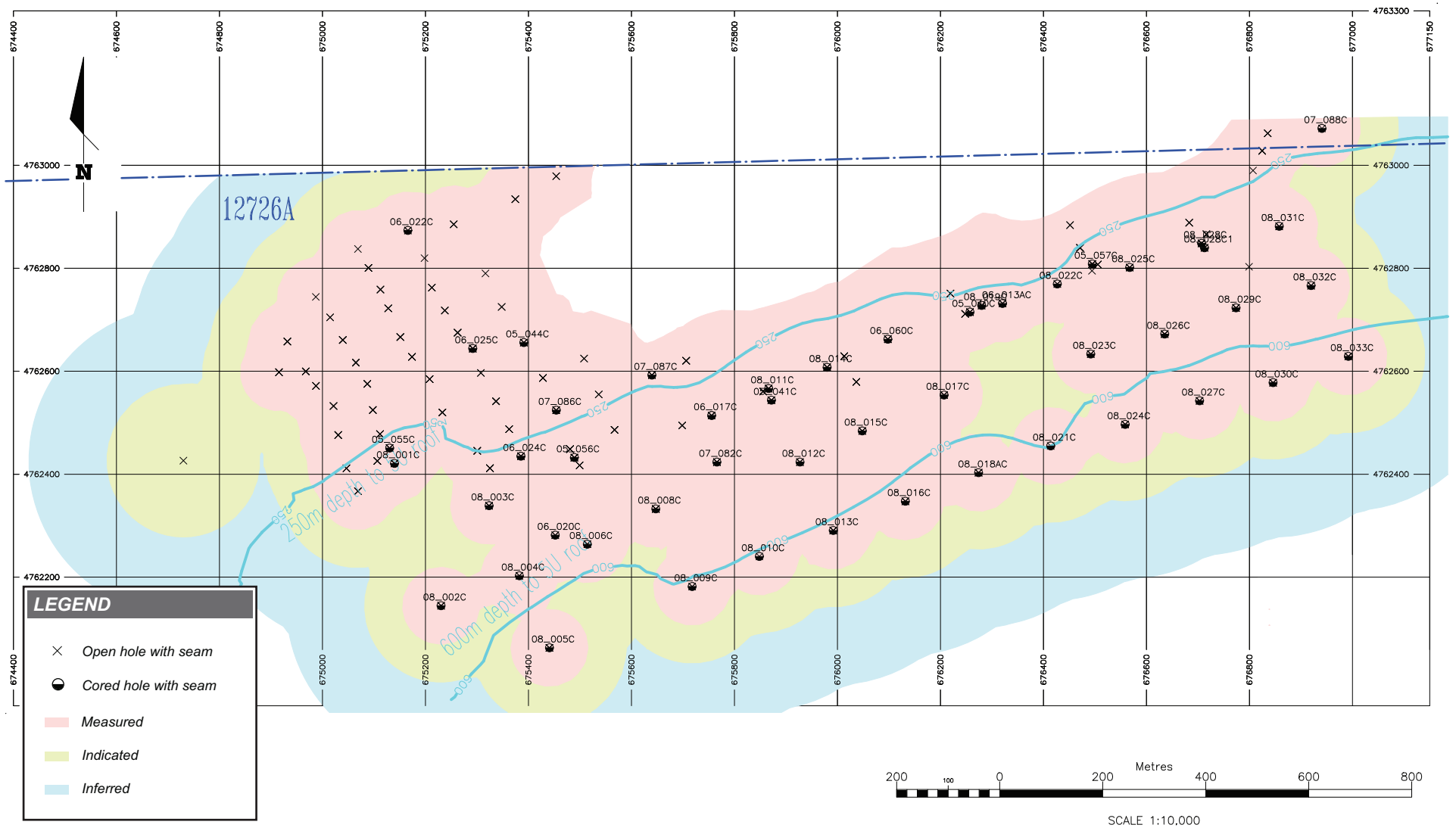

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FIGURE 13

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 9 Group Resource Polygons

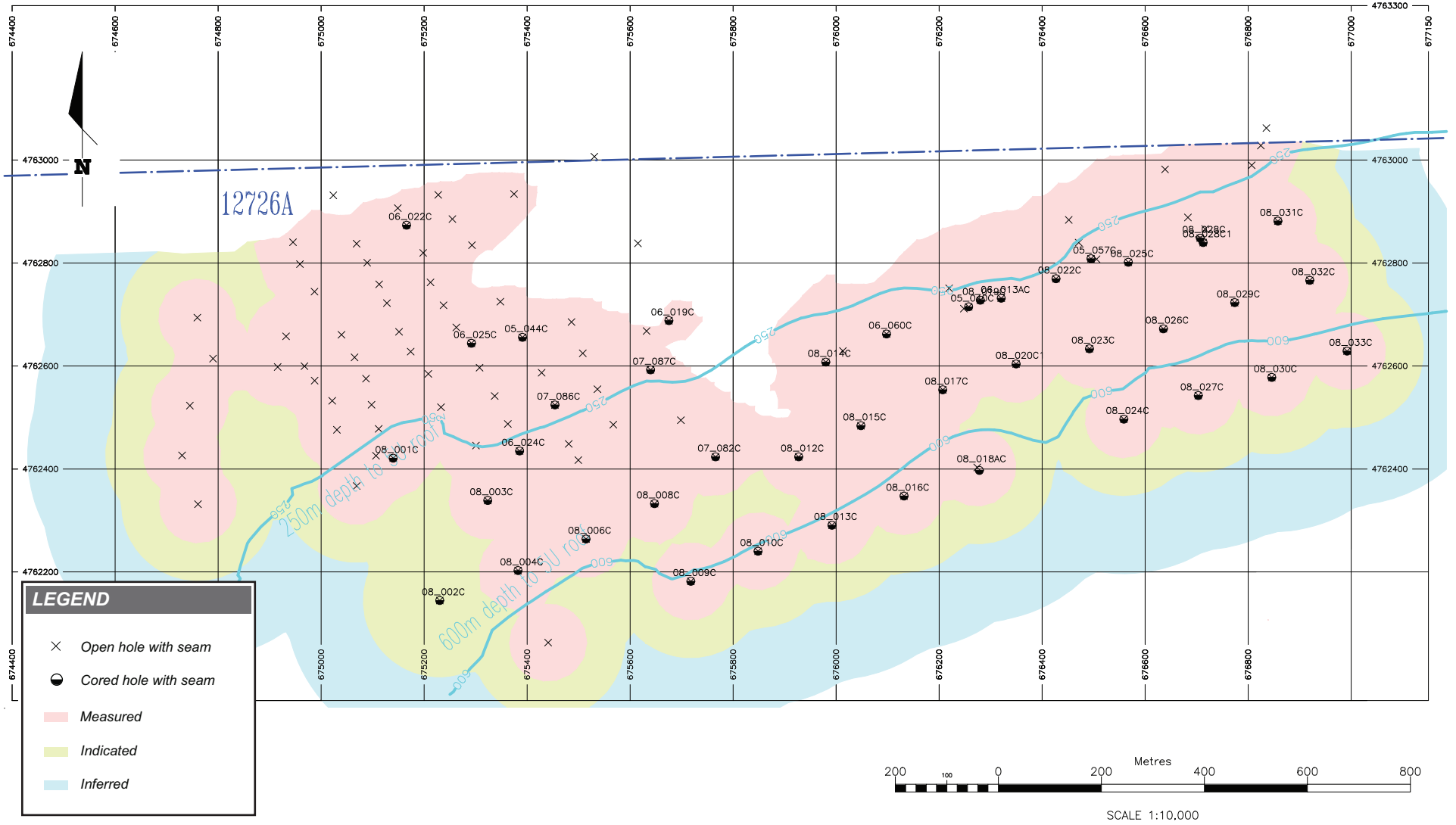

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FIGURE 14

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 8 Group Resource Polygons

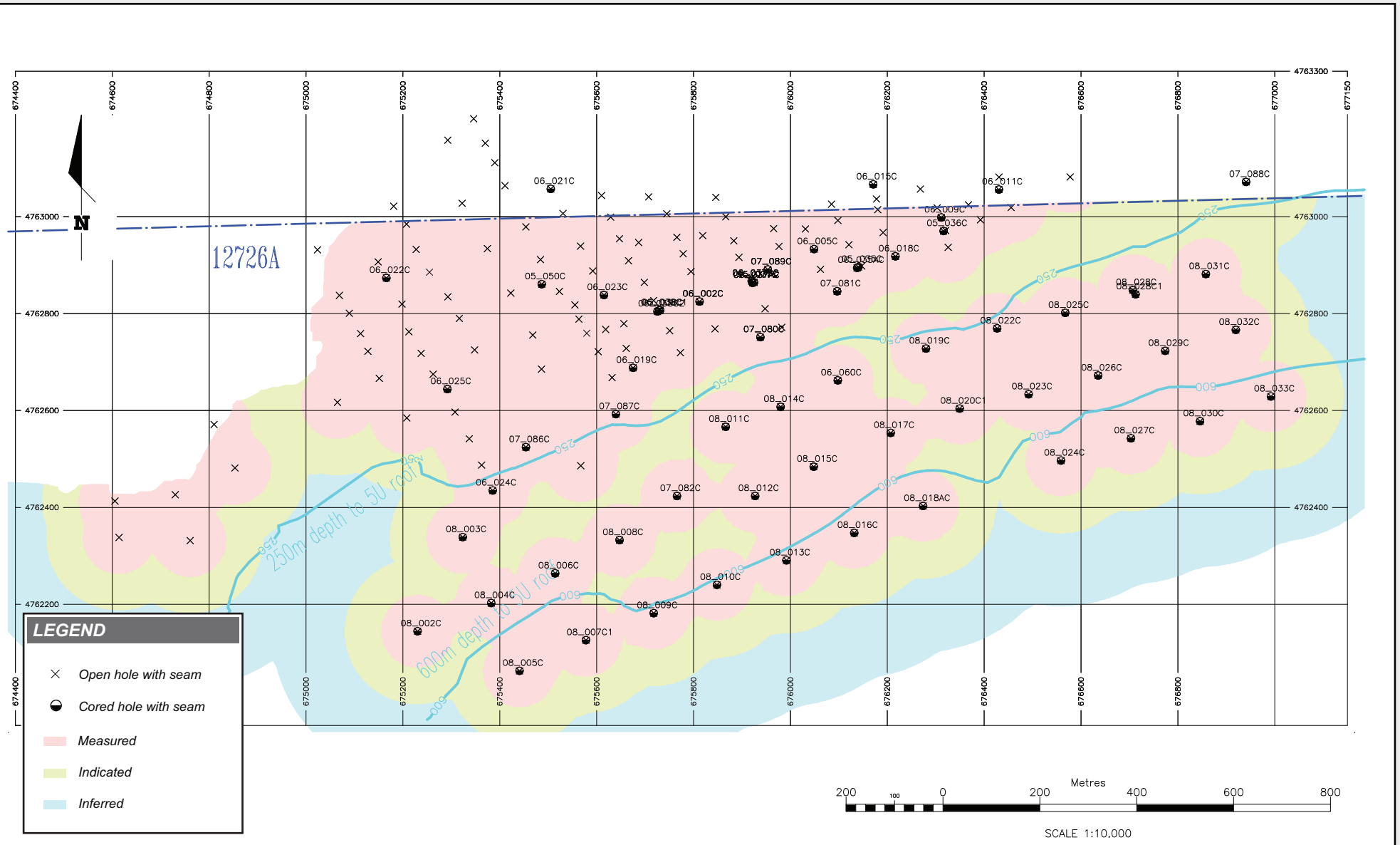

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FIGURE 15

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 5U Group Resource Polygons

Project No : ADV-MN-10014

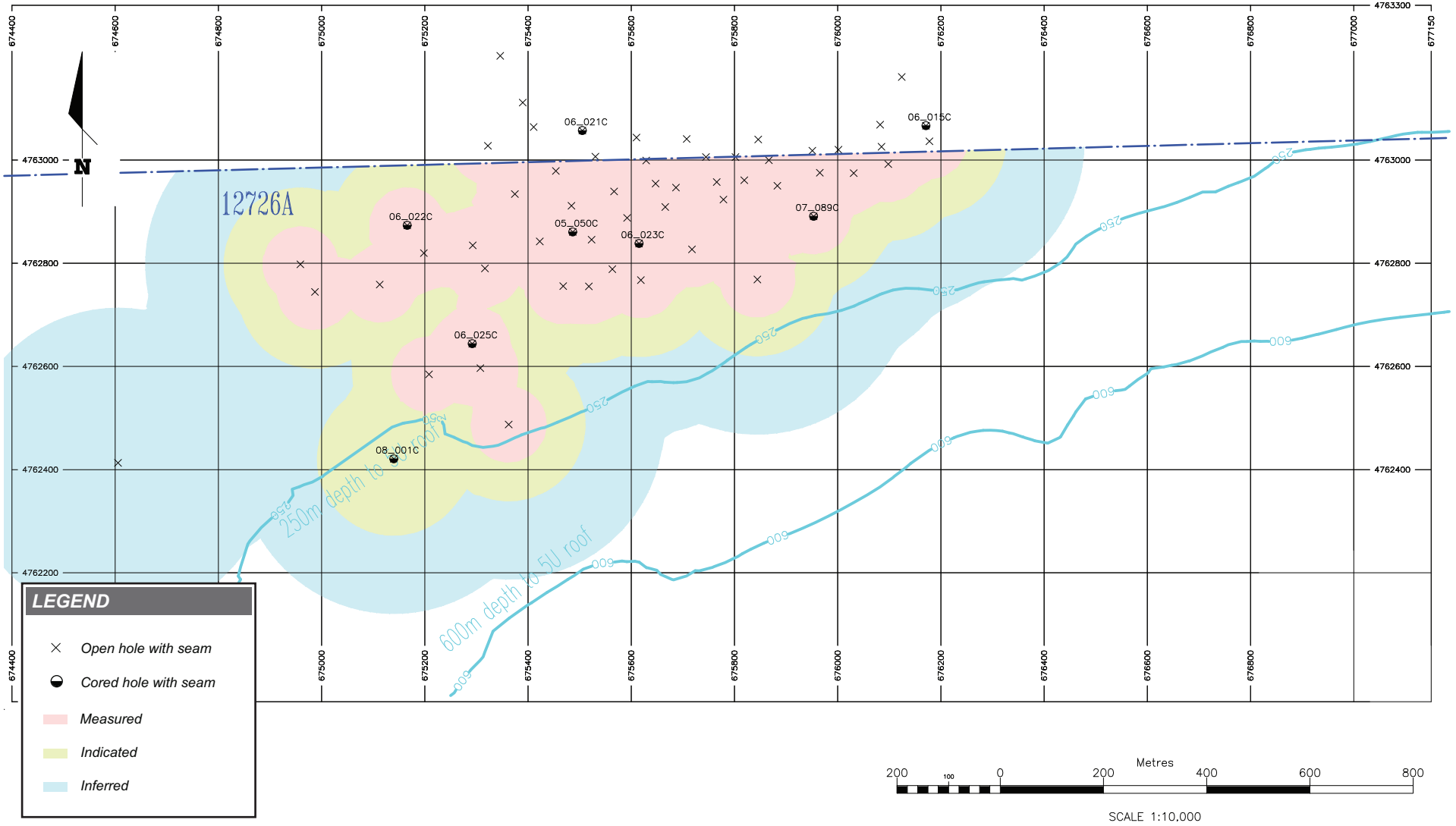

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FIGURE 16

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunset Field

Seam 5L Group Resource Polygons

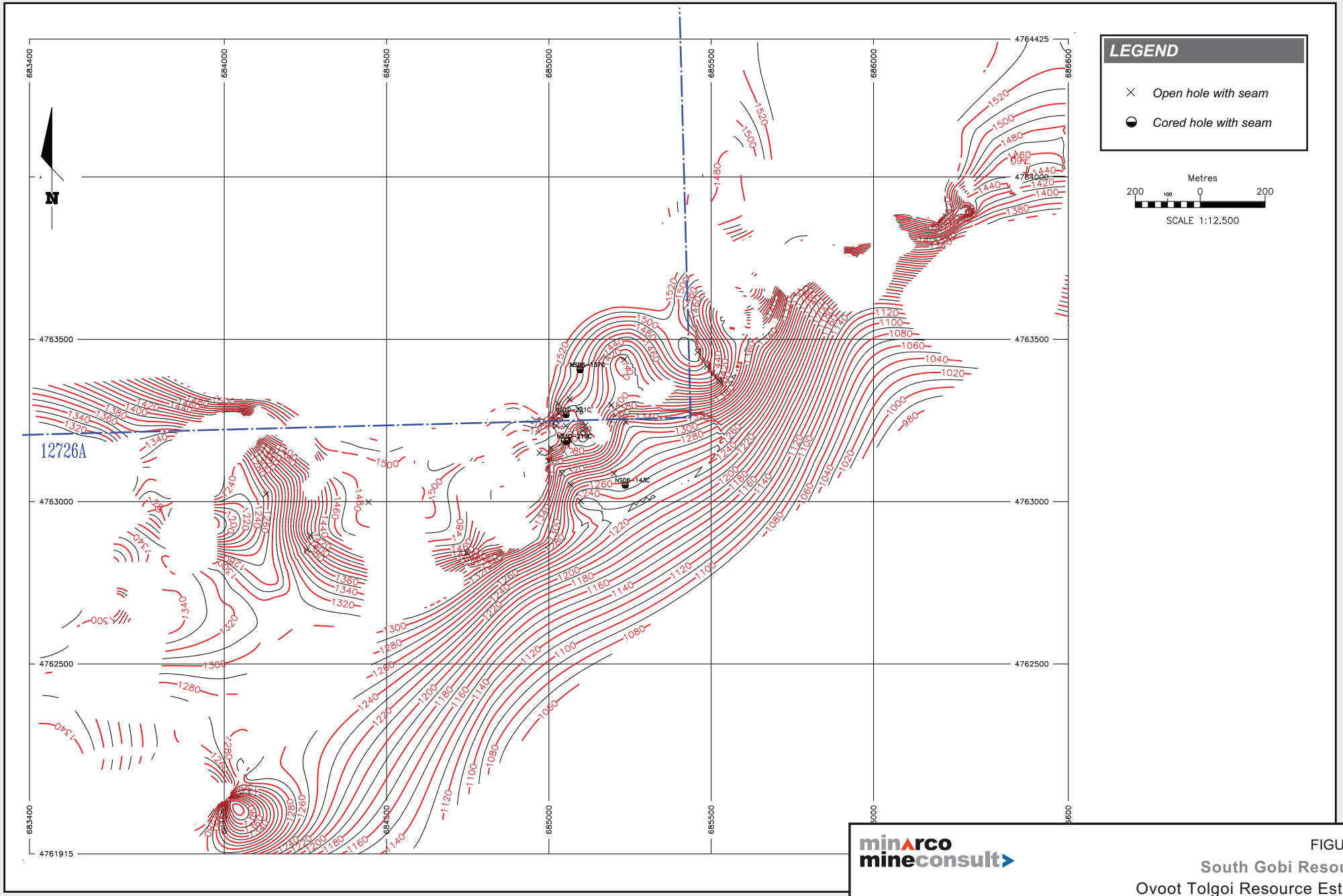

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FIGURE 17

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5U1 Group Structure Floor

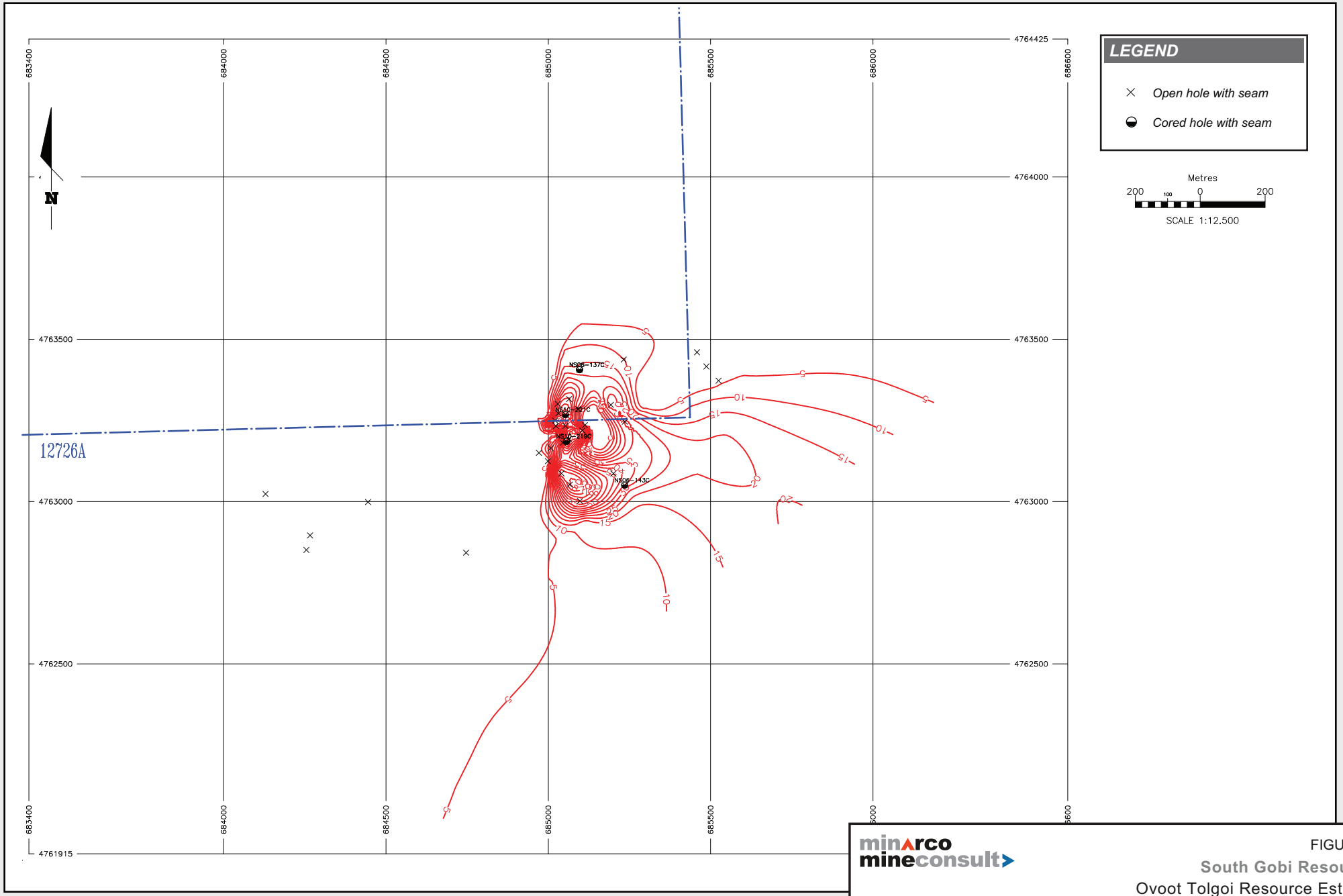

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FIGURE 18

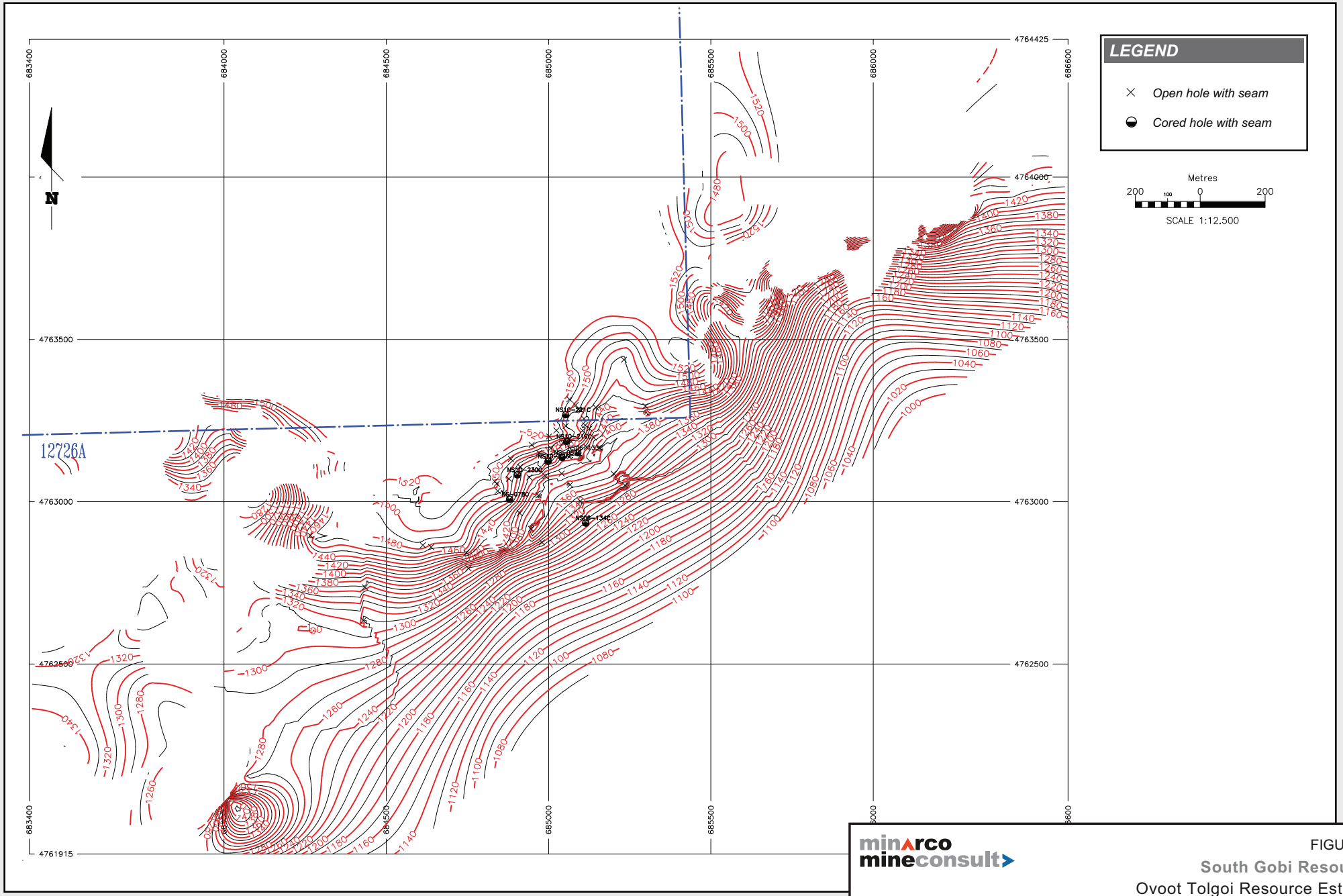
South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5U1 Group Thickness

Project No : ADV-MN-10014



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Project No : ADV-MN-10014

FIGURE 19

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5U2 Group Structure Floor

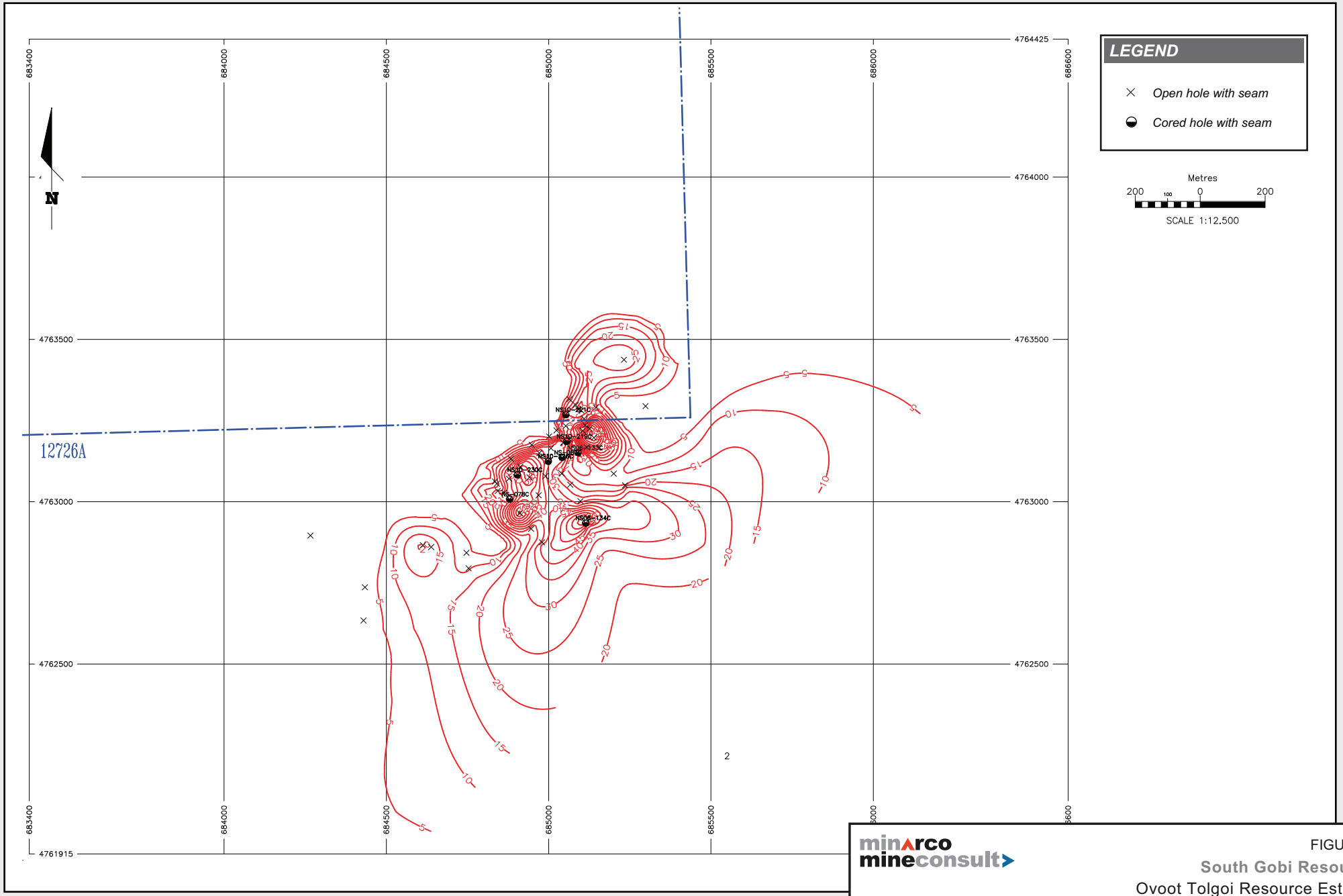

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FIGURE 20

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5U2 Group Thickness

Project No : ADV-MN-10014

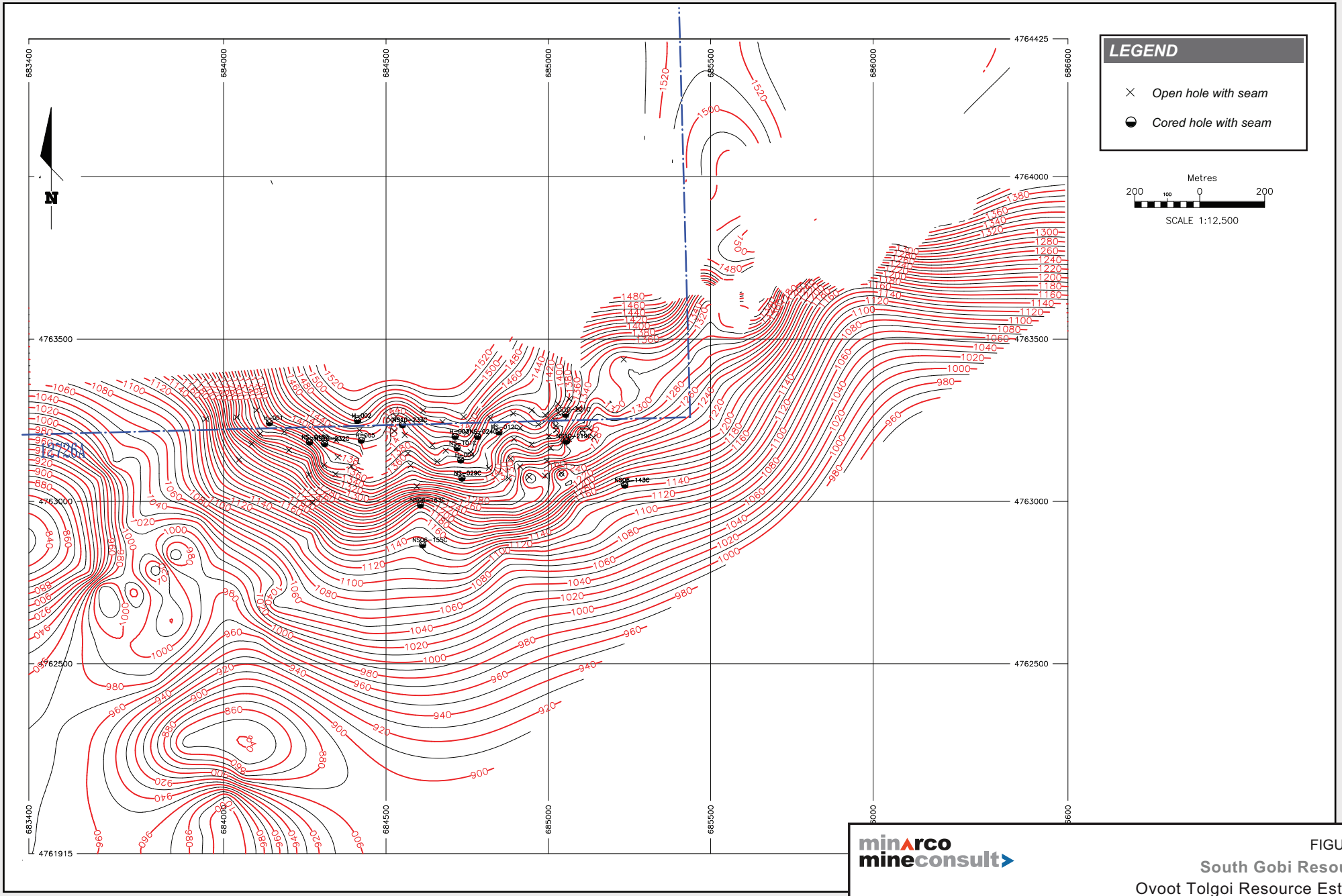

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FIGURE 21

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5L1 Group Structure Floor

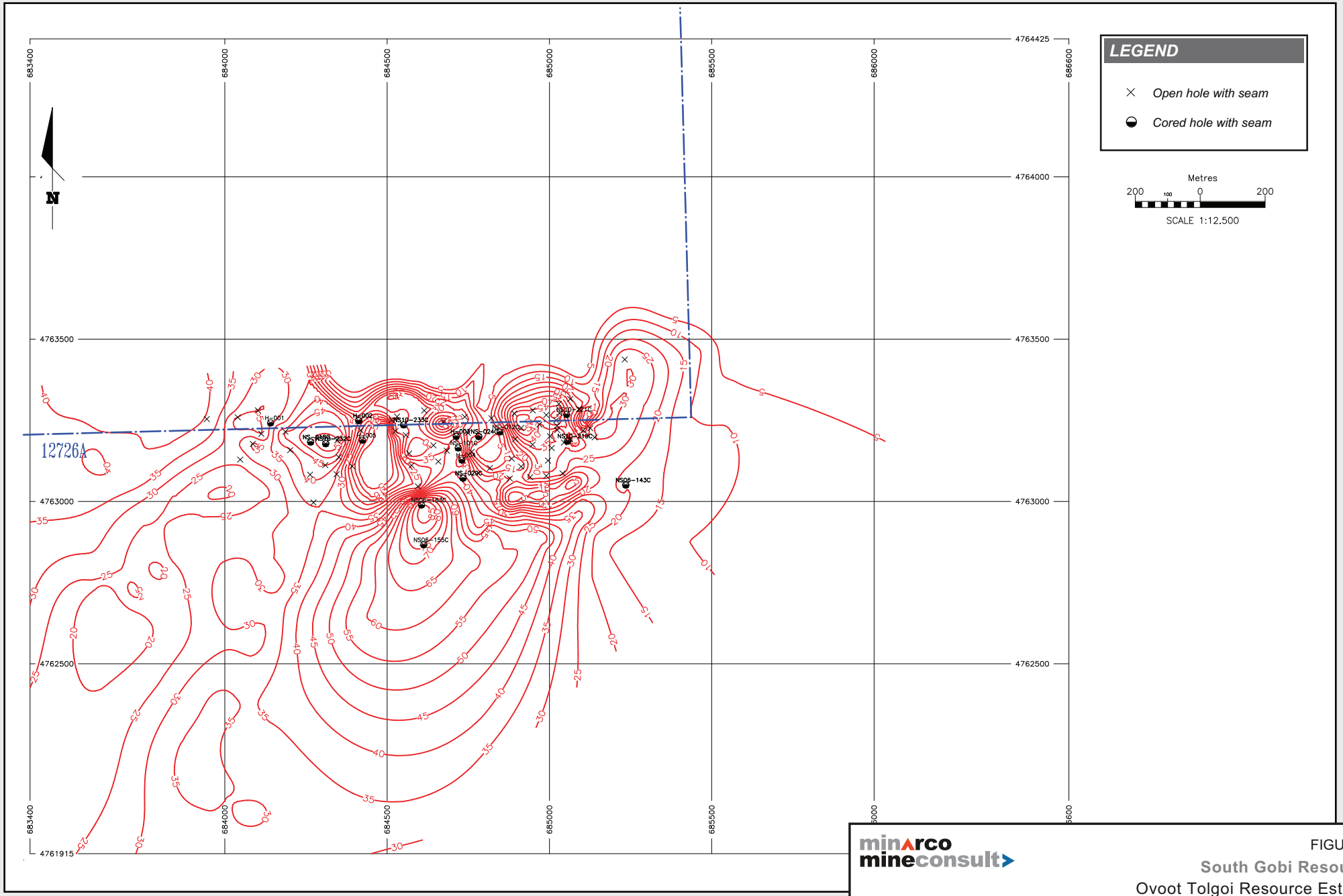

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FIGURE 22

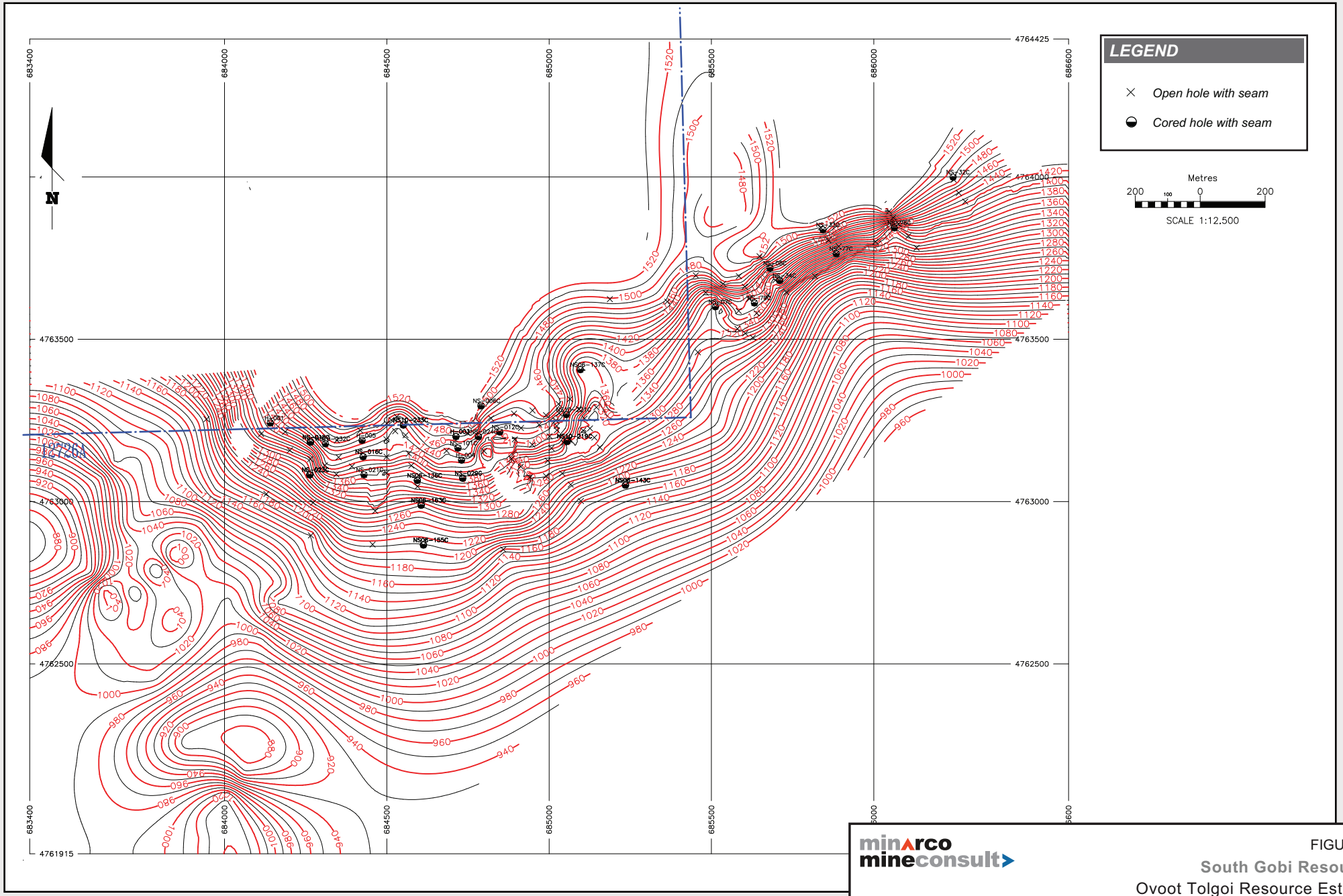
South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5L1 Group Thickness

Project No : ADV-MN-10014



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Project No : ADV-MN-10014

FIGURE 23

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5L2 Group Structure Floor

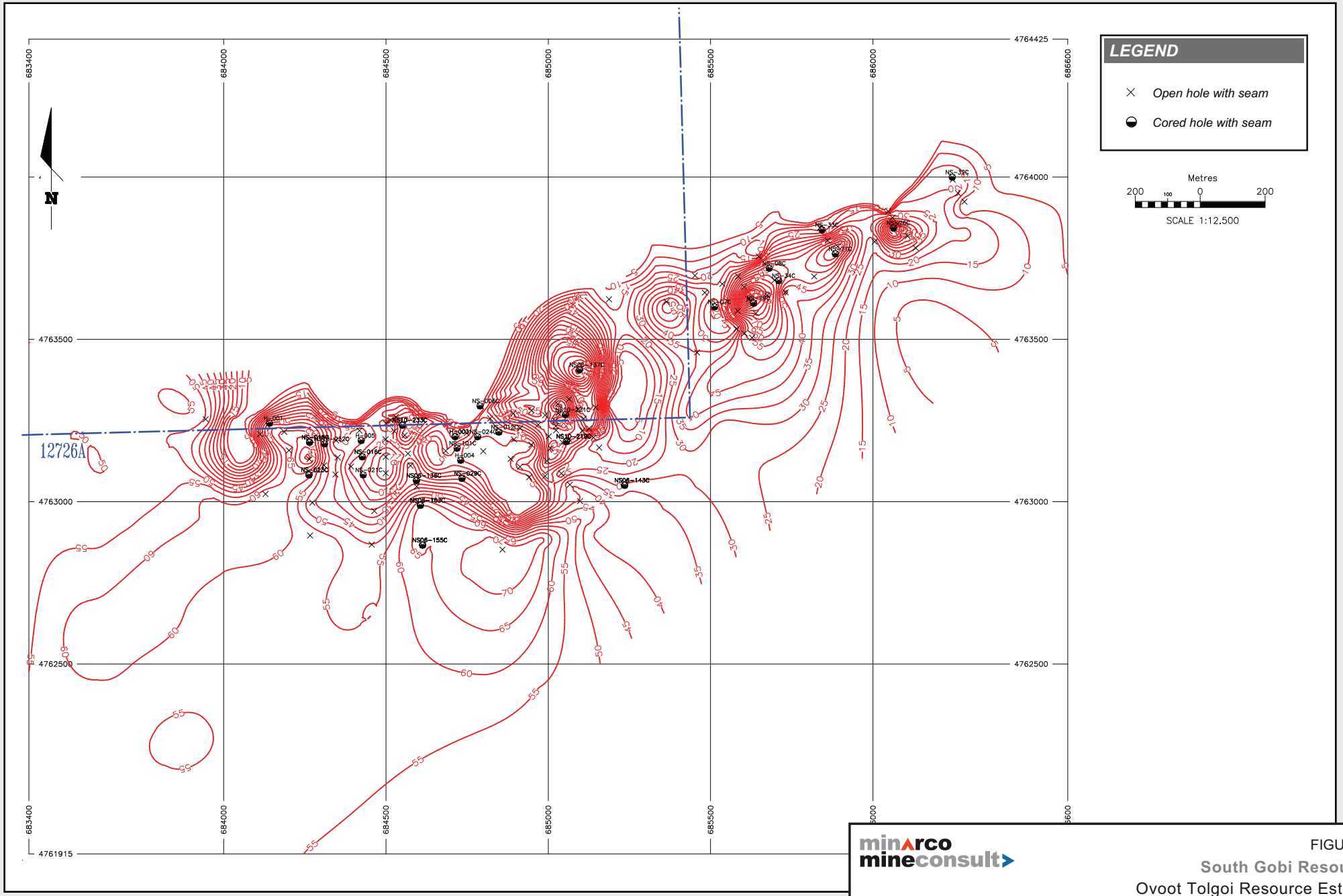

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FIGURE 24

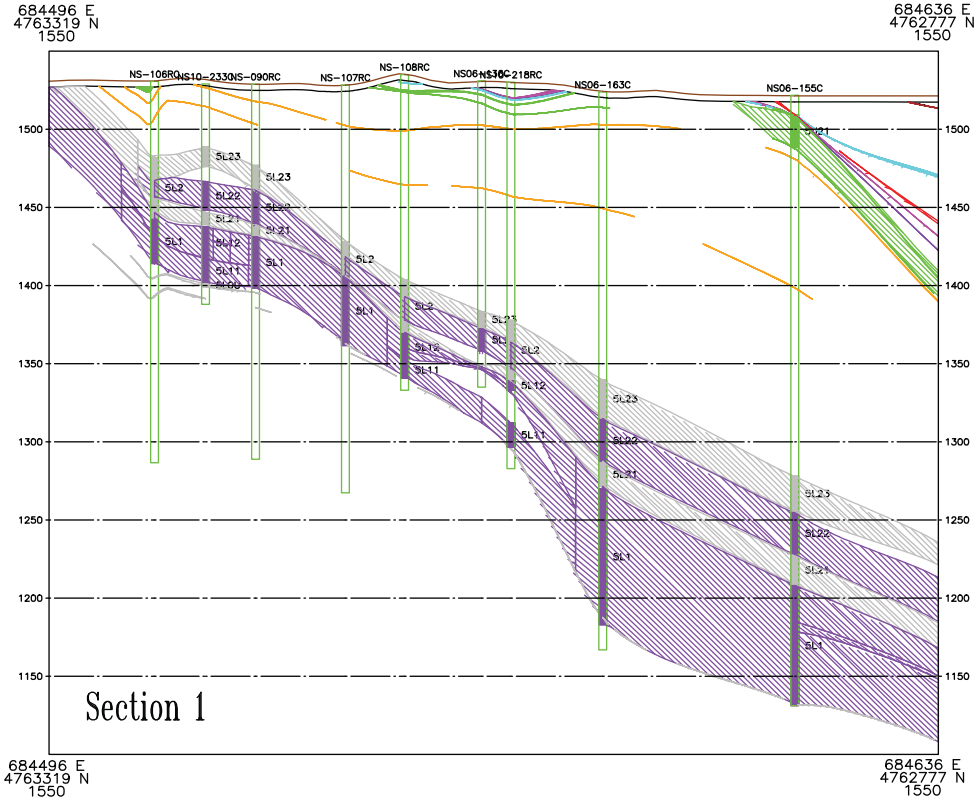
South Gobi Resources

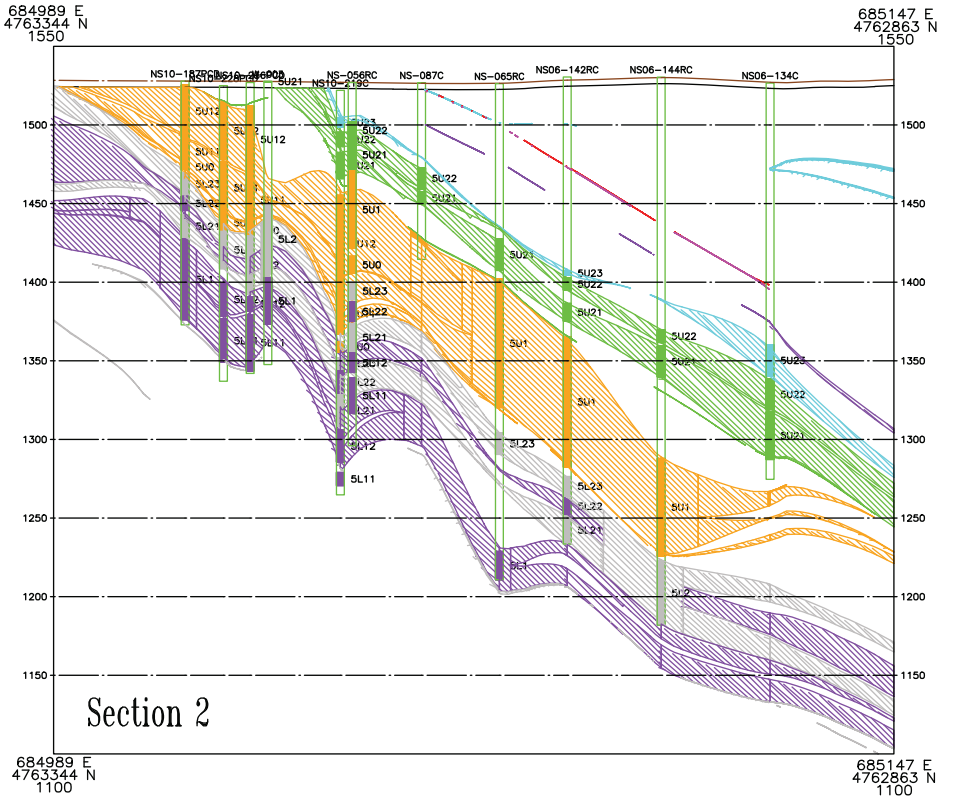
Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5L2 Group Thickness

Project No : ADV-MN-10014





Location Plan

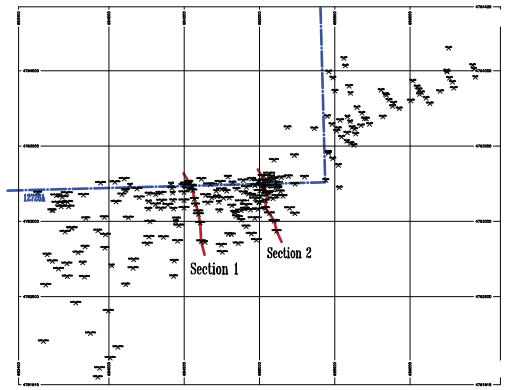


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FIGURE 25

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Typical Cross Sections

Project No : ADV-MN-10014

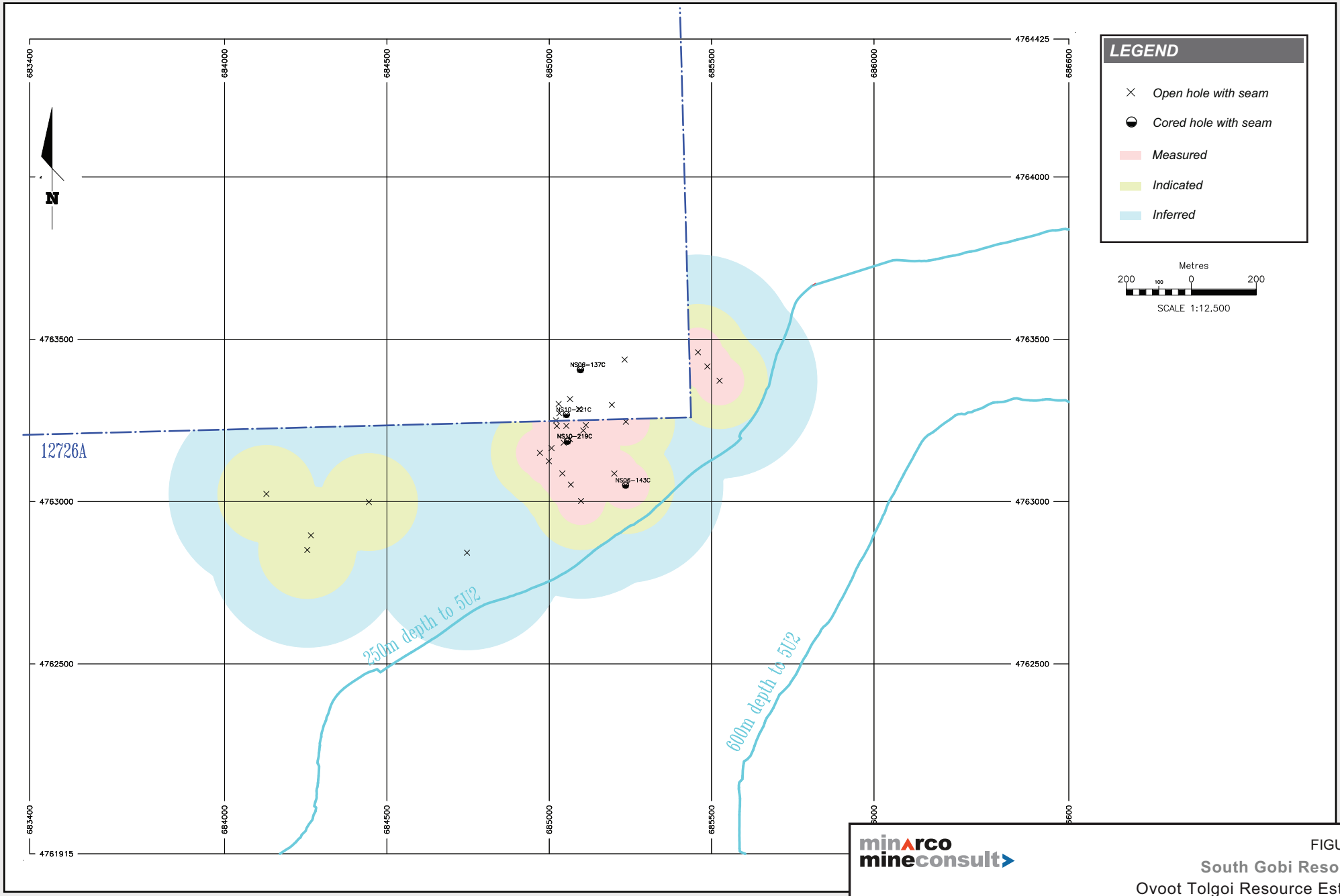

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FIGURE 26

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5U1 Group Resource Polygons

Project No : ADV-MN-10014

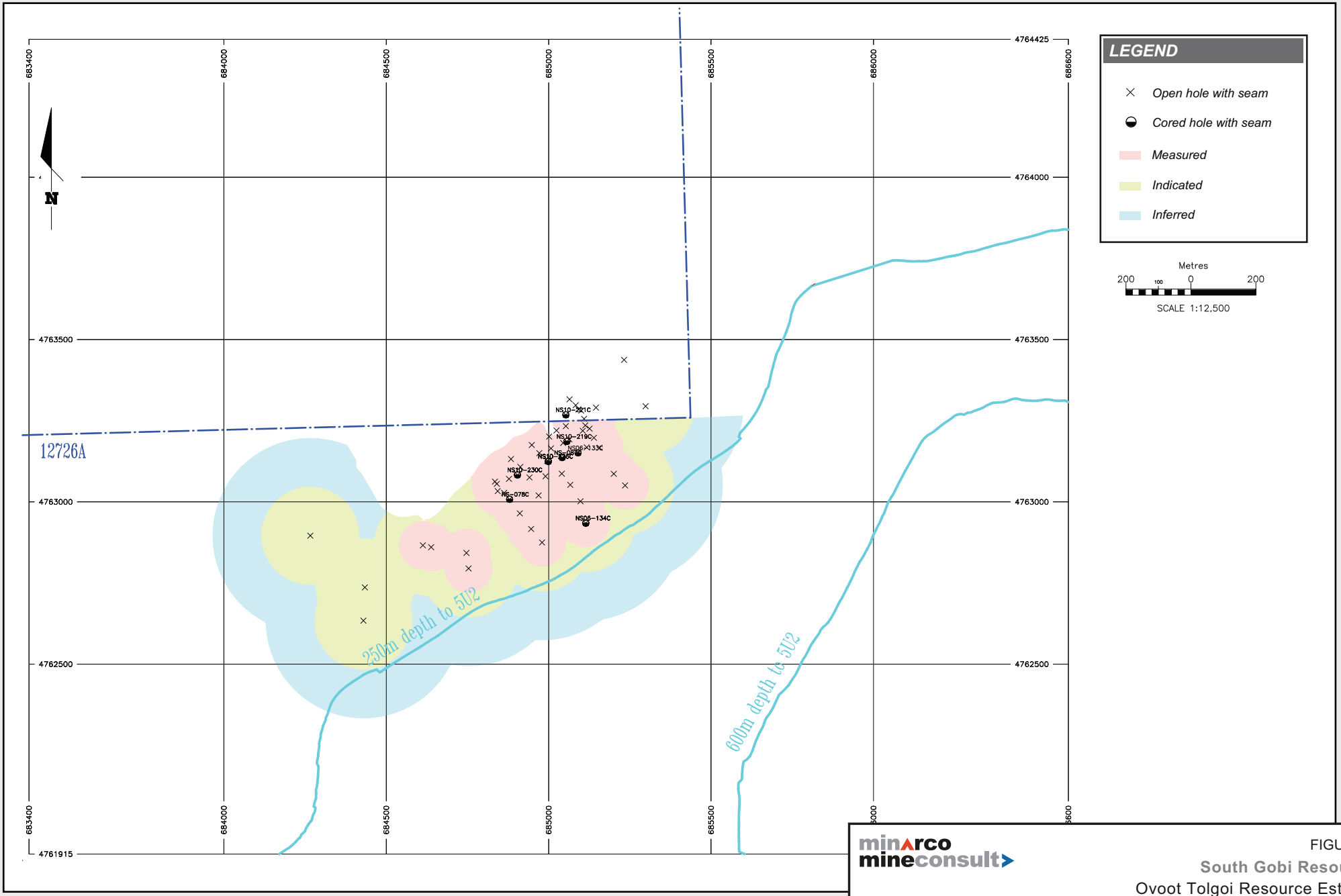

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FIGURE 27

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5U2 Group Resource Polygons

Project No : ADV-MN-10014

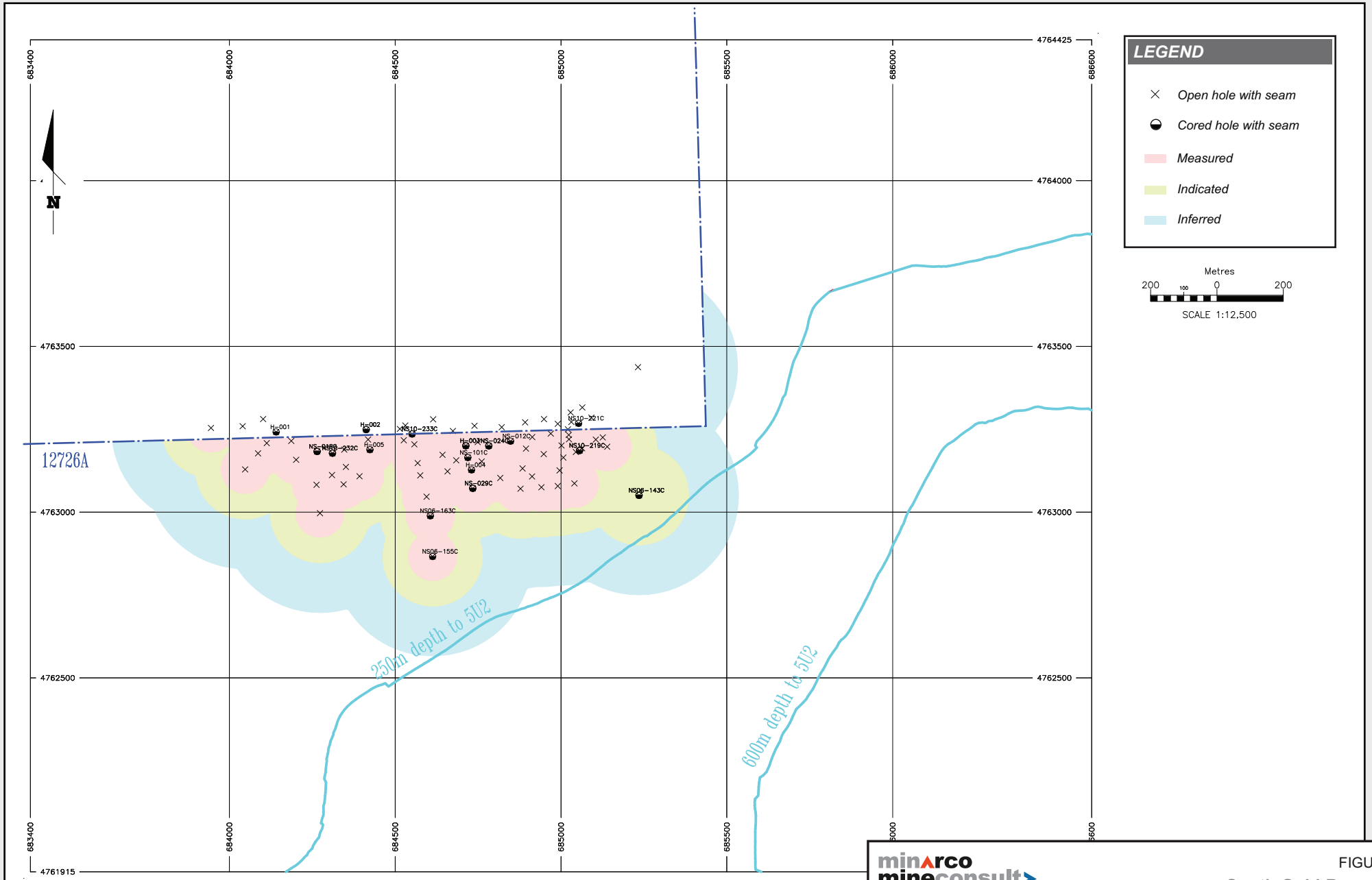

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FIGURE 28

South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5L1 Group Resource Polygons

Project No : ADV-MN-10014

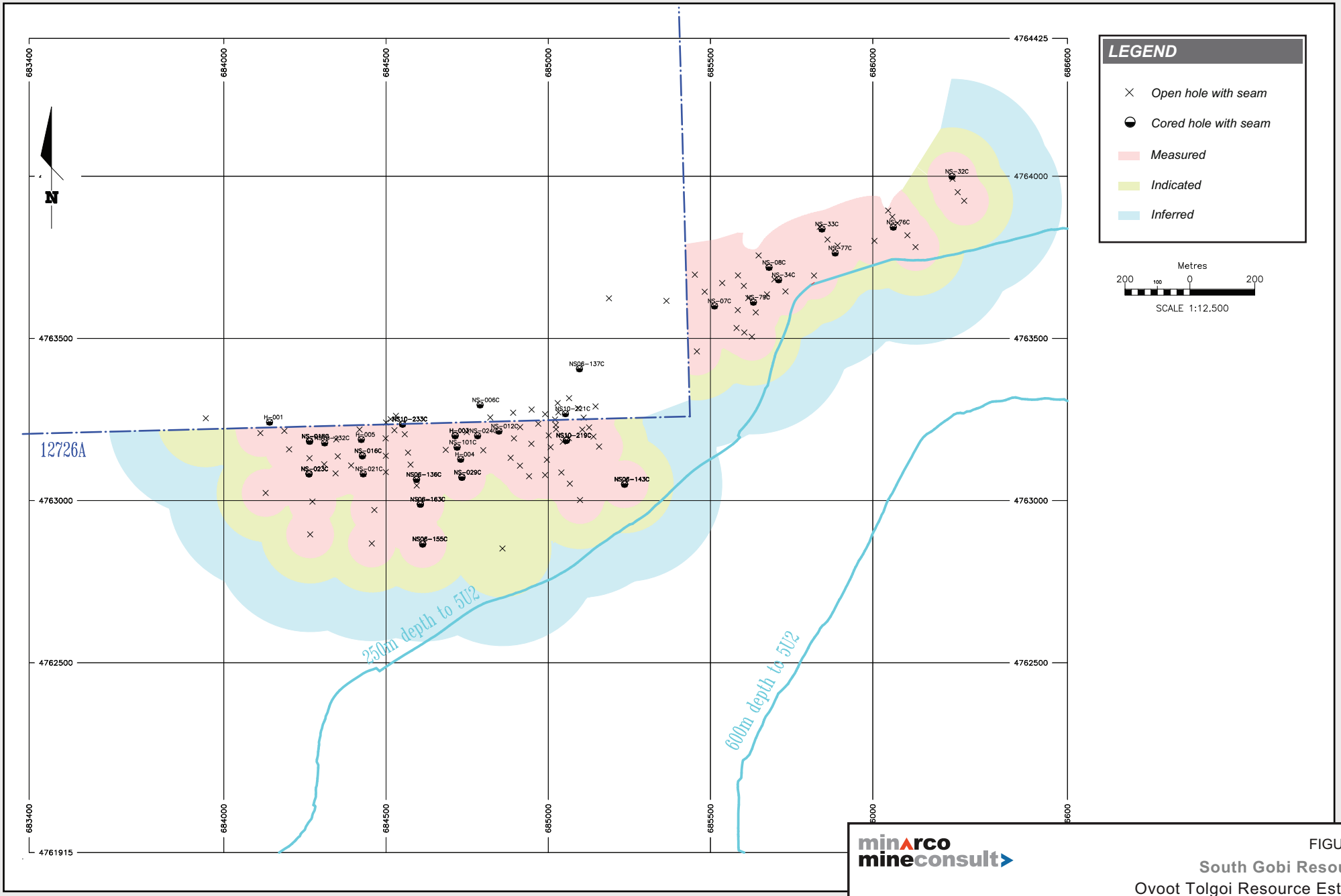

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FIGURE 29

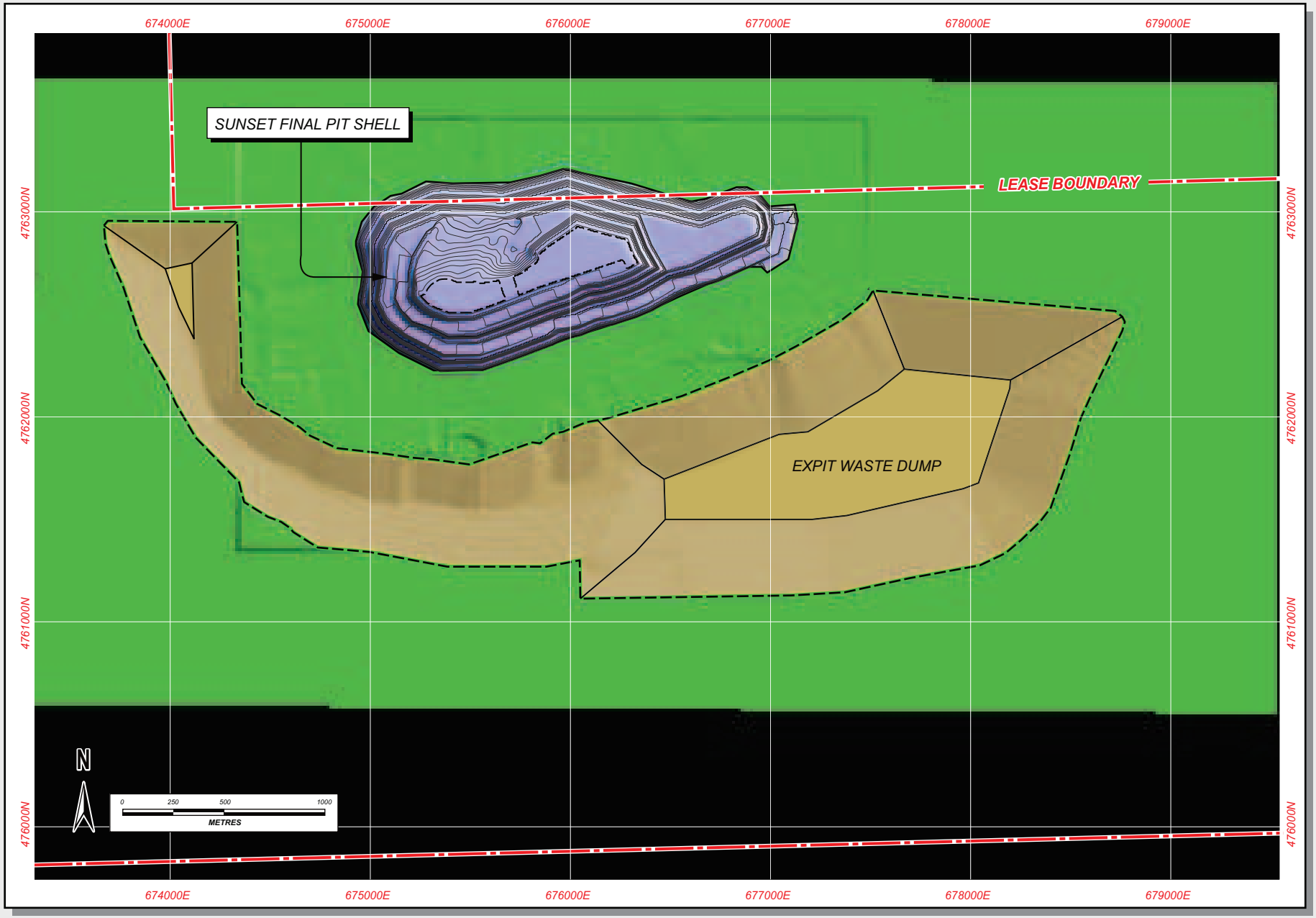
South Gobi Resources

Ovoot Tolgoi Resource Estimate

Sunrise Field

Seam 5L2 Group Resource Polygons

Project No : ADV-MN-10014



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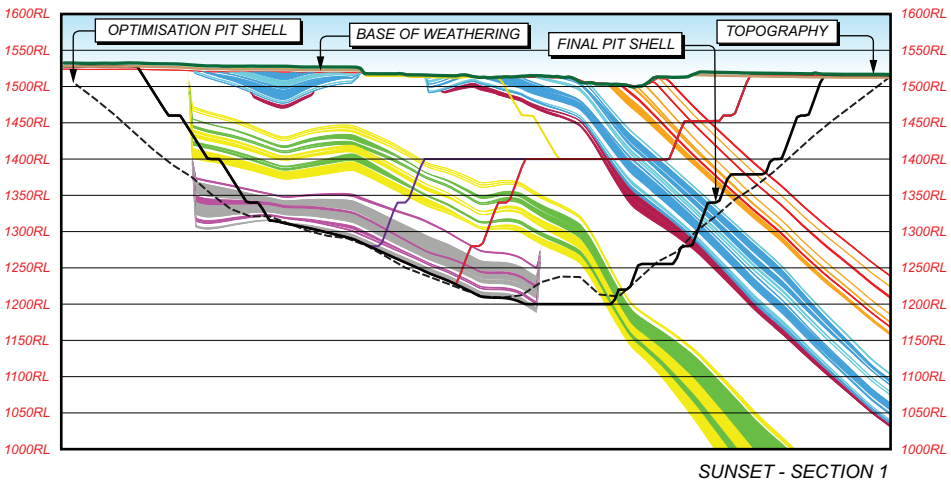
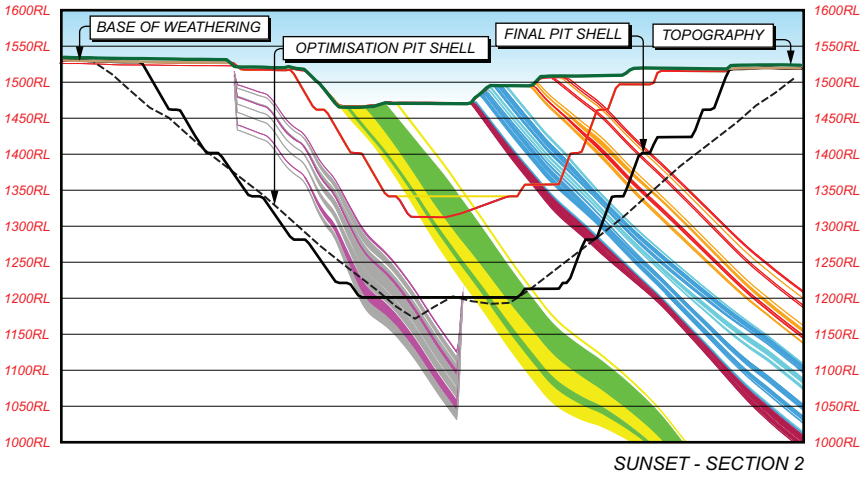
SouthGobi Resources

Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
Project : **OVOOT TOLGOI**	Date : March 2011
Figure : **SUNSET FIELD PIT AND DUMP**	FIGURE No. 22.30



SUNSET - SECTION 1



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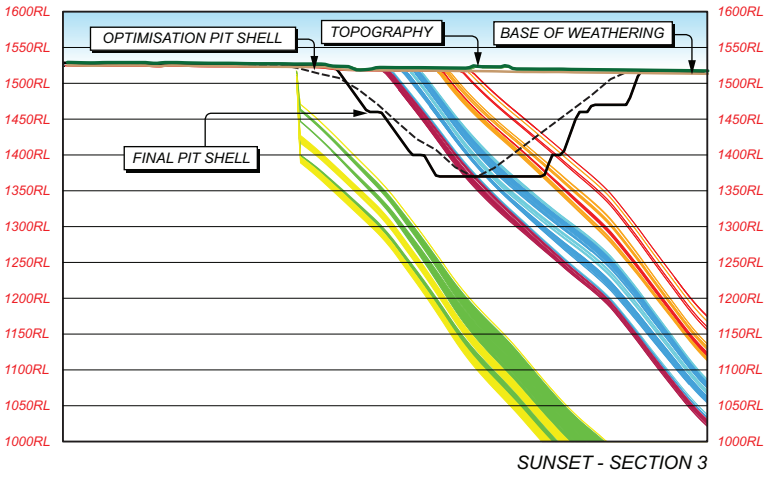
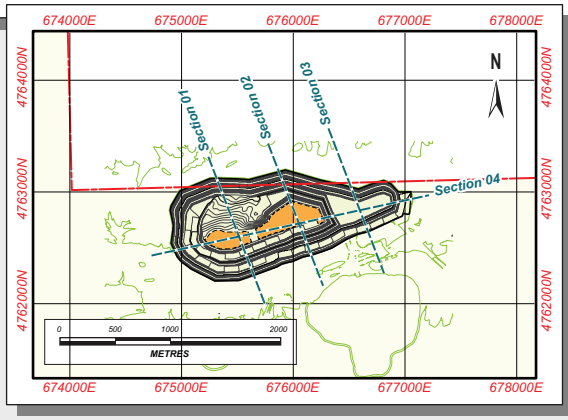


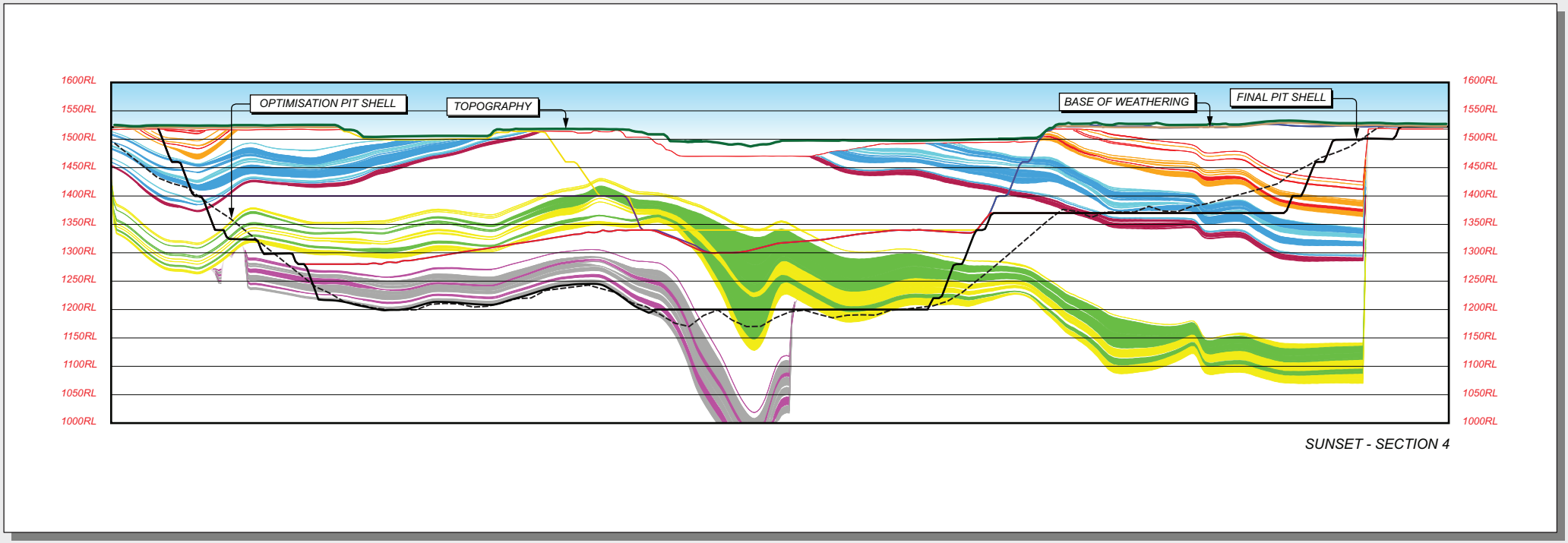
SUNSET - SECTION 3



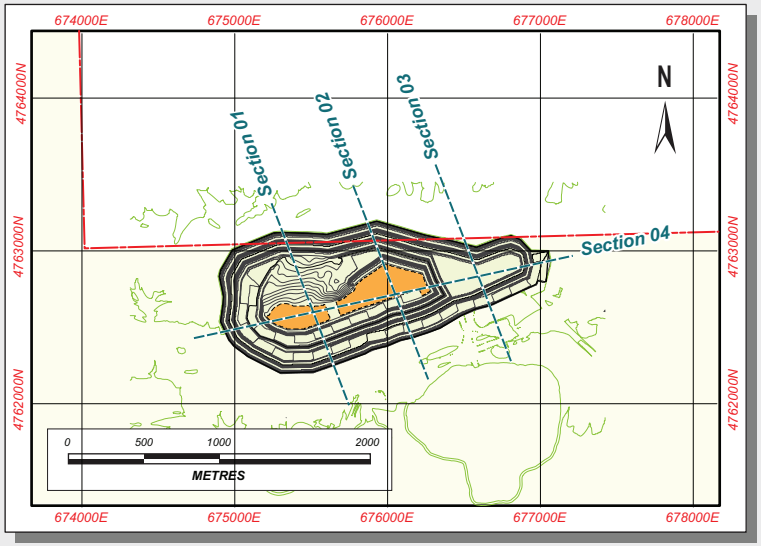
LEGEND

- Nested Shell 1
- Nested Shell 2
- Nested Shell 3
- Nested Shell 4
- Final Pit Shell
- Opt100 Pit Shell

minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNSET FIELD CROSS-SECTIONS**	FIGURE No. 22.31



SUNSET - SECTION 4



LEGEND

- Nested Shell 1
- Nested Shell 2
- Nested Shell 3
- Nested Shell 4
- Final Pit Shell
- Opt100 Pit Shell

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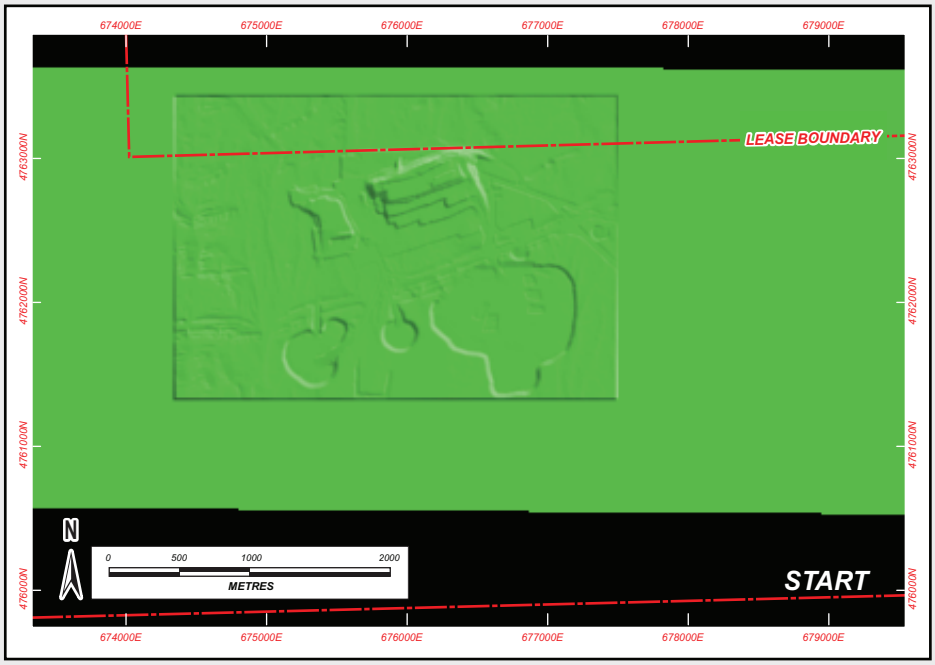
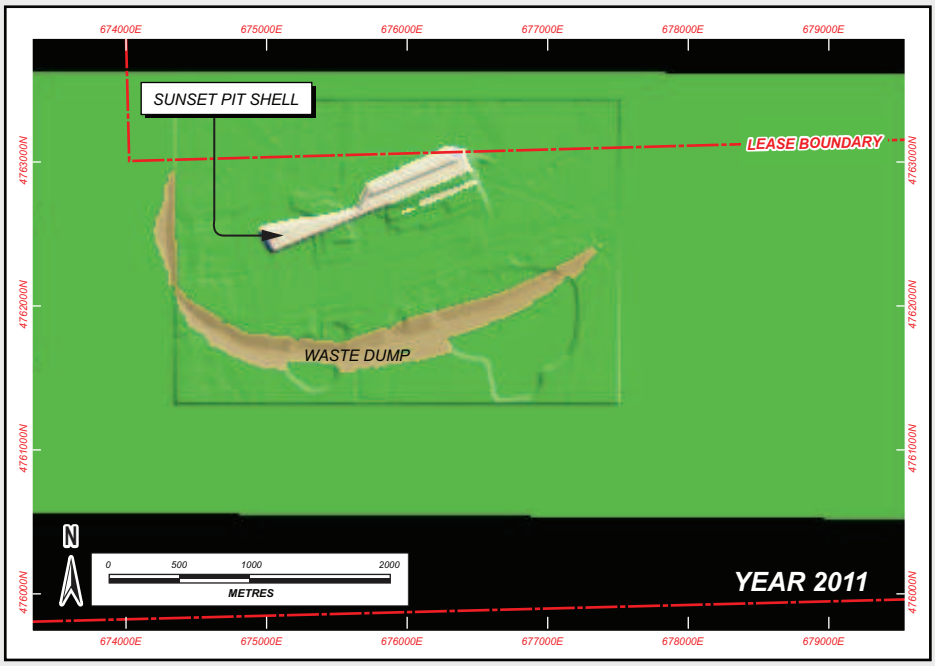
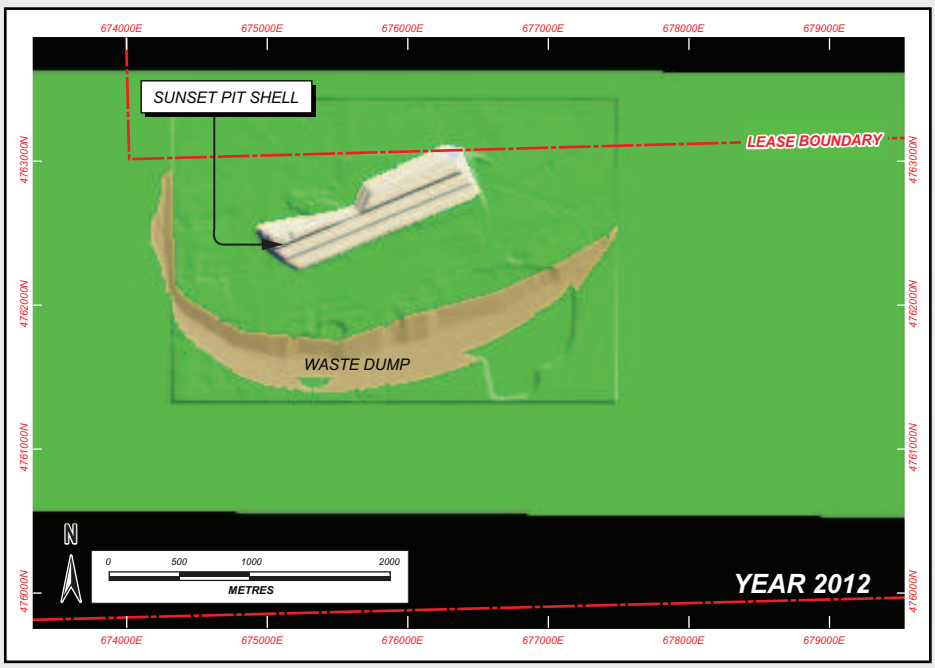
SouthGobi Resources

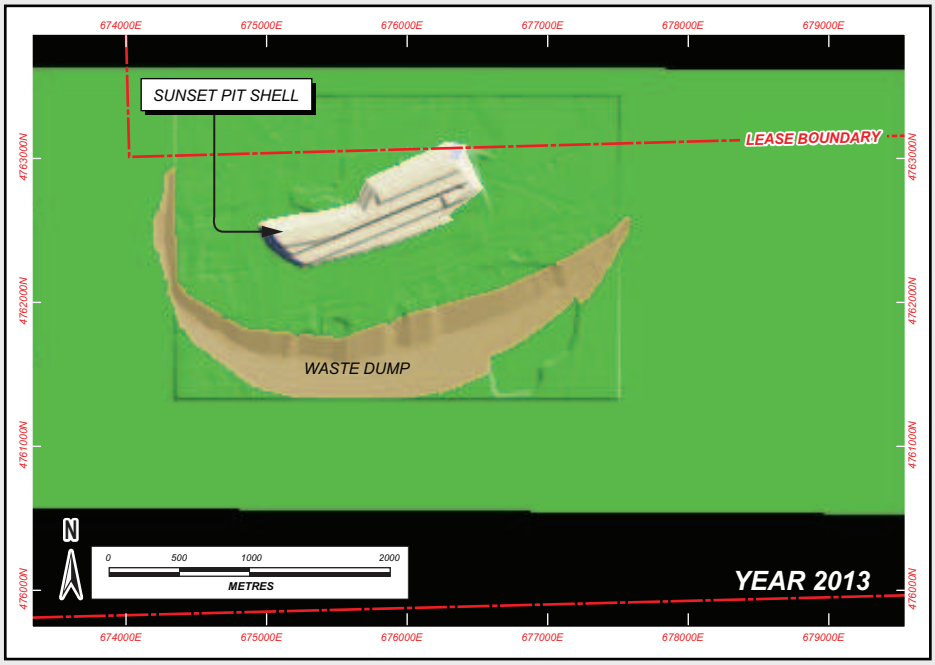
Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
Project : **OVOOT TOLGOI**	Date : March 2011
Figure : **SUNSET FIELD LONG SECTION**	FIGURE No. 22.32

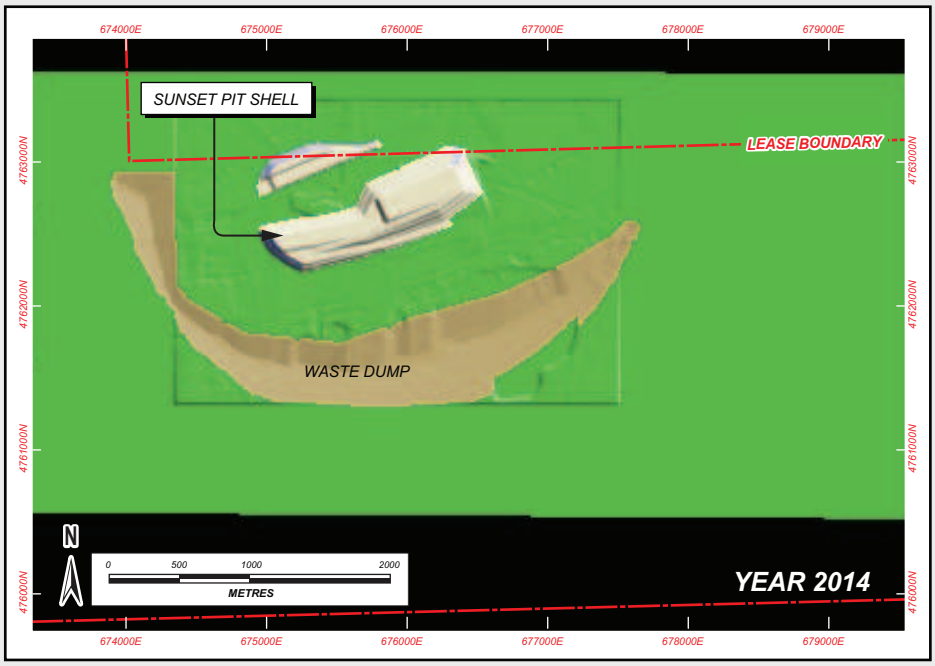


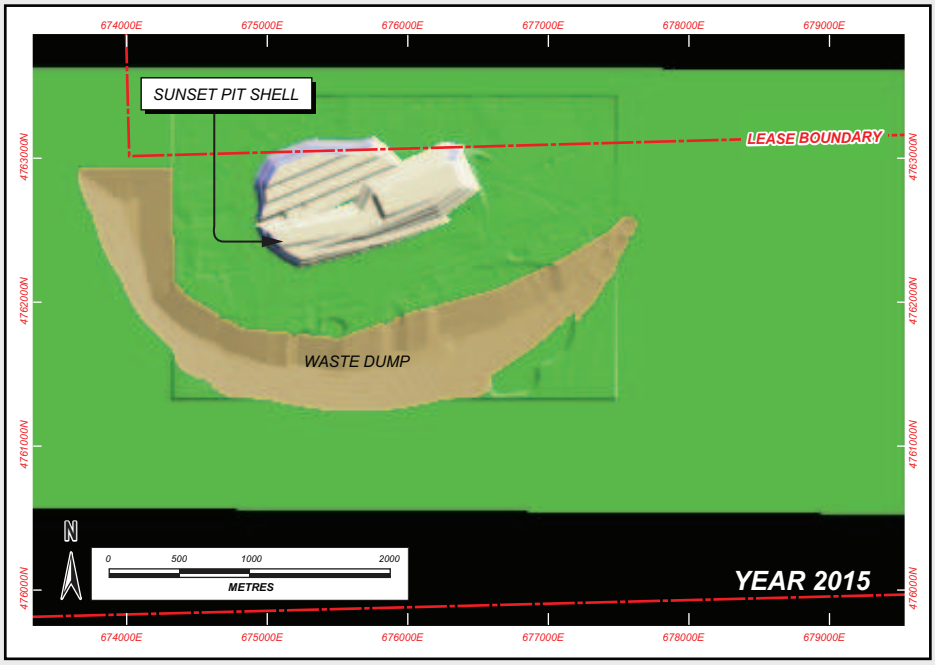




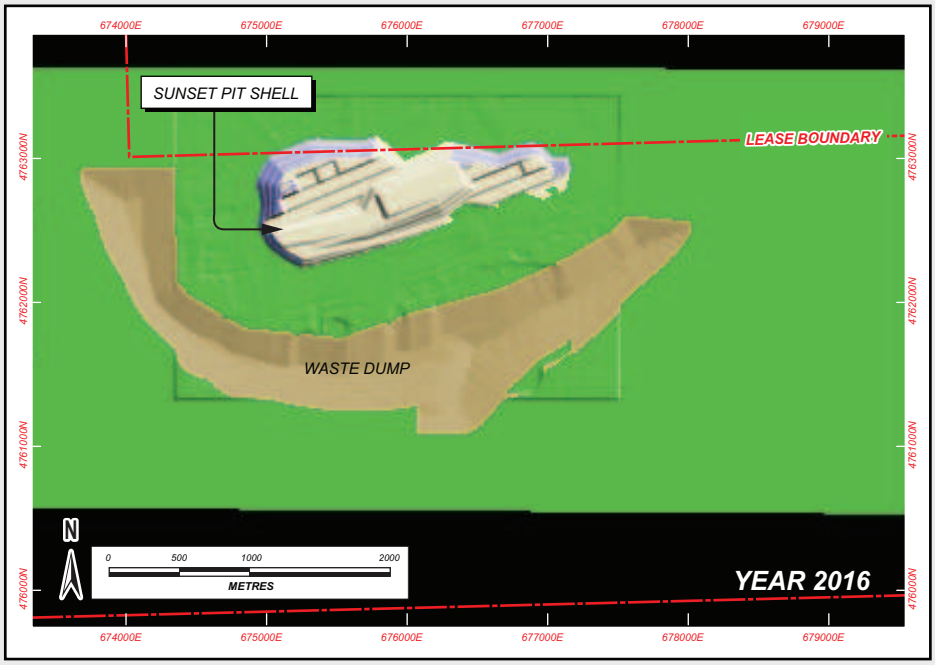
minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNSET FIELD STAGE PLANS - START, 2011 & 2012**	FIGURE No. 22.33

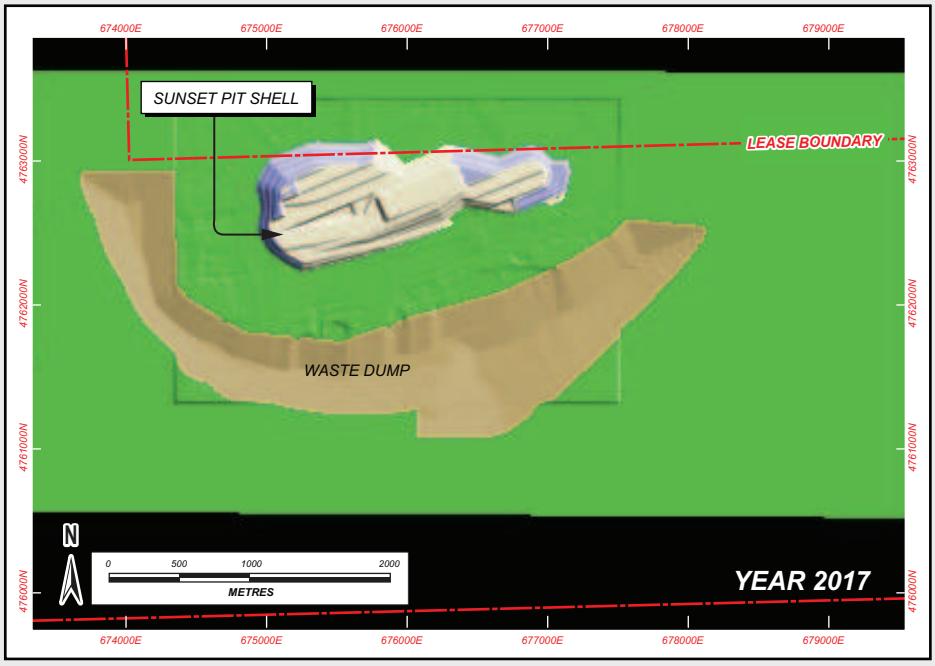


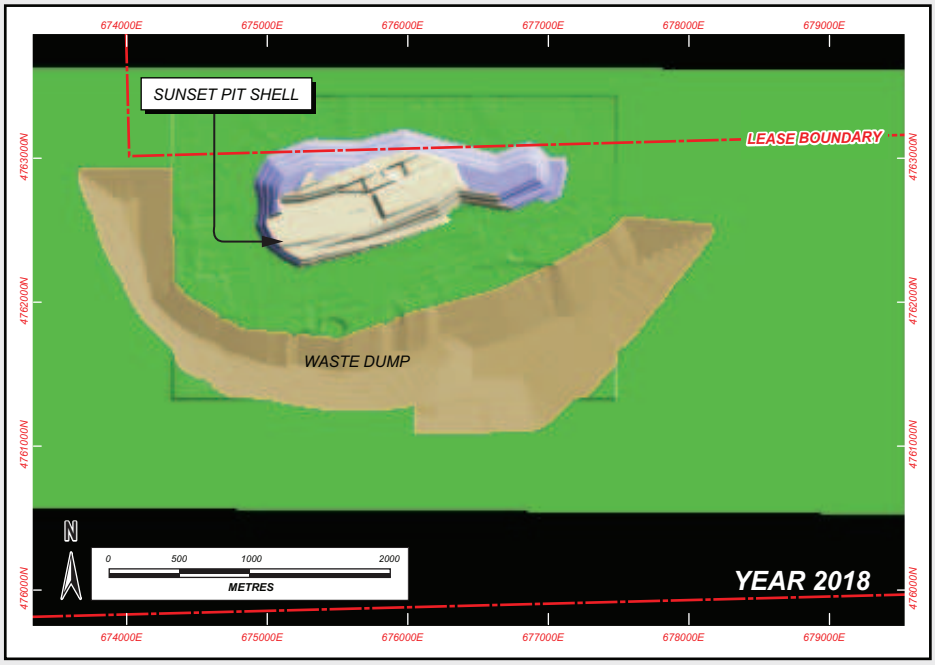




minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNSET FIELD STAGE PLANS - 2013, 2014 & 2015**	FIGURE No. 22.34







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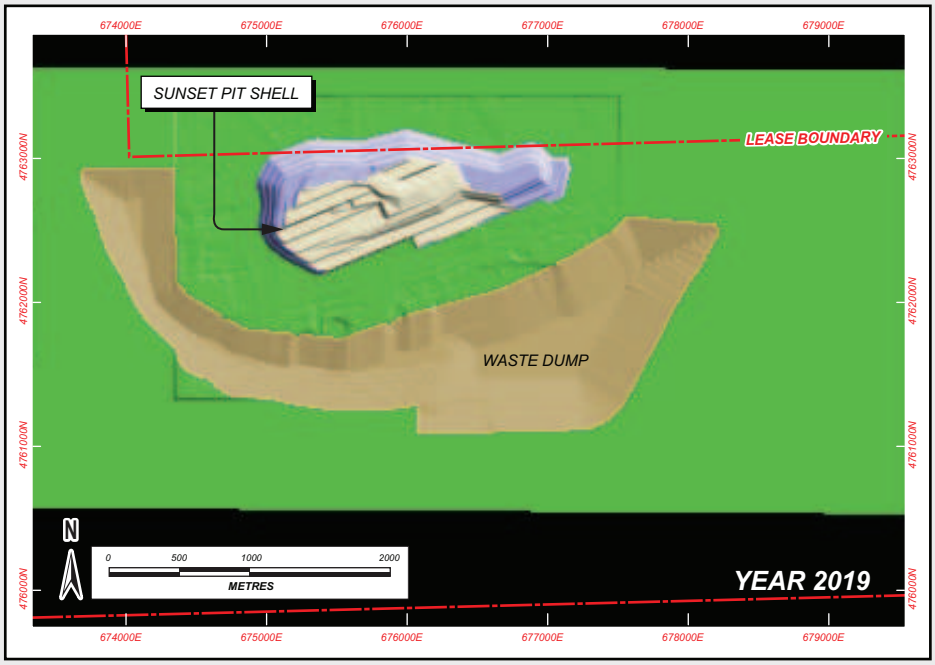
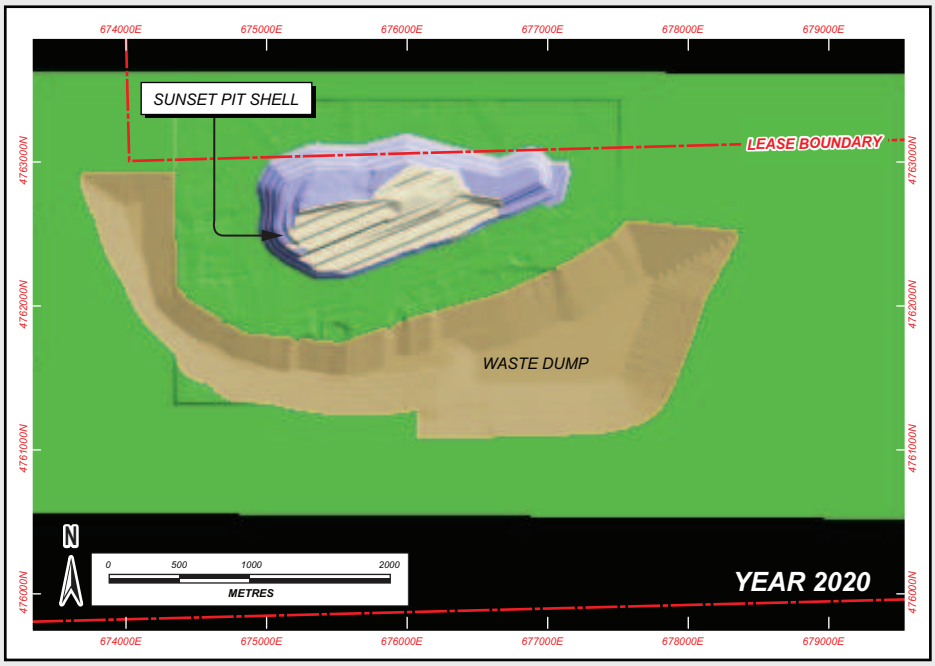
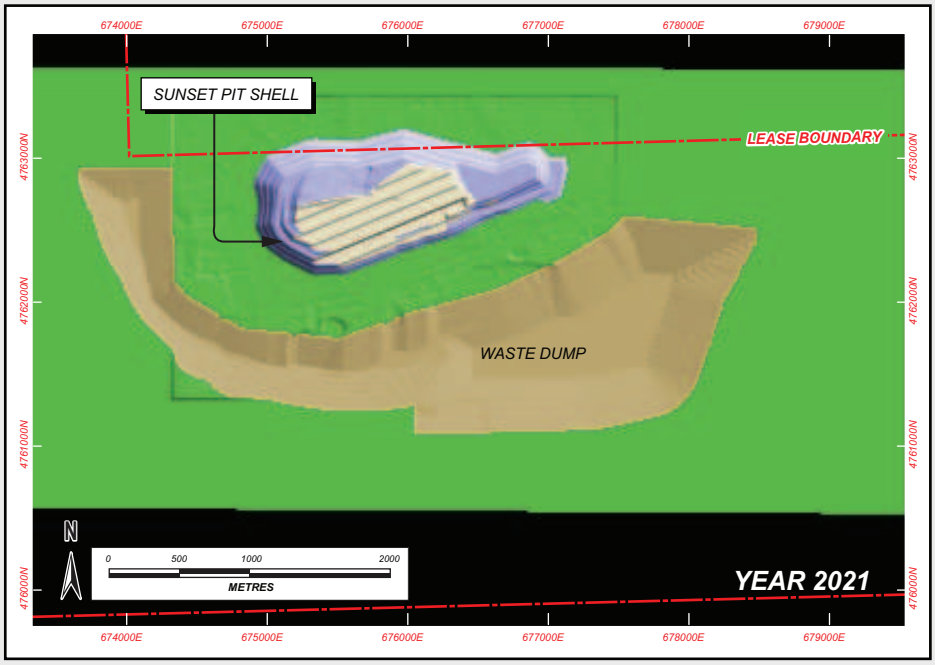
SouthGobi Resources

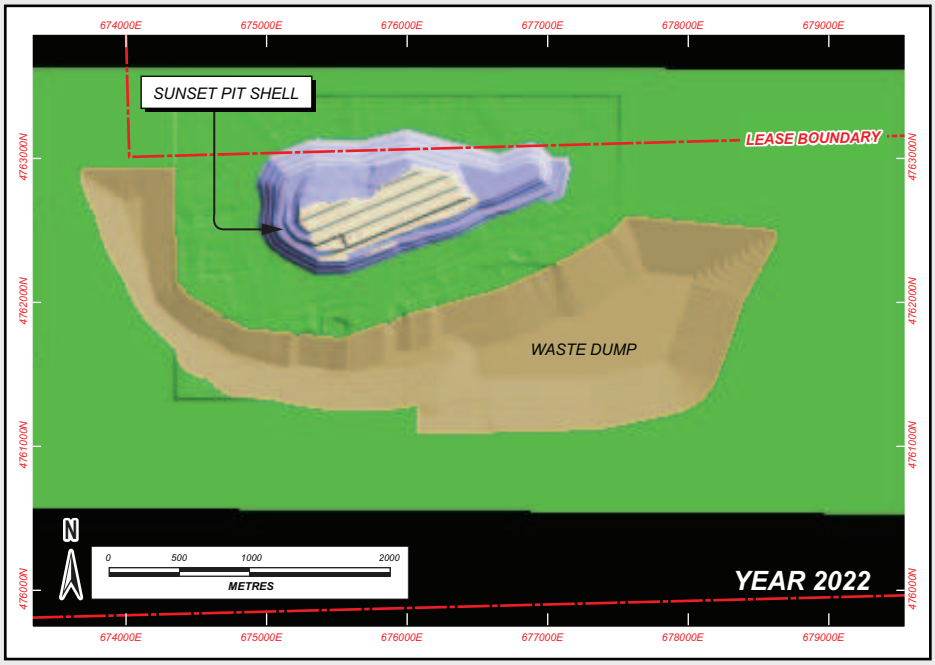
Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
Project : **OVOOT TOLGOI**	Date : March 2011
Figure : **SUNSET FIELD STAGE PLANS - 2016, 2017 & 2018**	FIGURE No. 22.35

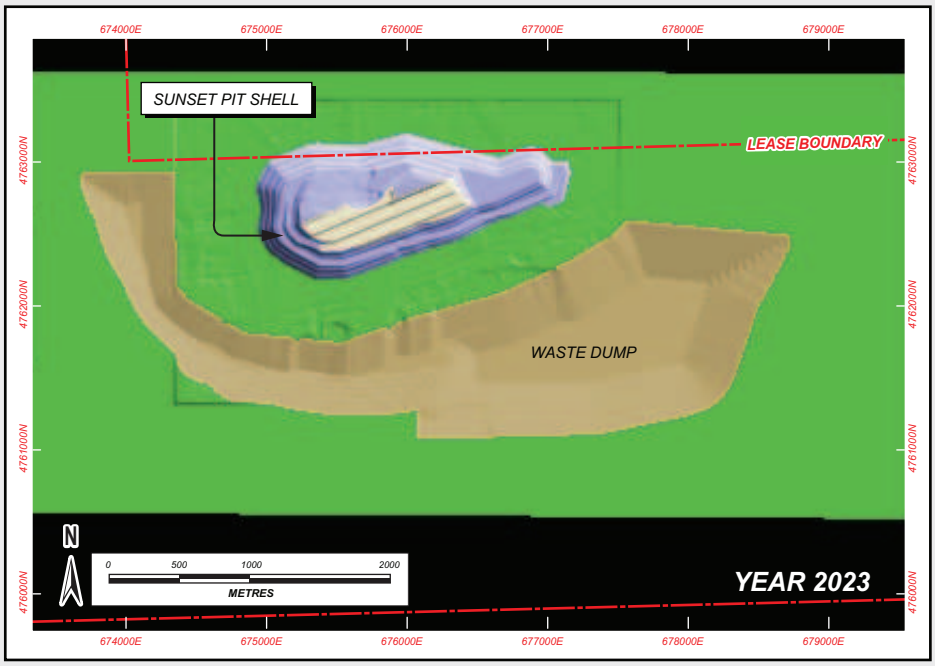


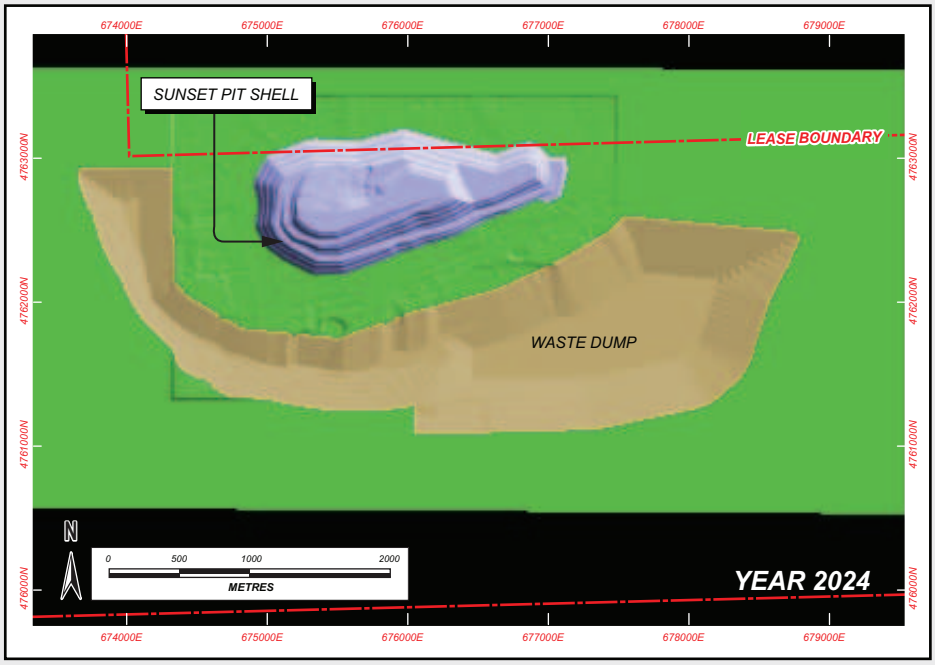




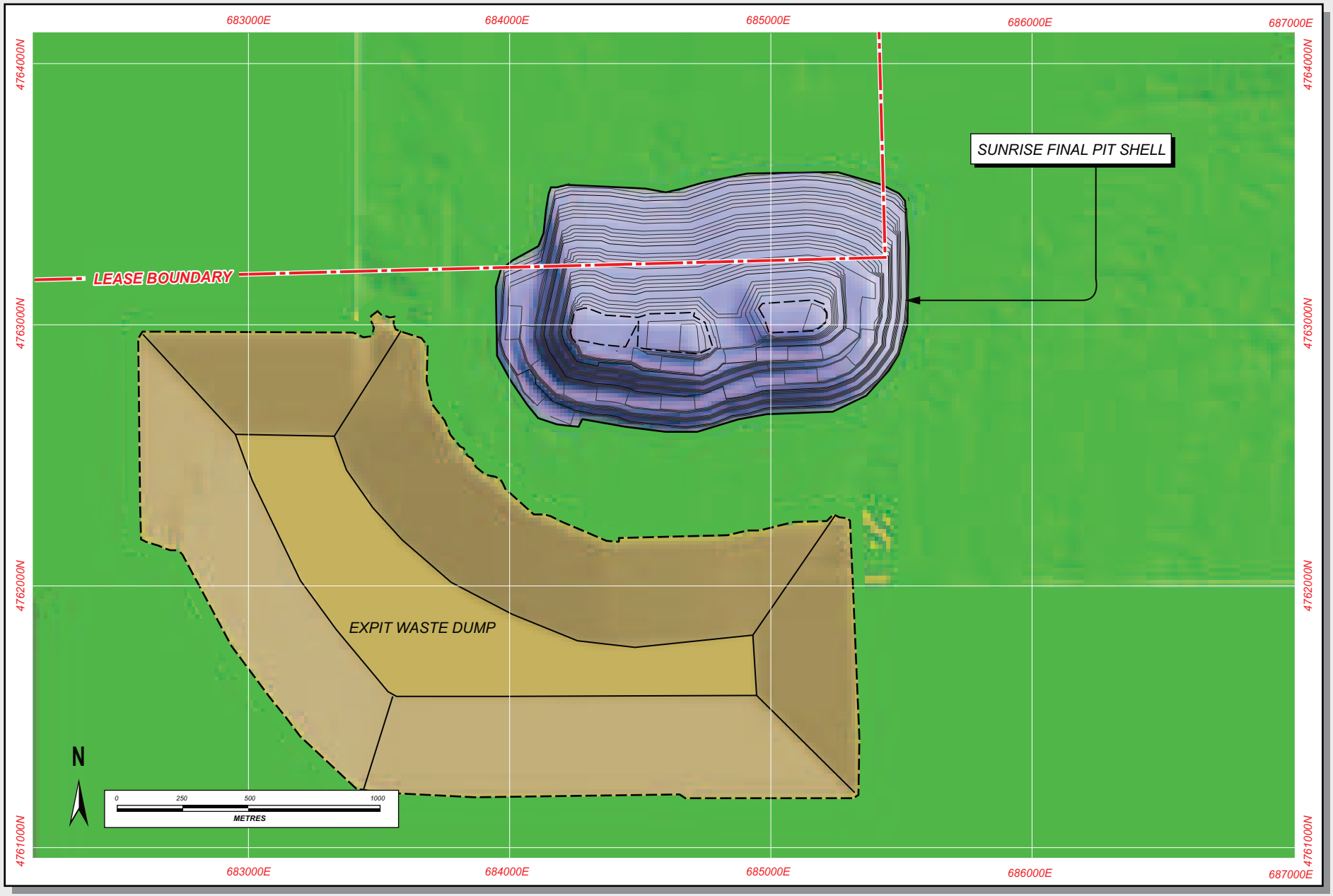
minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNSET FIELD STAGE PLANS - 2019, 2020 & 2021**	FIGURE No. 22.36



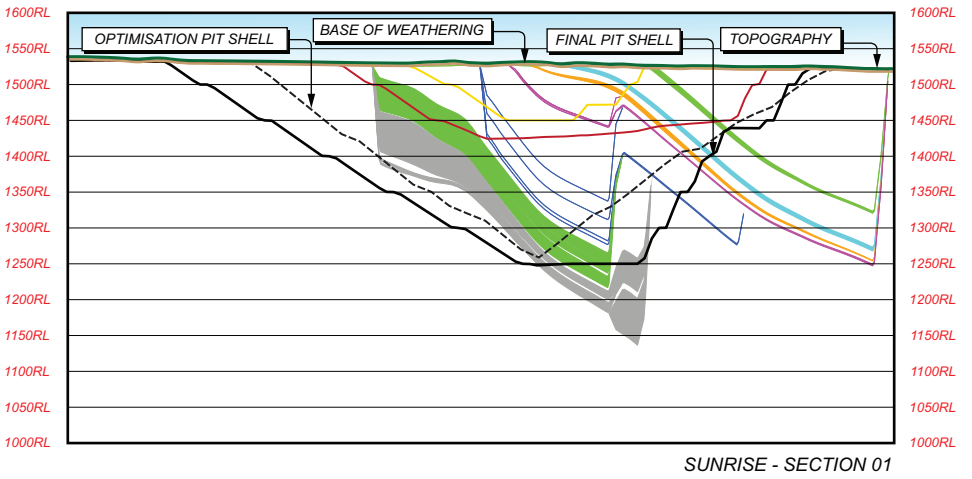




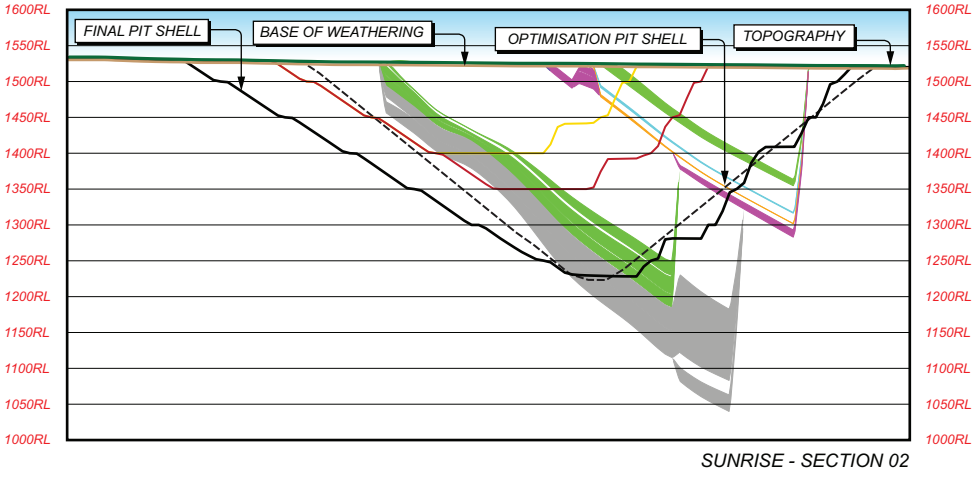
minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNSET FIELD STAGE PLANS - 2022, 2023 & 2024**	FIGURE No. 22.37



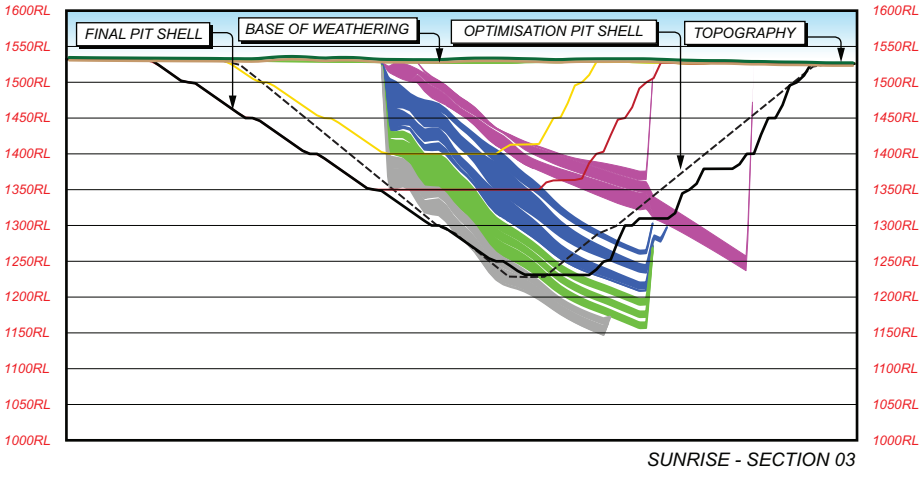
minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
	Project : **OVOOT TOLGOI**	Date : March 2011
SouthGobi Resources	Figure : **SUNRISE FIELD PIT AND DUMP**	FIGURE No. 22.38



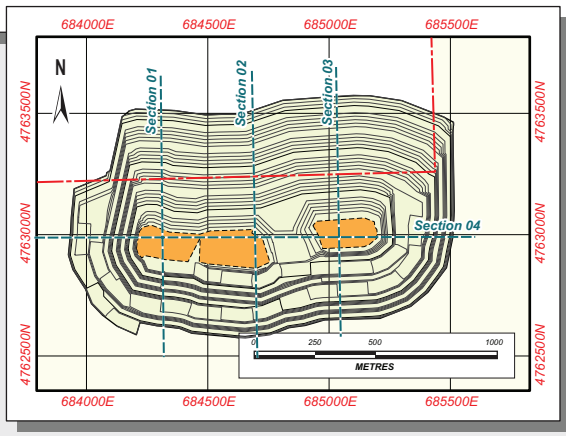
SUNRISE - SECTION 01



SUNRISE - SECTION 02



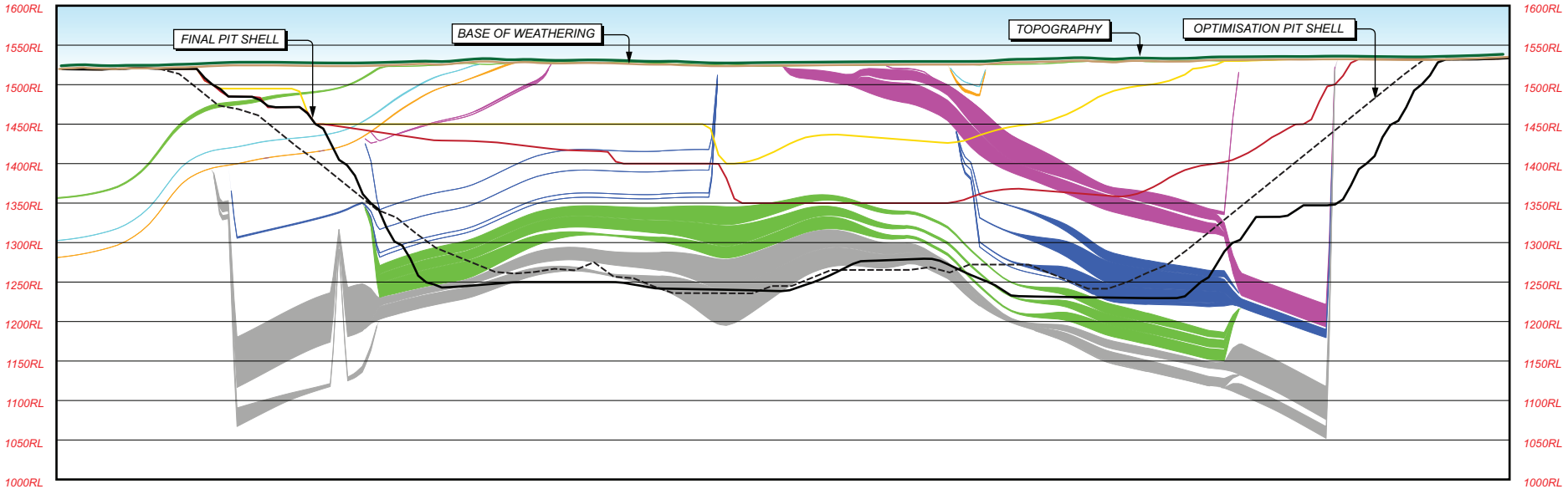
SUNRISE - SECTION 03



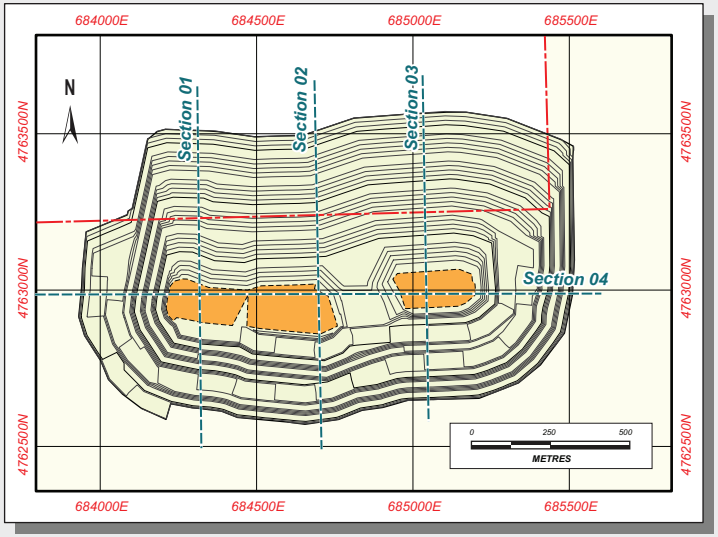
LEGEND

- Nested Shell 1
- Nested Shell 2
- Final Pit Shell
- Opt100 Pit Shell

minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNRISE FIELD CROSS-SECTIONS**	FIGURE No. 22.39



SUNRISE - SECTION 04



LEGEND

- Nested Shell 1
- Nested Shell 2
- Final Pit Shell
- Opt100 Pit Shell

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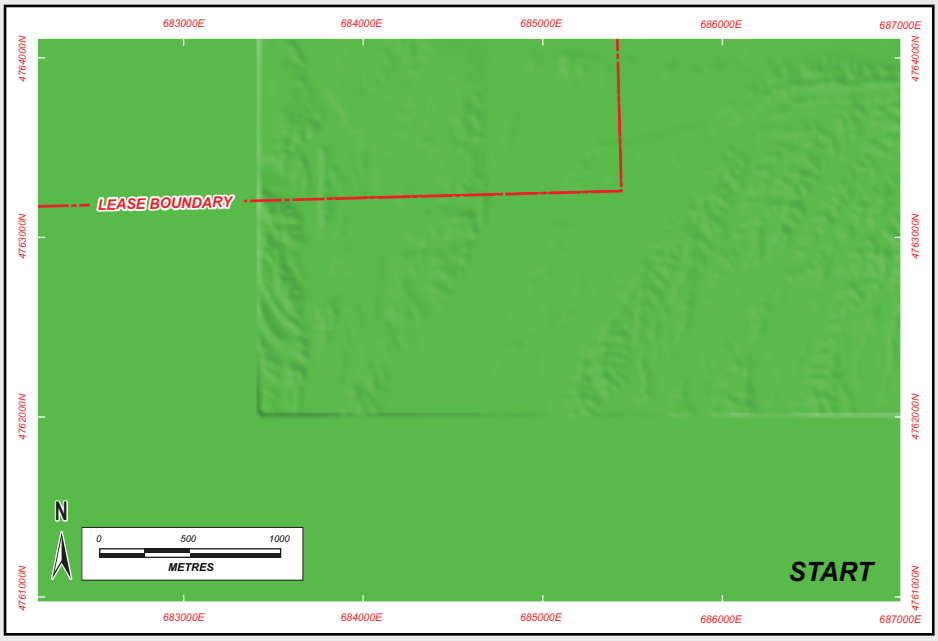
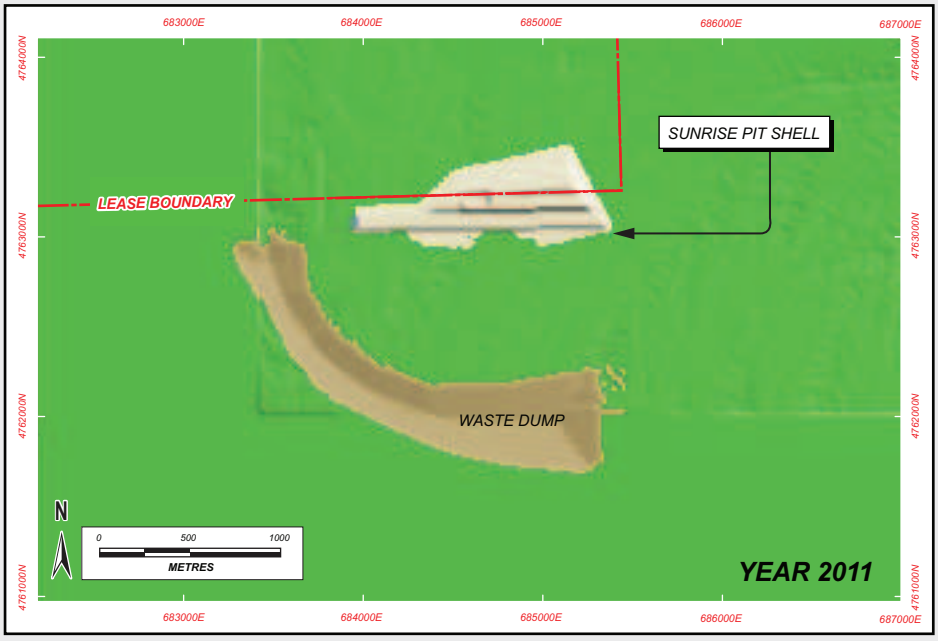
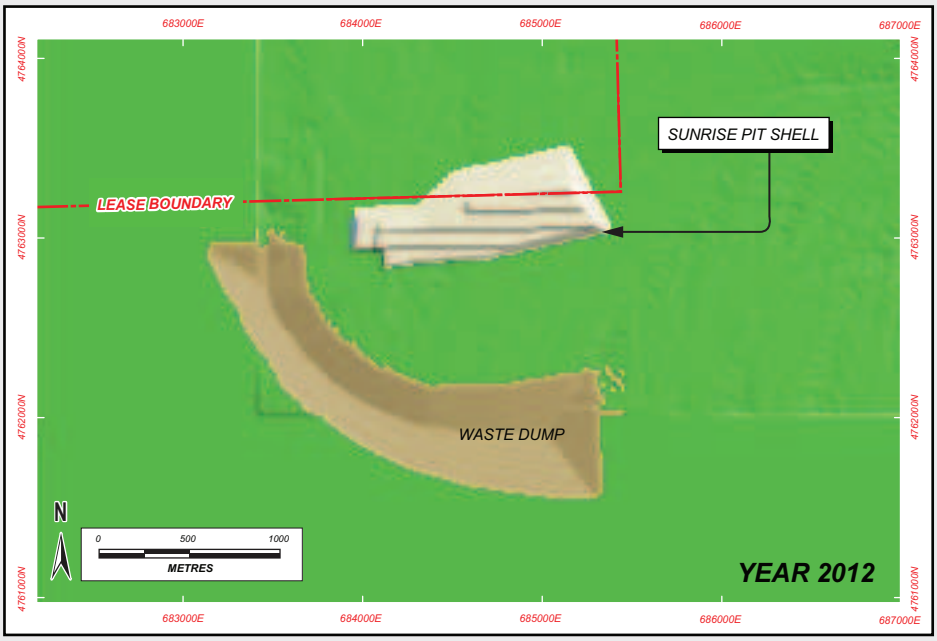
SouthGobi Resources

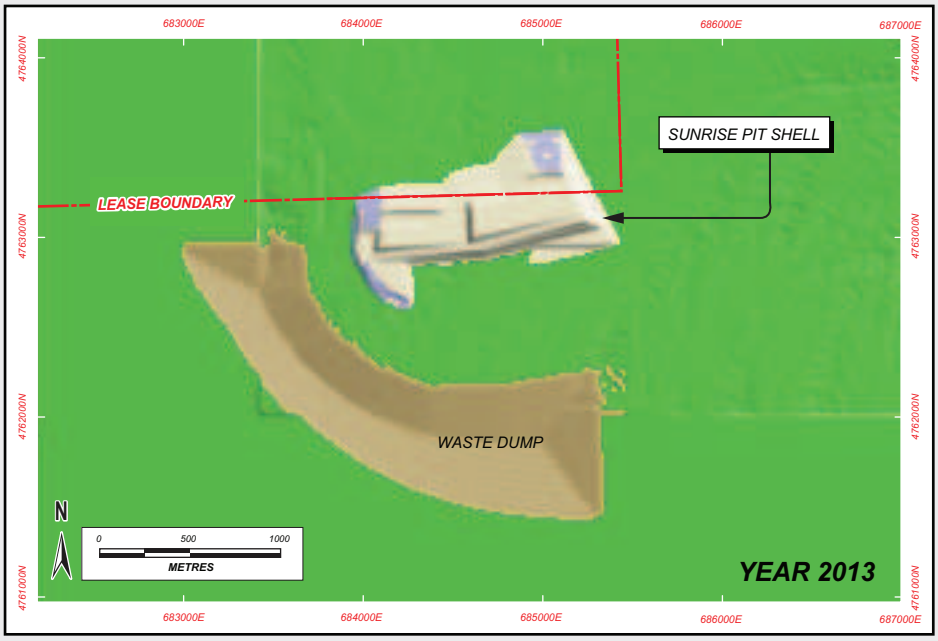
Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
Project : **OVOOT TOLGOI**	Date : March 2011
Figure : **SUNRISE FIELD LONG SECTION**	FIGURE No. 22.40

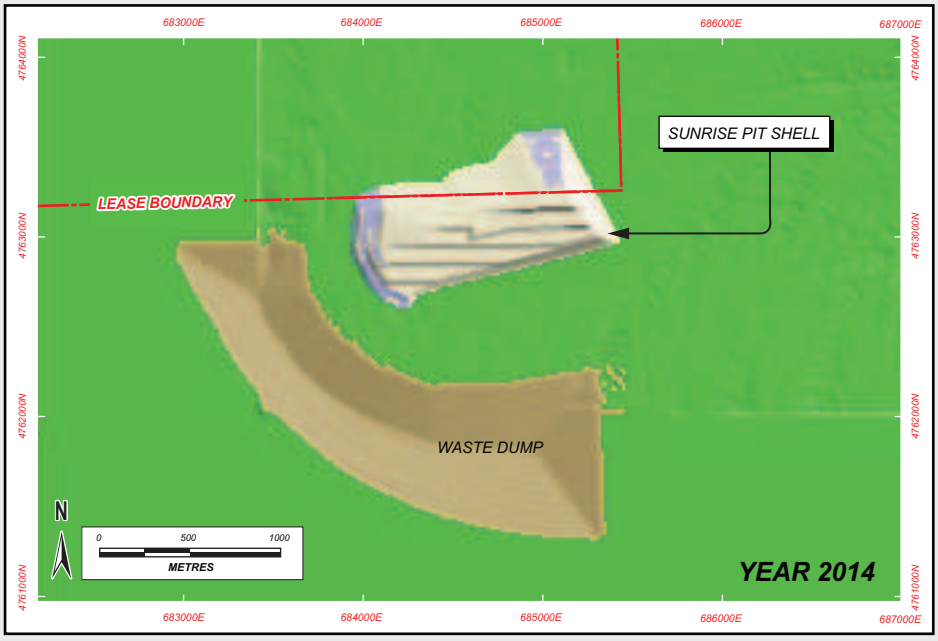


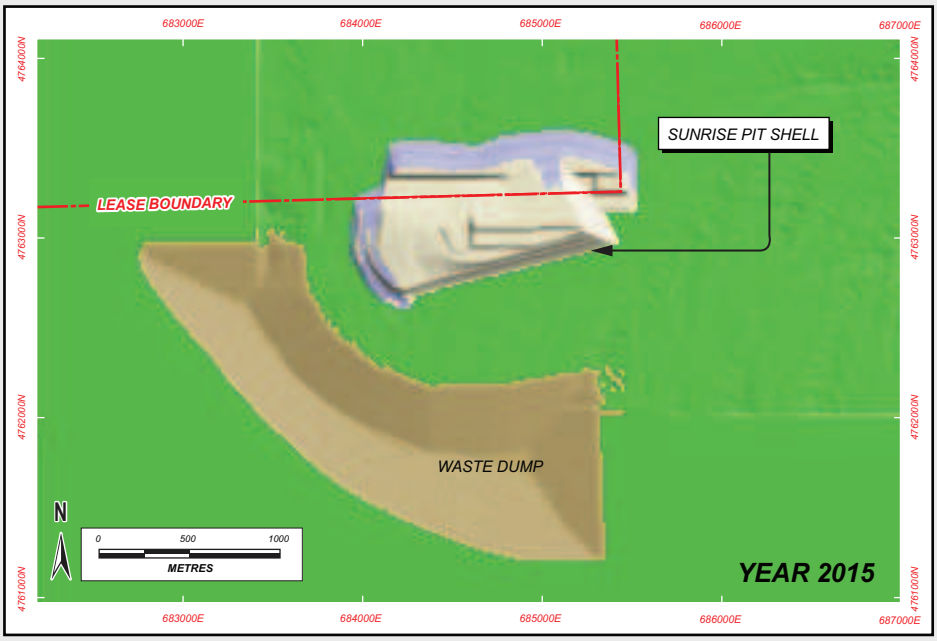




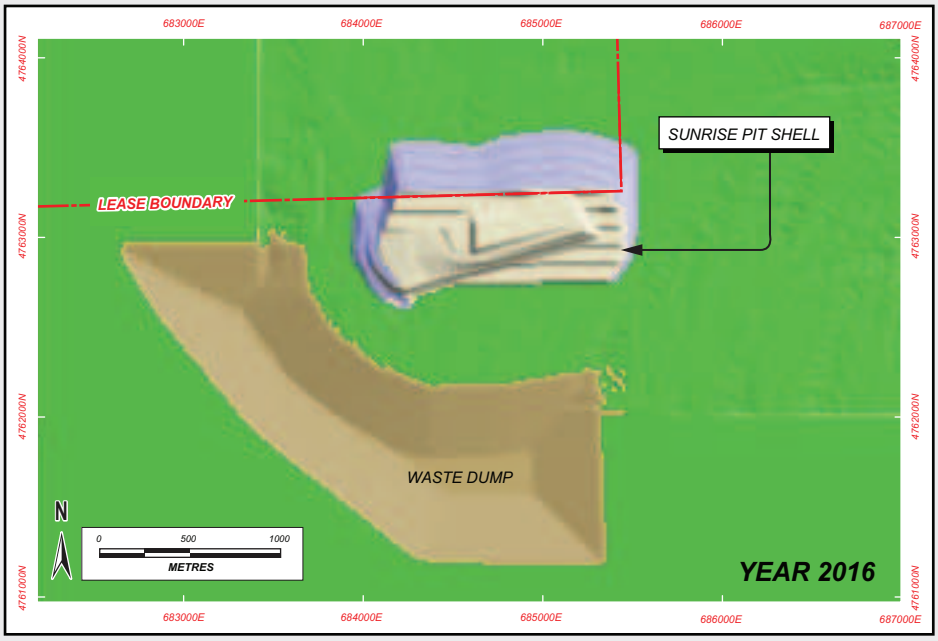
minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNRISE FIELD STAGE PLANS - START, 2011 & 2012**	FIGURE No. 22.41

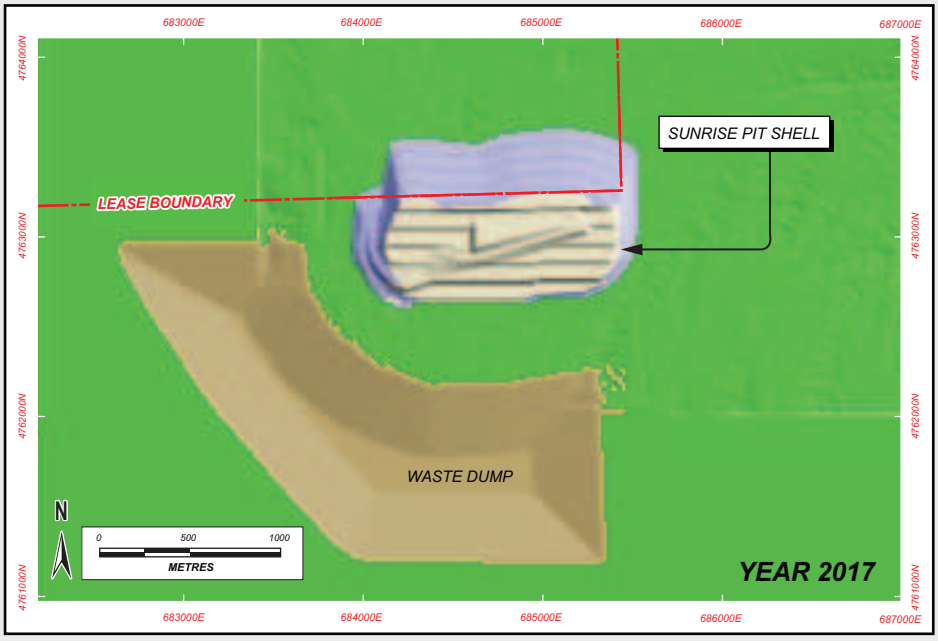


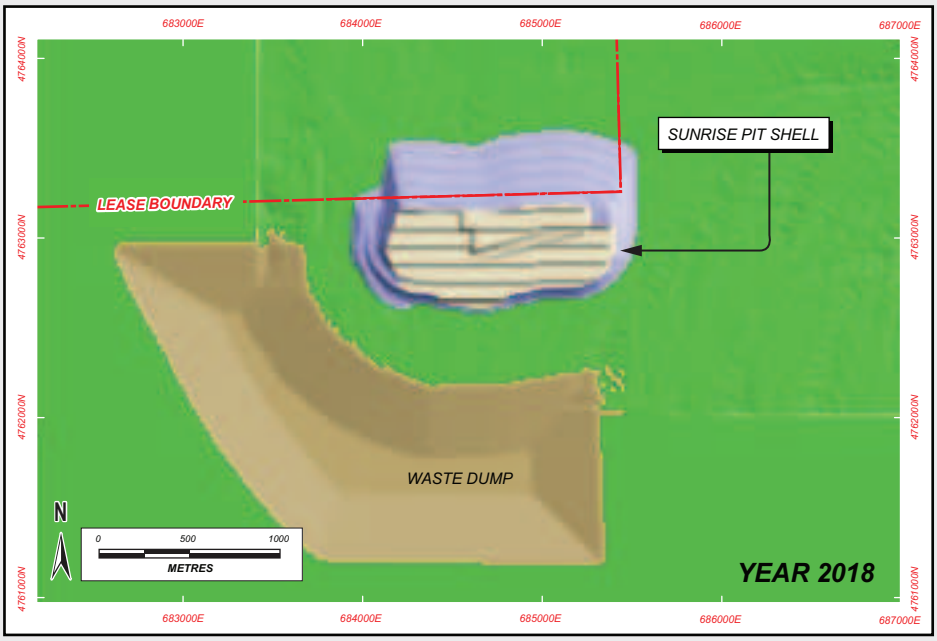




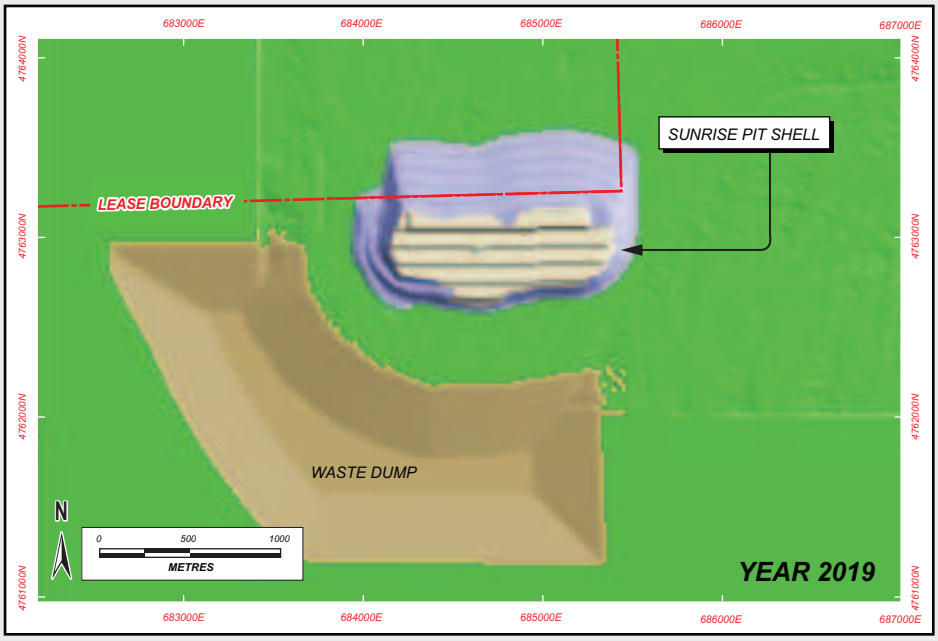
minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNRISE FIELD STAGE PLANS - 2013, 2014 & 2015**	FIGURE No. 22.42

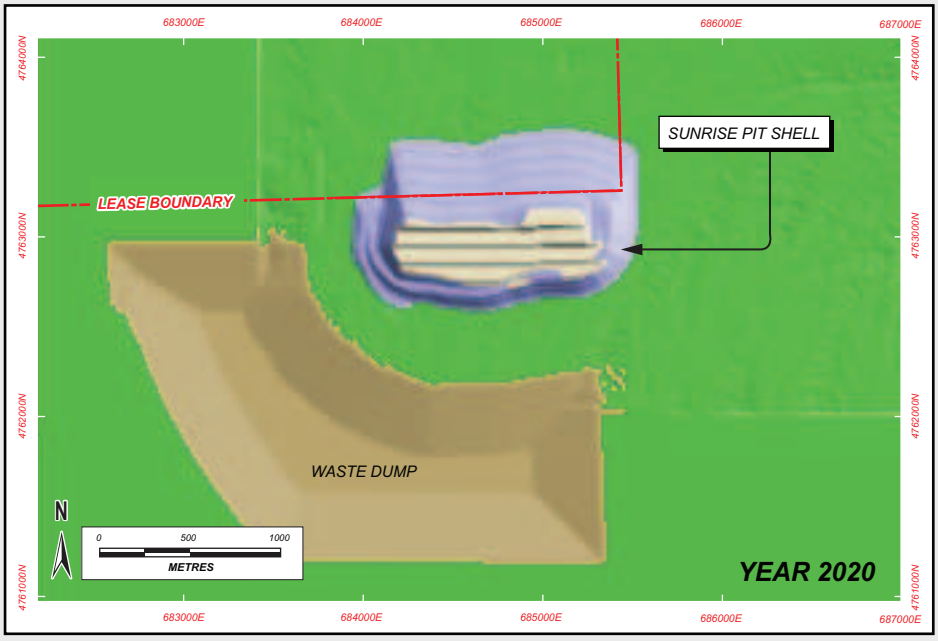


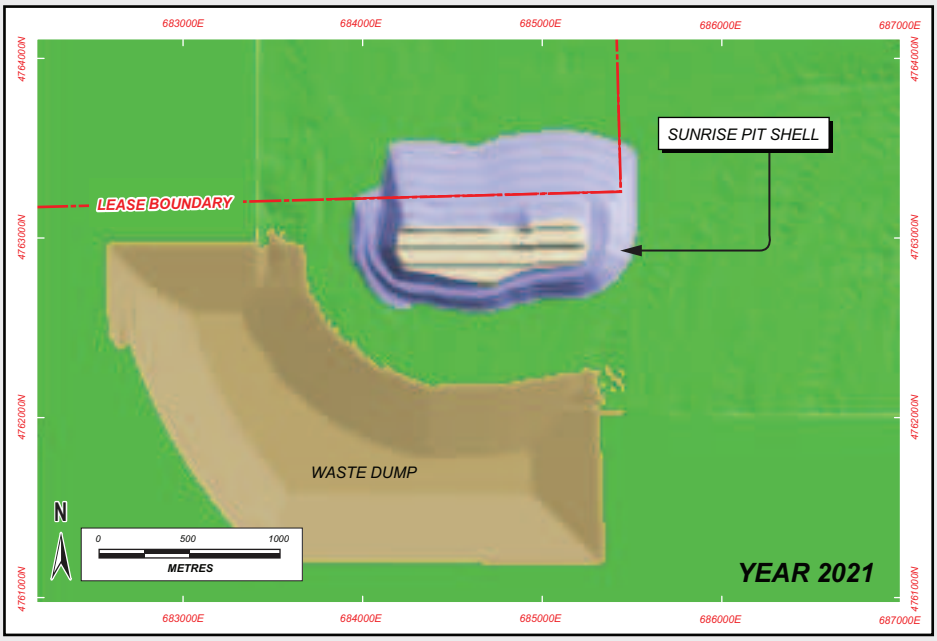




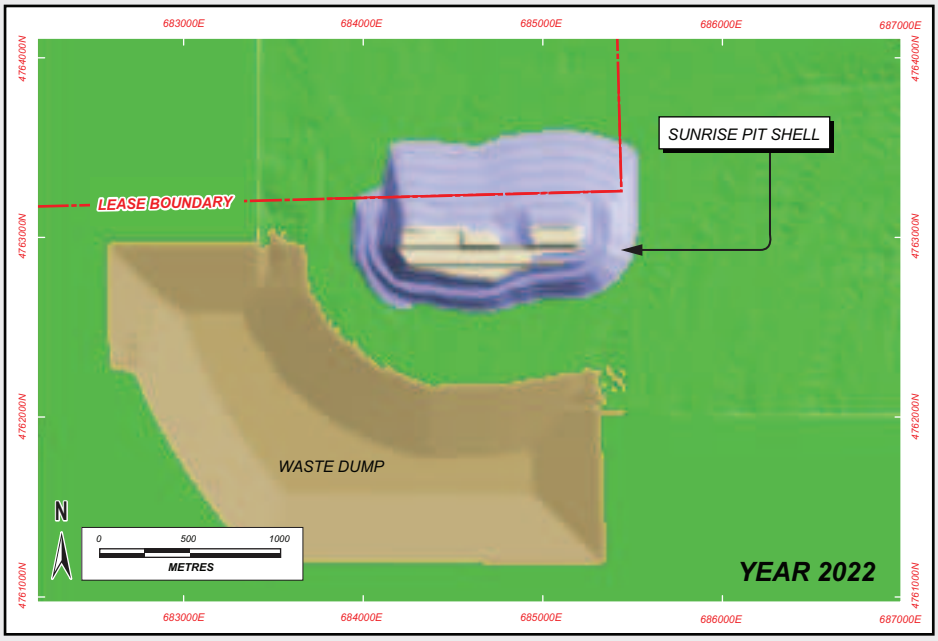
minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNRISE FIELD STAGE PLANS - 2016, 2017 & 2018**	FIGURE No. 22.43

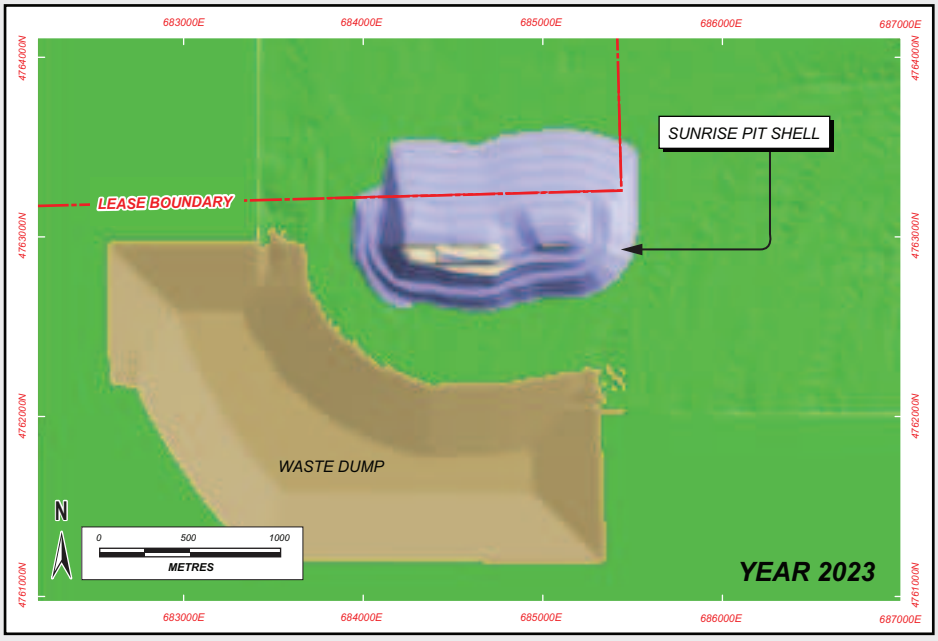


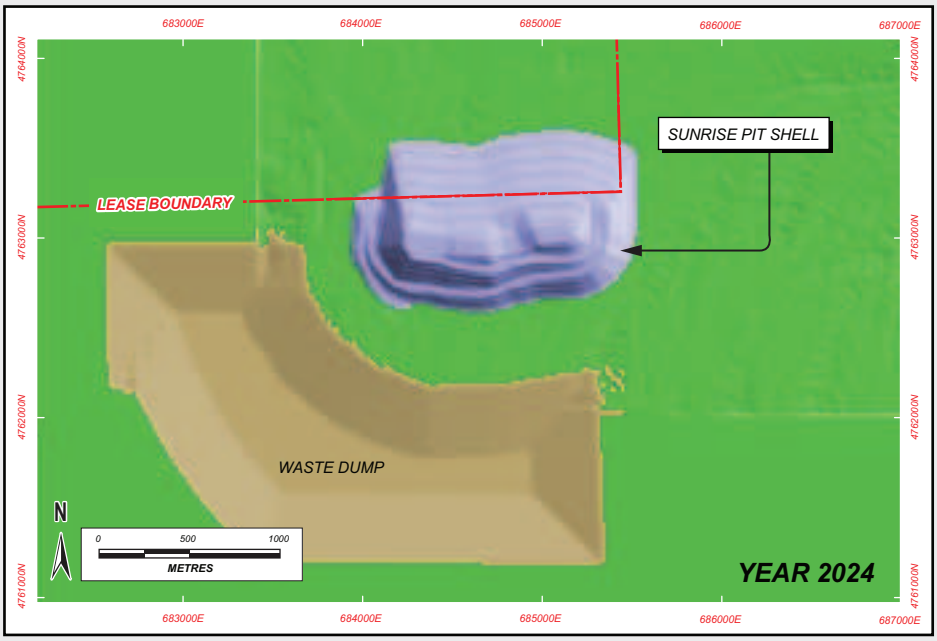




minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNRISE FIELD STAGE PLANS - 2019, 2020 & 2021**	FIGURE No. 22.44







minarco mineconsult	Client : **SOUTHGOBI RESOURCES LTD**	Job No. ADV-MN-10014
SouthGobi Resources	Project : **OVOOT TOLGOI**	Date : March 2011
	Figure : **SUNRISE FIELD STAGE PLANS - 2022, 2023 & 2024**	FIGURE No. 22.45

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24 DATE AND SIGNATURE PAGE

The effective date of publication of this technical report is March 28th 2011

Dated at Brisbane, Australia, this 28th March 2011

ORIGINAL SIGNED BY QP (Resources)

"Merryl Peterson"

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Merryl Peterson
Principal Geologist, Runge Limited
(Minarco-MineConsult is a trading division of Runge Limited)

Dated at Sydney, Australia, this 28th March 2011

ORIGINAL SIGNED BY QP (Reserves)

"Robert Mackenzie"

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Robert Mackenzie
Executive Consultant, Minarco-MineConsult

Dated at Sydney, Australia, this 28th March 2011

ORIGINAL SIGNED BY QP (Coal Processing)

"Peter Goodman"

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Peter Goodman
Principal Minerals Consultant, P.E.A.T. (Aust) Pty Ltd
(Sub-consultant to Minarco-MineConsult)

Dated at Sydney, Australia, this 28th March 2011

ORIGINAL SIGNED BY QP (Geotechnical)

"Ross Seedsman"

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Ross Seedsman
Consultant, Seedsman Geotechnical

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

CERTIFICATE OF QUALIFICATIONS

I, Merryl Peterson, am working as a Principal Geologist at Runge Limited, of Level 12, 333 Ann Street, Brisbane QLD 4000, Australia. Minarco–MineConsult is a trading division of Runge Limited. This certificate applies to the Resource Estimate in the Technical Report for the Ovoot Tolgoi Complex, Mongolia, prepared for SouthGobi Resources Ltd, dated 17 March 2011 (the "Technical Report"), do hereby certify that:

1. I am a registered member of the Australasian Institute of Mining and Metallurgy (AIMM).

2. I am a graduate of University of Western Australia and hold an Honours Degree in Geology.

3. I have been continuously and actively engaged in the assessment, development, and operation of mineral projects since my graduation from university in 1972.

4. I am a Qualified Person for the purposes of the National Instrument 43-101 of the Canadian Securities Administrators ("Ni 43-101").

5. I inspected the Ovoot Tolgoi Complex between the dates 18th to 22nd November 2010.

6. I am responsible for the preparation or the supervision and final editing of Resource portions of the Technical Report.

7. I have had no prior involvement with the properties that are the subject of the Technical Report.

8. 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 make the technical report not misleading. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

9. I am independent of SouthGobi Resources Ltd in accordance with the application of Section 1.4 of NI 43-101.

10. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange or any other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their website and accessible by the public, of the Technical Report.

Dated at Brisbane, Australia, this 28th March 2011

"Merryl Peterson"

_____

Merryl Peterson

CERTIFICATE OF QUALIFICATIONS

I, Robert Mackenzie, am working as an Executive Consultant at Minarco–Mine Consult., of Level 16 Australia Square, 264-278 George Street, Sydney NSW 2000, Australia. This certificate applies to the Reserve Estimate in the Technical Report for the Ovoot Tolgoi Complex, Mongolia, prepared for SouthGobi Resources Ltd, dated 17 March 2011 (the "Technical Report"), do hereby certify that:

1. I am a registered member of the Australasian Institute of Mining and Metallurgy (AIMM).

2. I am a graduate of University of Queensland and hold an Honours Degree in Mining Engineering.

3. I have been continuously and actively engaged in the assessment, development, and operation of mineral projects since my graduation from university in 1975.

4. I am a Qualified Person for the purposes of the National Instrument 43-101 of the Canadian Securities Administrators ("Ni 43-101").

5. I inspected the Ovoot Tolgoi Complex between the dates 14th to 26th December 2010.

6. I am responsible for the preparation or the supervision and final editing of Reserves portions of the Technical Report.

7. I have had no prior involvement with the properties that are the subject of the Technical Report.

8. 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 make the technical report not misleading. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

9. I am independent of SouthGobi Resources Ltd in accordance with the application of Section 1.4 of NI 43-101.

10. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange or any other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their website and accessible by the public, of the Technical Report.

Dated at Sydney, Australia, this 28th March 2011

"Robert Mackenzie"

_____

Robert Mackenzie

CERTIFICATE OF QUALIFICATIONS

I, Peter Goodman, am working as Principal Minerals Processing consultant, for P.E.A.T. (Aust) Pty Ltd of 8 Thynne Avenue, Norman Park , Queensland 4170, Australia. This certificate applies to the Coal Processing in the Technical Report for the Ovoot Tolgoi Complex, Mongolia, prepared for SouthGobi Resources Ltd, dated 17 March 2011 (the "Technical Report"), do hereby certify that:

1. I am a registered member of the Australian Coal Preparation Society (ACPS).

2. I hold a Degree in Applied Science (Process Engineering) and a Metallurgy Certificate (Wollongong).

3. I have been continuously and actively engaged in the assessment, development, and operation of mineral projects since my graduation from university in 1982.

4. I am a Qualified Person for the purposes of the National Instrument 43-101 of the Canadian Securities Administrators ("Ni 43-101").

5. I inspected the Ovoot Tolgoi Complex on the 2nd December 2010.

6. I am responsible for the preparation or the supervision and final editing of Coal Preparation portions of the Technical Report.

7. I have had no prior involvement with the properties that are the subject of the Technical Report.

8. 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 make the technical report not misleading. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

9. I am independent of SouthGobi Resources Ltd in accordance with the application of Section 1.4 of NI 43-101.

10. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange or any other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their website and accessible by the public, of the Technical Report.

Dated at Brisbane, Australia, this 28th March 2011
"Peter Goodman"

_____
Peter Goodman

CERTIFICATE OF QUALIFICATIONS

I, Ross Seedsman, am a director of Seedsman Geotechnics Pty Ltd and am providing specialist advice to Minarco–Mine Consult. This certificate applies to the Reserve Estimate in the Technical Report for the Ovoot Tolgoi Complex, Mongolia, prepared for SouthGobi Resources Ltd, dated 17 March 2011 (the "Technical Report"), do hereby certify that:

1. I am a registered member of the Australasian Institute of Mining and Metallurgy (AusIMM).
2. I am a graduate of University of Melbourne and hold Honours and Masters Degree in Geology. I also hold a Doctor of Philosophy degree in Civil Engineering from the University of Queensland.
3. I have been continuously and actively engaged in the assessment, development, and operation of mineral projects since 1978.
4. I am a Qualified Person for the purposes of the National Instrument 43-101 of the Canadian Securities Administrators ("Ni 43-101").
5. I inspected the Ovoot Tolgoi Complex between the dates 11-12 January 2011.
6. I am responsible for the preparation or the supervision and final editing of geotechnical portions of the Technical Report.
7. I have had no prior involvement with the properties that are the subject of the Technical Report.
8. 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 make the technical report not misleading. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of SouthGobi Resources Ltd in accordance with the application of Section 1.4 of NI 43-101.
10. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance with that instrument and form.
11. I consent to the filing of the Technical Report with any stock exchange or any other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their website and accessible by the public, of the Technical Report.

Dated at Sydney, Australia, this 28th March 2011

"Ross Seedsman"

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Ross Seedsman

25 APPENDIX A – GLOSSARY OF TERMS

The key terms used in this report include:

- **Company** means SouthGobiResources Ltd “SGQ” or “the Client”.
- **concentrate** a powdery product containing higher concentrations of minerals resulting from initial processing of mined ore to remove some waste materials; a concentrate is a semi-finished product, which would still be subject to further processing, such as smelting, to effect recovery of metal
- **contained metal** refers to the amount of pure metal equivalent estimated to be contained in the material based on the metal grade of the material.
- **element** Chemical symbols used in this report

  Au – Gold

  Ag – Silver

  As – Arsenic

  Cu – Copper

  Pb – Lead

  Zn – Zinc
- **exploration** activity to identify the location, volume and quality of a mineral occurrence
- **Exploration Target/Results** includes data and information generated by exploration programmes that may be of use to investors. The reporting of such information is common in the **early** stages of exploration and is usually based on limited surface chip sampling, geochemical and geophysical surveys. Discussion of target size and type must be expressed so that it cannot be misrepresented as an estimate of Mineral Resources or Ore Reserves.
- **exploration right** the licensed right to identify the location, volume and quality of a mineral occurrence
- **flotation** is a separation method for to the recovery of minerals using reagents to create a froth that collects target minerals
- **gangue** is a mining term for waste rock
- **grade** any physical or chemical measurement of the concentration of the material of interest in samples or product. The units of measurement should be stated when figures are reported
- **grind** means to crush, pulverize, or reduce to powder by friction, especially by rubbing between two hard surfaces
- **In situ** means rock or mineralisation in place in the ground
- **In Situ Quantities** Estimates of total in ground tonnes and grade which meet the requirements of the PRC Code or other international codes for reserves but do not meet either NI 43-101 or Joint Ore Reserves Committee's recommendations
- **Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.
- **Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.
- **ITR** stands for Independent Technical Review
- **ITRR** stands for Independent Technical Review Report

- **km** stands for kilometre
- **kt** stands for thousand tonnes
- **lb** stands for pound, a unit of weight equal to 453.592 grams
- **m** stands for metres
- **Mineral Resource** is a concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.
- **Measured Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.
- **metallurgy** Physical and/or chemical separation of constituents of interest from a larger mass of material. Methods employed to prepare a final marketable product from material as mined. Examples include screening, flotation, magnetic separation, leaching, washing, roasting etc.
- **mine production** is the total raw production from any particular mine
- **Mineable Quantities** Estimates of in ground tonnes and grades which are recoverable by mining
- **Mineral Reserve** is the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when the material is mined.
- **mineral right** for purposes of this report, mineral right includes exploration right, mining right, and leasehold exploration or mining right
- **mineralisation** any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest. The term is intended to cover all forms in which mineralisation might occur, whether by class of deposit, mode of occurrence, genesis or composition
- **mining rights** means the rights to mine mineral resources and obtain mineral products in areas where mining activities are licensed
- **MMC** refers to Minarco-MineConsult
- **mRL** means metres above sea level
- **Mt** stands for million tonnes
- **Mtpa** means million tonnes per annum
- **NI 43-101** Means National Instrument 43-101
- **OC** Means open cut mining which is mining from a pit open to surface and usually carried out by stripping of overburden materials
- **ore** is the portion of a reserve from which a metal or valuable mineral can be extracted profitably under current or immediately foreseeable economic conditions
- **ore processing** is the process through which physical or chemical properties, such as density, surface reactivity, magnetism and colour, are utilized to separate and capture the useful components of ore, which are then concentrated or purified by means of flotation, magnetic selection, electric selection, physical selection, chemical selection, reselection, and combined methods
- **ore selection** the process used during mining to separate valuable ore from waste material or barren rock residue
- **ore t** stands for ore tonne

• **primary mineral deposits**	are mineral deposits formed directly from magmas or hydrothermal processes
• **Probable Ore Reserve**	A 'Probable Mineral Reserve' is the economically mineable part of an Indicated and, in some circumstances, a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.
• **project**	means a deposit which is in the pre-operating phase of development and, subject to capital investment, feasibility investigations, statutory and management approvals and business considerations, may be commissioned as a mine
• **Proven Ore Reserve**	A 'Proven Mineral Reserve' is the economically mineable part of a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.
• **raw ore**	is ore that has been mined and crushed in an in-pit crusher, but has not been processed further
• **recovery**	The percentage of material of initial interest that is extracted during mining and/or processing. A measure of mining or processing efficiency
• **regolith**	is a geological term for a cover of soil and rock fragments overlying bedrock
• **Qualified Person (QP)**	A "Qualified Person" means an individual who is an engineer or geoscientist with at least five years of experience in mineral exploration, mine development or operation or mineral project assessment, or any combination of these; has experience relevant to the subject matter of the mineral project and the technical report; and is a member or licensee in good standing of a professional association.
• **Resources**	A Mineral Resource is a concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.
• **RL**	means Reduced Level, an elevation above sea level
• **RMB**	stands for Chinese Renminbi Currency Unit;
• **RMB/t**	stands for Chinese Renminbi per material tonne
• **ROM**	stands for run-of-mine, being material as mined before beneficiation
• **saprolite**	is a geological term for weathered bedrock
• **secondary mineral deposits**	are mineral deposits formed or modified as a result of weathering or erosion of primary mineral deposits
• **shaft**	a vertical excavation from the surface to provide access to the underground mine workings
• **sq.km**	Square Kilometre
• **t**	stands for tonne
• **t/bcm**	stands for tonnes per bank cubic metre (i.e. tonnes in situ) a unit of density
• **tonnage**	An expression of the amount of material of interest irrespective of the units of measurement (which should be stated when figures are reported)
• **tonne**	refers to metric tonne
• **tpa**	stands for tonnes per annum
• **tpd**	stands for tonnes per day
• **UG**	means underground mining which is an opening in the earth accessed via shafts, declines or adits below the land surface to extract minerals
• **upgrade ratio**	is a processing factor meaning ROM Grade% / Product Grade %
• **USD**	stands for United States dollars

- **$** refers to United States dollar currency Unit

26 APPENDIX B – DETAILED SEAM TABLES

Table B1

Sunset Field Coal Seam Characteristics

Seam	No. holes	Thickness (m)			Interburden (m)
		Mean	Minimum	Maximum	Mean
1062	3	1.27	1.00	1.52	
1061	3	0.45	0.38	0.60	2.71
106	7	2.11	0.60	3.76	
105	12	3.14	1.12	6.30	9.73
1042	10	1.52	0.60	3.80	13.05
1041	14	2.68	0.00	6.30	4.15
104	5	5.22	1.50	10.29	
103U	14	1.97	0.80	5.12	20.66
1032	14	2.61	0.80	6.04	3.63
1031	13	2.37	0.50	5.30	2.18
103	41	4.14	0.50	10.00	
1022	14	2.65	0.50	7.70	3.98
1021	14	2.97	1.00	7.40	1.31
102	44	3.24	0.58	8.40	
1012	23	3.41	0.50	7.76	4.98
1011	25	2.96	0.40	7.31	1.42
101	47	4.45	0.50	12.30	
952	15	1.75	0.76	3.40	35.50
951	16	2.28	0.00	5.41	3.07
95	38	1.35	0.00	3.62	
94U	8	1.29	0.50	2.33	5.18
942	68	6.09	1.20	11.79	2.07
941	79	4.28	0.00	17.40	2.62
940	23	1.86	0.70	6.80	2.36
94	17	9.35	3.85	18.64	
932	64	2.84	0.40	9.50	4.53
931	65	1.70	0.30	5.80	2.99
93	20	3.45	0.30	9.60	
92U	43	1.73	0.40	6.50	4.79
922	39	5.85	1.20	12.50	2.93
921	62	7.85	0.70	32.90	2.07
920	34	2.41	0.50	7.80	0.93
92	40	11.93	4.20	39.20	
91	47	2.41	0.50	5.38	7.62
902	4	1.22	0.30	2.30	4.36
901	4	2.04	0.60	4.00	0.98
90	6	1.91	1.18	3.50	
82	48	2.92	0.60	13.60	2.55
81	64	4.96	0.60	27.70	1.56
80	47	1.27	0.00	4.10	1.46
8	41	4.08	0.00	12.00	

Seam	No. holes	Thickness (m)			Interburden (m)
		Mean	Minimum	Maximum	Mean
5U33	3	2.91	1.90	3.44	24.80
5U32	4	1.55	0.70	2.67	5.92
5U31	9	1.35	0.00	3.31	4.63
5U3	8	4.05	1.00	8.67	
5U222	40	6.23	0.00	53.18	14.87
5U221	35	4.80	0.00	26.72	7.61
5U220	9	2.04	0.46	3.60	2.87
5U22	21	35.86	0.00	100.03	
5U212	33	4.55	0.00	27.40	7.74
5U211	44	3.22	0.00	20.00	4.22
5U210	14	3.08	0.00	22.11	2.66
5U21	27	24.25	7.55	69.84	
5U2	39	51.97	7.40	106.70	
5U122	28	2.59	0.30	6.38	7.36
5U121	27	2.12	0.42	5.49	1.88
5U12	16	11.30	1.18	78.52	
5U112	25	4.02	1.00	11.06	3.84
5U111	52	4.01	0.00	33.31	1.21
5U110	4	2.66	0.54	5.80	1.77
5U11	27	8.83	1.50	18.16	
5U1	39	21.43	8.46	57.31	
5U	12	52.83	34.70	79.72	
5L32	3	1.33	1.00	1.60	31.36
5L31	3	1.57	1.22	2.00	2.90
5L3	34	2.09	0.00	7.06	
5L23U	1	1.90	1.90	1.90	
5L232	31	5.99	0.00	14.30	1.65
5L231	26	3.90	0.00	16.90	1.65
5L230	6	2.48	0.47	3.70	0.74
5L23	9	10.40	4.84	29.00	
5L222	26	1.93	0.50	7.89	1.66
5L221	28	1.64	0.00	5.23	0.84
5L22	11	7.31	0.48	33.11	
5L21U	5	1.60	0.45	3.97	1.53
5L212	17	4.74	0.00	14.50	1.74
5L211	24	5.23	0.00	12.64	4.02
5L210	10	1.22	0.00	3.40	2.93
5L21	19	14.84	6.82	51.00	
5L2	1	54.84	54.84	54.84	
5L122	7	3.25	0.50	6.90	6.20
5L121	8	1.93	0.00	5.40	1.99
5L12	19	2.18	1.20	4.14	
5L112	6	2.90	0.70	7.40	6.82
5L111	24	2.39	0.00	7.17	1.12
5L110	10	1.07	0.00	3.94	0.97
5L11	11	5.17	0.00	13.00	
5L1	1	43.20	43.20	43.20	
5L	3	118.81	76.04	140.68	

**Based on apparent thickness from drill intercepts*

Table B2

Sunrise Field Coal Seam Characteristics

Seam	No.holes	Thickness (m)			Interburden (m)
		Mean	Minimum	Maximum	Mean
81	4	2.75	0.00	11.01	
73	3	1.79	1.07	2.83	30.12
72	2	5.29	4.34	6.23	20.35
71	2	8.19	2.04	14.34	17.25
6U3	1	1.57	1.57	1.57	84.74
6U2	2	3.39	0.95	5.82	2.57
6U1	4	9.09	5.63	13.26	0.88
6U0	4	3.85	1.56	5.70	9.09
6M	6	2.61	0.10	4.59	13.72
6L2	9	3.40	0.40	11.00	15.37
6L1	13	5.78	0.00	17.86	13.92
6L0	9	11.74	0.50	52.90	22.64
590U	24	7.14	1.00	22.45	86.77
580	28	5.63	1.20	49.00	51.31
570	37	7.09	0.60	30.70	9.65
5U23	13	7.84	2.46	19.92	6.59
5U22	38	15.91	1.04	40.20	1.97
5U21	40	16.55	0.10	35.92	2.38
5U20	10	6.12	2.18	11.54	3.99
5U2	3	32.41	6.24	72.70	
5U122	6	3.02	0.00	11.55	23.28
5U121	15	6.64	0.00	26.92	20.64
5U12	8	37.47	27.80	61.68	
5U11	12	19.09	0.00	39.90	20.50
5U1	10	47.40	3.61	83.00	
5U0	14	5.40	0.00	15.21	2.88
5L23	48	12.78	2.80	34.50	9.55
5L22	95	29.92	0.90	124.00	3.25
5L21	42	15.12	3.00	31.30	1.82
5L2	19	39.18	20.62	67.47	
5L122	5	11.11	2.54	14.23	3.25
5L121	5	9.28	2.00	16.16	1.14
5L12	38	15.28	5.00	27.30	
5L11	42	18.16	1.73	37.04	3.60
5L1	31	35.53	18.00	86.93	
5L0U	7	3.69	1.92	5.00	1.93
5L0L	31	14.50	1.20	66.00	8.13

**Based on apparent thickness from drill intercepts*

Table B3

Sunset - Summary of Drillhole Quality Data

Seam	No.holes	Total Moisture % ar			Inherent Moisture % ad			Ash % ad			Volatile Matter % ad			Total Sulphur % ad			Calorific value kcal/kg ad			FSI			Relative Density		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
1062	2	2.8	8.5	5.7	0.4	1.5	1.0	16.8	30.6	23.7	-	-	-	0.73	2.72	1.73	4726	6620	5673	0.0	1.0	0.5	1.44	1.62	1.53
1061	2	2.4	2.8	2.6	0.4	0.4	0.4	16.8	24.7	20.7	-	-	-	1.63	2.72	2.18	5559	6620	6090	1.0	1.5	1.3	1.44	1.54	1.49
106	3	2.1	6.2	4.8	0.3	1.2	0.8	11.7	22.4	18.3	32.2	32.4	32.3	1.03	1.64	1.35	6022	7066	6403	3.0	3.0	3.0	1.38	1.49	1.45
105	5	2.4	7.7	4.5	0.3	1.7	1.1	15.3	25.6	20.1	29.9	34.0	31.9	0.93	1.57	1.26	5843	6784	6238	1.5	2.1	1.9	1.39	1.55	1.47
1042	6	2.2	8.4	4.3	0.6	1.7	1.1	16.6	22.9	20.0	31.0	34.5	32.6	0.92	1.73	1.31	6039	6348	6168	1.0	3.0	2.3	1.43	1.52	1.46
1041	7	2.4	11.6	5.8	0.4	1.7	1.1	12.3	38.2	23.9	26.6	32.9	29.8	0.70	2.09	1.17	4588	6812	5861	1.0	3.2	1.8	1.38	1.66	1.50
104	1			4.5			1.4			8.0			35.4			1.71			7498			4.5			1.31
103U	5	2.3	7.9	4.5	0.9	1.9	1.3	21.1	30.8	26.9	28.9	31.9	30.0	0.73	1.47	1.10	4410	6111	5465	1.0	2.5	1.6	1.48	1.62	1.54
1032	3	2.2	8.1	5.5	0.8	1.9	1.5	14.3	34.5	23.3	28.4	31.9	30.2	0.39	0.87	0.70	4766	6768	5882	2.0	2.5	2.2	1.40	1.68	1.52
1031	3	2.2	8.1	5.5	0.8	1.9	1.5	14.3	34.5	23.3	28.4	31.9	30.2	0.39	0.87	0.70	4766	6768	5882	2.0	2.5	2.2	1.40	1.68	1.52
103	16	1.9	10.0	5.5	0.4	1.8	1.3	7.2	30.7	17.3	29.3	36.6	32.3	0.75	1.74	1.21	5451	7554	6568	1.5	6.0	3.9	1.30	1.58	1.41
1022	6	2.7	10.0	5.3	1.0	1.4	1.1	8.5	32.1	21.0	24.8	36.3	31.1	0.89	1.54	1.11	5534	7524	6270	1.5	6.5	4.3	1.30	1.54	1.44
1021	6	2.7	9.0	5.2	1.0	1.4	1.1	8.1	28.5	17.2	28.8	36.2	33.0	0.94	1.81	1.16	5592	7414	6581	1.5	7.4	4.8	1.31	1.54	1.41
102	12	2.3	11.0	6.0	0.4	1.9	1.4	11.2	30.4	18.6	29.0	36.3	32.5	0.55	1.75	1.05	5331	7164	6375	1.0	4.5	2.8	1.36	1.58	1.45
1012	9	2.3	10.1	6.3	0.9	1.9	1.3	12.5	26.6	17.9	30.0	34.8	32.5	0.84	1.50	1.06	5616	7098	6540	1.4	6.8	3.6	1.35	1.53	1.42
1011	10	2.5	14.7	7.0	0.9	2.0	1.4	6.2	24.5	14.4	31.7	35.1	33.3	0.81	1.59	1.20	5782	7647	6856	3.0	7.0	4.4	1.30	1.51	1.38
101	15	2.0	9.7	5.3	0.4	1.8	1.2	9.4	38.1	18.3	25.4	34.6	30.6	0.75	2.42	1.37	4732	7417	6422	1.5	6.5	2.9	1.33	1.68	1.43
952	4	2.4	5.1	3.6	0.7	1.7	1.3	14.6	26.3	20.1	30.8	32.6	31.7	1.59	1.86	1.75	5508	6814	6265	1.0	2.5	1.8	1.38	1.56	1.46
951	4	2.4	6.9	4.6	0.7	1.9	1.4	12.0	26.0	17.6	29.6	34.2	31.9	1.08	1.86	1.49	5926	6933	6496	1.5	4.4	2.8	1.37	1.50	1.43
95	8	2.4	5.6	4.1	1.0	2.1	1.4	9.4	27.6	19.0	29.5	30.8	30.4	1.27	1.97	1.66	5615	7378	6459	1.0	5.0	2.5	1.34	1.58	1.43
94U	2	3.4	6.5	5.0	1.4	1.4	1.4	12.7	19.4	16.1	34.0	34.0	34.0	1.65	2.30	1.97	6436	7013	6725	2.5	2.5	2.5	1.38	1.44	1.41
942	25	2.7	9.8	5.1	0.8	2.2	1.4	7.8	20.8	15.0	31.0	34.8	32.9	0.65	2.90	1.45	6196	7528	6739	1.2	7.4	4.6	1.32	1.47	1.40
941	28	2.1	10.6	4.9	0.5	2.4	1.3	9.5	40.1	18.9	25.2	34.5	31.6	0.68	3.11	1.38	4518	7332	6417	1.0	7.7	4.2	1.32	1.68	1.44
940	9	3.0	5.3	4.5	1.0	1.8	1.3	12.6	40.1	26.5	25.3	33.5	29.5	0.68	2.27	1.35	4518	7203	5818	2.0	6.5	4.1	1.31	1.68	1.49
94	6	2.4	7.0	4.6	0.6	1.7	1.1	10.1	17.3	13.7	33.1	34.0	33.6	0.78	2.17	1.23	6449	7308	6871	2.4	7.5	5.3	1.33	1.45	1.39
932	22	2.3	7.8	4.6	0.8	2.2	1.5	6.8	42.5	23.8	22.6	33.4	29.3	0.77	1.88	1.30	4508	7364	6070	2.0	7.2	3.7	1.30	1.66	1.47
931	20	2.3	9.9	4.9	0.8	2.2	1.4	11.7	39.9	26.5	23.7	33.5	28.7	0.65	2.75	1.23	4190	7032	5771	1.5	7.0	3.6	1.37	1.68	1.51
93	5	2.7	10.3	6.2	0.4	1.7	1.2	11.6	35.1	25.4	26.6	30.9	28.9	0.90	1.98	1.23	4941	7038	5810	1.5	2.9	2.1	1.37	1.63	1.52
92U	13	2.3	7.6	4.6	0.9	2.0	1.3	8.4	35.6	21.7	24.3	36.1	30.6	0.54	2.70	1.34	4940	7281	6197	1.0	7.4	3.2	1.33	1.66	1.45
922	17	2.2	12.7	5.8	0.7	1.9	1.2	10.4	20.7	14.9	30.1	35.7	32.4	0.61	2.40	1.22	6067	7221	6776	1.4	7.0	4.7	1.35	1.48	1.40
921	24	2.3	11.0	5.3	0.5	2.1	1.1	8.6	21.8	13.1	29.9	36.0	33.1	0.74	1.88	1.17	6250	7421	6973	1.6	7.5	5.0	1.32	1.47	1.38
920	13	2.0	8.2	5.0	0.5	2.0	1.0	9.8	24.2	16.4	30.2	35.1	32.9	0.85	1.55	1.18	6056	7454	6710	1.5	7.5	5.1	1.33	1.49	1.41
92	9	2.8	11.8	6.1	0.8	1.7	1.3	6.9	18.4	12.3	29.9	35.1	32.7	0.80	1.43	1.15	6553	7695	7090	2.9	7.3	5.0	1.30	1.45	1.37
91	6	2.7	5.9	4.1	0.3	2.0	1.1	12.8	21.8	18.0	28.6	32.1	29.9	1.00	1.64	1.37	5942	7063	6515	1.5	4.6	2.9	1.37	1.49	1.44
902	1			9.5			0.8			37.2			25.0			0.76			4876			2.0			1.60
90	1			4.1			1.1			16.5			37.4			0.68			6341			3.0			1.39
901	1			9.5			0.8			37.2			25.0			0.76			4876			2.0			1.60
82	17	2.2	18.4	5.6	0.5	2.2	1.1	10.4	35.9	22.7	25.1	33.4	29.7	0.62	1.78	1.11	5009	7152	6142	1.2	6.5	4.0	1.35	1.67	1.48
81	24	2.1	16.2	6.7	0.7	2.2	1.2	7.4	28.3	16.0	28.1	34.1	30.9	0.85	1.77	1.19	5700	7716	6777	1.7	7.0	4.2	1.31	1.55	1.40
80	16	2.0	11.7	6.3	0.7	2.2	1.2	7.4	36.5	18.4	25.9	35.9	31.4	0.62	1.39	1.00	4972	7652	6572	2.0	7.0	4.7	1.29	1.64	1.42
8	8	3.0	8.1	5.6	0.7	1.5	1.0	11.4	39.2	21.6	24.1	32.6	29.3	0.62	2.03	1.08	4676	7197	6311	1.1	5.5	3.9	1.35	1.69	1.47
5U3	6	3.4	8.2	5.5	1.0	2.0	1.5	4.0	16.0	9.1	28.3	30.7	29.7	0.56	0.96	0.79	6809	7894	7425	2.0	6.6	4.3	1.28	1.40	1.34
5U31	1			2.8			-			8.7			-			0.85			7434			-			1.35
5U222	8	2.3	8.0	4.2	0.7	1.7	1.2	6.4	30.5	12.8	29.9	32.4	31.3	0.47	2.91	1.09	5282	7721	7009	0.5	6.3	3.0	1.29	1.62	1.39
5U221	8	2.4	7.1	3.9	0.6	1.5	1.0	6.4	21.7	11.4	29.9	33.3	31.4	0.34	1.54	0.84	6134	7488	7074	1.2	6.1	3.0	1.30	1.50	1.37
5U220	1			2.6			1.5			20.4			-			1.25			6231			2.0			1.48
5U22	12	1.9	10.0	5.2	0.5	1.3	1.0	5.6	9.6	7.3	29.5	32.7	31.1	0.43	1.49	0.66	7289	7776	7553	1.8	6.7	4.4	1.29	1.39	1.33

Seam	No.holes	Total Moisture % ar			Inherent Moisture % ad			Ash % ad			Volatile Matter % ad			Total Sulphur % ad			Calorific value kcal/kg ad			FSI			Relative Density		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
5U212	2	2.6	2.9	2.8	0.4	0.9	0.7	15.5	20.4	17.9	-	-	-	1.18	1.36	1.27	6394	6643	6518	2.0	2.1	2.1	1.42	1.48	1.45
5U211	3	2.6	5.0	3.5	0.4	0.7	0.6	12.9	20.4	15.8	31.9	31.9	31.9	1.23	1.47	1.35	6394	6983	6773	2.0	2.8	2.4	1.38	1.48	1.42
5U21	18	2.3	9.0	4.5	0.5	1.4	0.9	6.5	13.2	8.4	29.4	34.0	31.5	0.25	0.86	0.56	6923	7708	7403	1.7	6.8	4.1	1.29	1.40	1.34
5U210	2	6.5	7.4	6.9	0.8	0.8	0.8	9.2	26.2	17.7	29.5	30.8	30.2	0.47	0.92	0.70	5935	7494	6714	6.2	6.2	6.2	1.34	1.45	1.40
5U2	23	2.3	9.7	5.1	0.5	1.9	1.0	5.2	11.7	7.3	29.7	33.5	31.1	0.47	0.88	0.60	7125	7891	7601	1.7	6.6	4.9	1.30	1.37	1.33
5U122	3	2.2	2.7	2.5	0.7	2.1	1.3	10.4	23.5	17.9	-	-	-	0.55	1.36	0.88	5759	7145	6418	1.5	2.5	2.0	1.35	1.52	1.45
5U121	3	2.3	2.7	2.5	0.8	2.0	1.4	9.3	24.7	15.1	-	-	-	0.62	1.18	0.91	5833	7276	6733	1.5	2.2	1.8	1.34	1.54	1.42
5U12	8	2.3	7.8	5.2	0.4	1.7	1.0	3.0	13.1	7.5	31.7	35.0	32.8	0.15	1.08	0.66	6832	8194	7500	2.2	6.3	5.0	1.27	1.44	1.32
5U112	1			2.6			1.1			18.1			-			0.57			6518			1.5			1.45
5U111	2	2.5	6.3	4.4	0.9	1.0	1.0	8.1	22.8	15.5	29.5	29.5	29.5	0.55	0.57	0.56	6059	7600	6829	1.5	5.6	3.6	1.34	1.52	1.43
5U11	11	1.8	8.5	3.8	0.3	1.7	0.8	5.1	29.4	10.8	21.6	33.2	30.6	0.15	1.03	0.58	5892	7926	7231	2.5	6.7	4.3	1.27	1.53	1.35
5U110	1			3.0			1.0			6.1			29.6			0.40			7845			4.5			1.33
5U1	24	2.0	10.8	4.9	0.5	1.5	0.8	4.6	12.3	7.2	30.3	33.4	31.6	0.22	0.80	0.41	7138	7968	7620	2.6	7.3	5.4	1.27	1.38	1.33
5U	9	2.6	8.3	5.3	0.6	1.5	1.1	5.7	8.1	6.6	31.2	33.1	32.1	0.42	0.96	0.70	7320	7841	7577	2.0	5.9	4.2	1.29	1.34	1.31
5L3	4	2.4	4.6	3.4	0.5	1.5	0.9	4.1	13.4	9.9	32.1	33.2	32.5	0.48	1.78	1.35	7034	7856	7375	2.0	6.0	4.1	1.29	1.39	1.34
5L232	5	2.1	5.4	3.2	0.5	1.1	0.8	9.3	15.7	11.7	32.6	32.8	32.7	0.94	1.20	1.04	6846	7407	7153	2.4	5.5	4.3	1.32	1.42	1.36
5L231	5	2.1	4.3	2.9	0.5	0.9	0.8	4.4	21.8	10.1	30.4	33.6	32.0	0.93	1.07	0.99	6400	7946	7359	2.5	8.0	5.6	1.28	1.44	1.34
5L230	1			3.4			0.7			7.9			33.1			1.08			7641			8.0			1.31
5L23	2	2.2	3.4	2.8	0.8	1.5	1.2	6.8	12.6	9.7	32.4	32.4	32.4	0.40	0.92	0.66	7039	7515	7277	4.1	4.6	4.3	1.32	1.38	1.35
5L222	3	2.2	5.0	3.5	0.7	0.8	0.8	7.9	15.9	11.5	31.5	33.1	32.3	0.99	1.08	1.03	6894	7641	7283	2.5	8.0	5.3	1.31	1.36	1.34
5L221	3	2.2	6.6	4.0	0.7	0.7	0.7	16.3	20.8	18.3	29.0	31.2	30.1	1.07	1.62	1.38	6564	6772	6691	2.0	7.0	4.5	1.34	1.43	1.38
5L22	4	2.0	3.1	2.4	0.6	0.9	0.7	7.4	17.8	11.7	-	-	-	0.70	1.10	0.92	6601	7975	7218	2.5	5.0	3.8	1.31	1.45	1.37
5L212	1			2.0			0.8			14.9			-			0.91			6803			5.3			1.41
5L211	3	1.8	4.4	2.8	0.6	0.7	0.7	10.2	15.1	12.7	-	-	-	0.77	0.87	0.83	6861	7194	7019	4.0	6.7	5.7	1.35	1.41	1.38
5L210	2	2.1	2.2	2.2	0.4	0.8	0.6	15.1	16.2	15.7	-	-	-	0.76	1.57	1.16	6165	6857	6511	5.0	5.0	5.0	1.41	1.43	1.42
5L21	5	2.2	4.2	3.0	0.5	1.4	0.8	6.7	13.1	8.8	31.9	35.3	33.3	0.39	0.88	0.71	6863	7732	7414	2.0	7.7	5.0	1.31	1.39	1.33
5L12	5	2.0	4.0	2.6	0.3	0.8	0.6	18.8	34.2	23.6	30.3	30.3	30.3	0.73	0.95	0.85	5200	7012	6313	1.5	3.5	2.4	1.45	1.67	1.51
5L112	3	2.0	4.4	3.0	0.3	0.6	0.5	12.2	13.5	12.7	32.0	32.0	32.0	1.09	1.60	1.28	7140	7268	7183	2.5	6.2	4.4	1.34	1.38	1.36
5L111	2	2.2	5.8	4.0	0.7	0.7	0.7	22.3	23.9	23.1	30.3	30.3	30.3	1.13	1.17	1.15	6055	6429	6242	1.5	1.5	1.5	1.46	1.53	1.50
5L11	1			2.1			0.8			12.6			-			1.12			7098			1.7			1.38
5L1	1			3.9			1.0			7.0			33.2			0.29			7652			6.9			1.31

Table B4

Sunrise – Summary of Drillhole Quality Data

Seam	No. holes	Total Moisture % ar			Inherent Moisture % ad			Ash % ad			Volatile Matter % ad			Total Sulphur % ad			Calorific Value kcal/kg ad			FSI			Relative Density		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
570	6	5.6	11.0	8.4	1.0	2.2	1.7	14.7	28.7	18.6	27.2	35.9	31.2	0.64	1.87	1.17	5553	6733	6385	2.1	4.0	3.1	1.37	1.46	1.40
5U23	4	3.2	18.0	8.4	0.3	1.9	1.1	13.0	24.6	17.1	29.2	33.7	31.4	0.81	1.67	1.22	5735	6846	6515	0.9	2.2	1.6	1.38	1.48	1.43
5U22	7	5.7	18.6	12.3	1.0	1.7	1.3	8.7	19.2	13.8	29.8	33.8	31.9	0.76	2.74	1.38	6379	7318	6873	1.5	4.4	2.6	1.36	1.50	1.39
5U21	7	3.9	12.7	9.6	1.0	1.3	1.2	10.8	20.2	13.6	29.9	33.3	31.9	0.78	1.49	1.04	6154	7105	6841	1.2	3.5	2.4	1.35	1.44	1.40
5U20	1			6.4			1.0			15.0			26.7			0.95			6731			2.3			1.45
5U122	1			2.4			1.0			22.1			30.0			0.47			6249			1.0			1.43
5U12	1			9.1			1.0			10.0			33.1			0.92			7213			2.9			1.40
5U121	1			2.1			0.8			9.6			32.5			0.85			7227			1.8			1.35
5U1	2	2.4	12.0	7.2	0.8	1.1	1.0	7.0	9.9	8.4	32.8	33.0	32.9	0.70	0.89	0.80	7262	7377	7319	1.9	3.0	2.5	1.32	1.39	1.36
5U11	1			10.9			1.0			14.6			30.7			1.42	6903	6903	6903			2.3			1.45
5U0	3	2.2	12.8	9.1	0.7	1.1	0.9	11.3	15.6	13.5	31.4	32.6	32.0	0.65	0.88	0.74	6642	7276	6937	1.1	2.9	2.1	1.39	1.44	1.41
5L23	10	1.9	17.2	7.9	0.6	1.7	1.1	10.6	27.3	15.6	25.9	35.7	31.4	0.75	2.26	1.24	5607	7168	6698	1.6	3.5	2.6	1.35	1.45	1.39
5L22	22	1.7	22.2	8.4	0.6	6.0	1.5	8.2	33.8	15.6	27.9	37.9	32.3	0.31	1.49	1.07	3890	7363	6550	1.7	4.2	3.1	1.34	1.50	1.38
5L2	4	6.6	10.8	8.6	1.0	1.1	1.1	7.1	12.1	10.6	32.1	34.3	33.1	0.61	1.34	0.99	6408	7175	6870	2.4	4.7	3.2	1.32	1.41	1.37
5L21	12	1.5	13.0	6.5	0.5	1.7	1.1	7.3	21.1	11.8	27.1	33.8	31.3	0.52	1.44	0.99	6163	7593	7011	1.6	4.4	3.2	1.32	1.44	1.36
5L12	11	1.7	17.8	8.4	0.8	1.7	1.2	8.7	25.8	12.6	27.2	40.2	32.5	0.49	1.67	0.96	5893	7337	6877	1.6	4.2	3.2	1.34	1.55	1.38
5L1	6	1.8	9.0	5.3	0.7	1.2	1.0	8.9	15.7	11.1	30.8	35.1	32.1	0.57	1.79	1.06	6739	7277	6986	2.2	4.5	3.6	1.34	1.45	1.37
5L11	9	1.6	13.0	8.0	0.5	1.7	1.1	10.4	25.5	14.8	28.4	32.8	31.1	0.40	1.21	0.92	6152	7127	6767	2.0	4.0	2.9	1.36	1.58	1.41
5L0U	1			12.8			1.1			14.7			27.5			0.41	7031	7031	7031			2.0			1.43
5L0L	5	2.7	8.6	5.9	0.8	2.2	1.4	13.7	33.1	21.4	27.9	31.7	30.1	0.87	1.71	1.26	5277	6891	6175	1.0	5.1	3.2	1.37	1.51	1.42

Table B5

Summary of Resources - Sunset Open Cut (depth <250m) December 2010 prior to Depletion by Mining

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Open Cut (depth < 250m)										
10 Seam group										
Measured	6.65	9.49	1.43	5.7	1.3	18.0	31.8	1.25	6431	2.48
Indicated	1.15	1.66	1.44	6.2	1.4	18.7	32.2	1.20	6379	2.84
Total Mes+Ind	7.80	11.15	1.43	5.7	1.3	18.1	31.9	1.24	6423	2.53
Inferred	0.17	0.24	1.40							
9 Seam Group										
Measured	17.65	24.82	1.41	4.7	1.2	16.1	32.1	1.52	6666	2.97
Indicated	1.32	1.86	1.41	5.1	1.2	16.2	32.2	1.35	6732	3.49
Total Mes+Ind	18.98	26.68	1.41	4.7	1.2	16.1	32.1	1.51	6671	3.01
Inferred	0.12	0.17	1.40							
8 Seam group										
Measured	4.26	6.05	1.42	5.3	1.1	17.7	31.9	1.22	6595	3.22
Indicated	0.20	0.29	1.41	3.1	1.1	14.5	31.5	1.47	6836	2.64
Total Mes+Ind	4.46	6.34	1.42	5.2	1.1	17.5	31.9	1.23	6606	3.20
Inferred	0.02	0.02	1.41							
5U Seam group										
Measured	17.18	22.91	1.34	4.1	1.0	9.2	32.8	0.81	7288	3.29
Indicated	2.04	2.74	1.34	4.5	1.3	8.6	32.1	0.81	7373	3.92
Total Mes+Ind	19.22	25.65	1.34	4.1	1.0	9.2	32.7	0.81	7297	3.35
Inferred	0.02	0.02	1.32							
5L Seam group										
Measured	7.35	10.06	1.37	3.1	0.8	12.6	31.6	0.88	7105	4.35
Indicated	1.36	1.87	1.37	2.8	0.7	12.6	31.6	0.96	7096	4.73
Total Mes+Ind	8.72	11.93	1.37	3.1	0.8	12.6	31.6	0.89	7104	4.41
Inferred	0.30	0.43	1.41							
Total Measured	53.08	73.33	1.38	4.5	1.1	13.8	32.2	1.15	6885	3.22
Total Indicated	6.09	8.42	1.38	4.6	1.1	13.4	32.0	1.06	6955	3.75
Total Mes+Ind	59.17	81.75	1.38	4.5	1.1	13.8	32.2	1.14	6892	3.27
Total Inferred	0.63	0.89	1.40							

Table B6

Sunset Pit Depletion of Resources to 11 December 2010

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Measured										
10 Seam group	0.34	0.48	1.41	5.1	1.3	16.7	31.9	1.41	6582	2.0
9 Seam Group	0.92	1.29	1.41	5.8	1.4	16.0	31.5	1.75	6684	2.0
8 Seam group	0.08	0.11	1.40	5.8	0.8	16.3	31.2	1.18	6818	2.6
5U Seam group	1.43	1.88	1.31	4.6	1.0	7.2	32.9	1.10	7406	2.2
5L Seam group	0.00	0.00								
Indicated										
10 Seam group	0.02	0.02	1.38	7.9	1.1	17.0	31.5	1.70	6607	2.2
Total Mes+Ind	**2.79**	**3.79**	**1.36**	**5.1**	**1.2**	**11.8**	**32.3**	**1.37**	**7033**	**2.2**

Table B7

Summary of Resources – Sunset Open Cut (depth less than 250m) December 2010

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Open Cut (depth < 250m)										
10 Seam group										
Measured	6.31	9.00	1.43	5.7	1.3	18.0	31.8	1.25	6431	2.5
Indicated	1.14	1.64	1.44	6.2	1.4	18.7	32.2	1.20	6379	2.8
Total Mes+Ind	7.44	10.65	1.43	5.7	1.3	18.1	31.9	1.24	6423	2.5
Inferred	0.17	0.24	1.40							
9 Seam Group										
Measured	16.74	23.53	1.41	4.7	1.2	16.1	32.1	1.52	6666	3.0
Indicated	1.32	1.86	1.41	5.1	1.2	16.2	32.2	1.35	6732	3.5
Total Mes+Ind	18.06	25.39	1.41	4.7	1.2	16.1	32.1	1.51	6671	3.0
Inferred	0.12	0.17	1.40							
8 Seam group										

Measured	4.17	5.93	1.42	5.3	1.1	17.7	31.9	1.22	6595	3.2
Indicated	0.20	0.29	1.41	3.1	1.1	14.5	31.5	1.47	6836	2.6
Total Mes+Ind	4.38	6.22	1.42	5.2	1.1	17.5	31.9	1.23	6606	3.2
Inferred	0.02	0.02	1.41							
5U Seam group										
Measured	15.74	21.03	1.34	4.1	1.0	9.2	32.8	0.81	7288	3.3
Indicated	2.04	2.74	1.34	4.5	1.3	8.6	32.1	0.81	7373	3.9
Total Mes+Ind	17.78	23.77	1.34	4.1	1.0	9.2	32.7	0.81	7297	3.4
Inferred	0.02	0.02	1.32							
5L Seam group										
Measured	7.35	10.06	1.37	3.1	0.8	12.6	31.6	0.88	7105	4.4
Indicated	1.36	1.87	1.37	2.8	0.7	12.6	31.6	0.96	7096	4.7
Total Mes+Ind	8.72	11.93	1.37	3.1	0.8	12.6	31.6	0.89	7104	4.4
Inferred	0.30	0.43	1.41							
Total Measured	50.31	69.56	1.38	4.5	1.1	13.8	32.2	1.15	6885	3.2
Total Indicated	6.07	8.40	1.38	4.6	1.1	13.4	32.0	1.06	6955	3.7
Total Mes+Ind	56.38	77.96	1.38	4.5	1.1	13.8	32.2	1.14	6892	3.3
Total Inferred	0.63	0.89	1.40							

Table B8

Summary of Resources – Sunset Open Cut (depth 250-300m) December 2010

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Open Cut (depth 250-300m)										
10 Seam group										
Measured	0.79	1.12	1.43	6.1	1.4	18.4	32.3	1.07	6444	3.5
Indicated	0.32	0.47	1.46	6.6	1.4	20.0	29.3	1.07	6284	3.2
Total Mes+Ind	1.11	1.59	1.44	6.3	1.4	18.9	31.4	1.07	6397	3.4
Inferred	0.00	0.00								
9 Seam Group										
Measured	2.16	3.07	1.42	5.4	1.4	17.9	32.0	1.11	6514	4.7
Indicated	0.50	0.70	1.40	6.1	1.4	15.2	32.2	1.27	6797	4.4
Total Mes+Ind	2.66	3.77	1.42	5.5	1.4	17.4	32.0	1.14	6567	4.6
Inferred	0.04	0.05	1.39							

8 Seam group										
Measured	0.74	1.06	1.43	7.0	1.3	19.2	31.1	1.05	6461	4.1
Indicated	0.09	0.12	1.40	3.9	1.1	14.4	31.9	1.37	6881	3.9
Total Mes+Ind	0.83	1.18	1.43	6.7	1.3	18.7	31.2	1.08	6505	4.1
Inferred	0.02	0.03	1.42							
5U Seam group										
Measured	3.00	3.92	1.31	4.6	1.2	6.7	32.5	0.50	7588	5.0
Indicated	2.85	3.80	1.33	5.0	1.2	7.9	32.2	0.67	7467	4.5
Total Mes+Ind	5.85	7.73	1.32	4.8	1.2	7.3	32.3	0.59	7528	4.7
Inferred	0.16	0.22	1.37	3.2	1.0	11.0	31.4	1.06	7238	4.5
5L Seam group										
Measured	2.26	3.09	1.37	2.8	0.9	12.4	31.8	0.82	7129	5.4
Indicated	1.73	2.39	1.38	2.6	0.7	13.5	30.7	0.92	7040	5.2
Total Mes+Ind	3.99	5.48	1.37	2.7	0.8	12.8	31.3	0.87	7090	5.3
Inferred	0.49	0.67	1.37	2.7	0.7	11.0	30.2	0.95	7276	5.8
Total Measured	8.94	12.26	1.37	4.7	1.2	13.0	32.0	0.83	7002	4.8
Total Indicated	5.50	7.49	1.36	4.4	1.1	11.2	31.5	0.84	7184	4.6
Total Mes+Ind	14.44	19.75	1.37	4.6	1.1	12.4	31.8	0.84	7071	4.7
Total Inferred	0.71	0.97	1.37	2.9	0.8	11.0	30.5	0.97	7267	5.5

Table B9

Summary of Resources – Sunset Underground (depth 300-600m) December 2010

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Underground (depth 300-600m)										
5U Seam group										
Measured	32.31	42.91	1.33	5.1	1.0	7.3	31.4	0.49	7605	5.25
Indicated	9.58	12.75	1.33	5.1	1.0	7.3	31.6	0.54	7598	5.12
Total Mes+Ind	41.89	55.65	1.33	5.1	1.0	7.3	31.4	0.50	7603	5.22
Inferred	1.18	1.64	1.39	3.6	0.7	10.0	0.0	0.76	7338	5.12
5L Seam group										
Measured	2.73	3.67	1.35	3.0	1.0	10.7	31.8	0.72	7314	5.92
Indicated	6.04	8.14	1.35	2.9	0.9	11.0	32.0	0.81	7308	6.26
Total Mes+Ind	8.76	11.81	1.35	2.9	0.9	10.9	31.9	0.78	7310	6.15
Inferred	8.58	11.72	1.37	2.3	0.8	13.7	31.2	0.91	7038	5.67
Total Measured	**35.04**	**46.58**	**1.33**	**5.0**	**1.0**	**7.6**	**31.4**	**0.51**	**7582**	**5.30**
Total Indicated	**15.62**	**20.89**	**1.34**	**4.2**	**0.9**	**8.7**	**31.7**	**0.64**	**7485**	**5.56**
Total Mes+Ind	**50.65**	**67.46**	**1.33**	**4.7**	**1.0**	**8.0**	**31.5**	**0.55**	**7552**	**5.38**
Total Inferred	**9.76**	**13.35**	**1.37**	**2.5**	**0.8**	**13.2**	**27.3**	**0.89**	**7075**	**5.61**

Table B10

Summary of Resources - Sunrise Open Cut (depth <250m) December 2010

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Open Cut (depth < 250m)										
570/580/590										
Measured	1.70	2.40	1.41	9.0		22.4	29.8	1.10	6102	1.4
Indicated	3.92	5.56	1.42	10.2		25.6	27.8	1.04	5857	1.8
Total Mes+Ind	**5.62**	**7.96**	**1.42**	**9.9**		**24.7**	**28.4**	**1.06**	**5931**	**1.7**
Inferred	3.43	4.89	1.43	6.8		25.2	28.5	1.01	5936	2.0
5U2 Seam group										
Measured	5.71	7.94	1.39	7.1	1.2	15.9	31.4	1.12	6649	1.7
Indicated	1.86	2.60	1.39	5.6	-	16.0	31.4	1.08	6651	1.3
Total Mes+Ind	**7.58**	**10.54**	**1.39**	**6.7**	**1.2**	**16.0**	**31.4**	**1.11**	**6650**	**1.6**
Inferred	0.29	0.40	1.38	5.7		15.0	31.6	1.07	6736	1.4
5U1 Seam group										
Measured	2.27	3.07	1.35	6.6	1.3	10.6	31.9	0.96	6708	2.1
Indicated	0.36	0.50	1.38	3.6		15.1	31.4	0.80	6717	0.9
Total Mes+Ind	**2.63**	**3.57**	**1.36**	**6.2**	**1.3**	**11.2**	**31.9**	**0.93**	**6709**	**1.9**
Inferred	0.32	0.44	1.38	3.7		15.7	31.3	0.80	6665	0.8
5L2 Seam group										
Measured	7.81	10.69	1.37	7.2	1.1	12.2	32.2	1.20	6968	3.0
Indicated	0.68	0.92	1.36	5.6	1.1	11.0	32.4	1.27	7109	3.4
Total Mes+Ind	**8.48**	**11.61**	**1.37**	**7.1**	**1.1**	**12.1**	**32.2**	**1.20**	**6979**	**3.0**
Inferred	0.00	0.00								
5L1 Seam Group										
Measured	15.66	21.72	1.39	7.5	1.1	19.3	32.2	1.04	6389	2.5
Indicated	1.28	1.77	1.39	6.8	1.1	16.8	31.8	1.15	6593	2.1
Total Mes+Ind	**16.94**	**23.49**	**1.39**	**7.4**	**1.1**	**19.1**	**32.2**	**1.05**	**6405**	**2.5**

Inferred	0.90	1.25	1.38	5.9		34.6	36.0	0.57	4925	1.0
Total Measured	33.15	45.82	1.38	7.4	1.1	16.7	31.9	1.09	6576	2.4
Total Indicated	8.10	11.35	1.40	8.0	1.1	20.4	29.8	1.07	6293	1.8
Total Mes+Ind	41.25	57.17	1.39	7.5	1.0	17.4	31.5	1.08	6520	2.3
Total Inferred	4.94	6.97	1.41	6.4		25.7	30.2	0.92	5846	1.7

Table B11

Summary of Resources – Sunrise Open Cut (depth 250-300m) December 2010

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Open Cut (depth 250m-300m)										
570/580/590										
Measured	0.13	0.18	1.40	12.5		25.1	27.6	1.01	5898	1.6
Indicated	0.54	0.76	1.42	10.6		25.2	27.8	1.07	5894	1.7
Total Mes+Ind	**0.67**	**0.95**	**1.42**	**11.0**		**25.2**	**27.8**	**1.06**	**5895**	**1.7**
Inferred	0.61	0.87	1.43	7.0		24.6	28.8	1.09	5959	1.7
5U2 Seam group										
Measured	0.18	0.25	1.35	3.2	1.5	10.4	32.6	0.81	7139	1.4
Indicated	1.08	1.48	1.37	3.8	-	13.5	32.0	0.91	6873	1.3
Total Mes+Ind	**1.26**	**1.72**	**1.37**	**3.7**	**1.5**	**13.1**	**32.1**	**0.90**	**6911**	**1.3**
Inferred	1.04	1.43	1.37	5.2		14.4	31.7	1.03	6788	1.4
5U1 seam group										
Measured	0.77	1.05	1.36	4.3	1.3	11.8	31.9	0.82	6505	1.4
Indicated	0.24	0.32	1.36	4.5		13.5	31.6	0.80	6875	1.1
Total Mes+Ind	**1.01**	**1.37**	**1.36**	**4.3**	**1.3**	**12.2**	**31.8**	**0.81**	**6592**	**1.3**
Inferred	0.36	0.50	1.38	3.8		15.1	31.4	0.79	6721	0.8
5L2 Seam group										
Measured	2.11	2.86	1.35	3.2	0.9	11.2	32.2	1.15	7090	3.3
Indicated	0.90	1.21	1.35	3.0	1.0	10.8	32.3	1.23	7144	3.5
Total Mes+Ind	**3.01**	**4.07**	**1.35**	**3.1**	**0.9**	**11.1**	**32.2**	**1.17**	**7106**	**3.4**
Inferred	0.00	0.00								
5L1 Seam Group										
Measured	3.10	4.30	1.39	7.8	0.9	21.3	41.1	1.43	8697	4.2
Indicated	3.47	4.80	1.38	6.0	1.0	17.2	32.1	1.07	6591	2.9
Total Mes+Ind	**6.57**	**9.10**	**1.38**	**6.8**	**0.9**	**19.2**	**36.3**	**1.24**	**7587**	**3.5**
Inferred	0.91	1.26	1.38	5.6		19.6	32.9	1.03	6371	2.5
Total Measured	6.30	8.64	1.37	5.8	0.9	16.6	36.5	1.24	7795	3.4
Total Indicated	6.22	8.57	1.38	5.5	1.1	16.2	31.7	1.06	6666	2.5
Total Mes+Ind	12.52	17.21	1.37	5.7	1.0	16.4	34.1	1.15	7233	3.0
Total Inferred	2.93	4.06	1.39	5.5		18.3	31.4	1.01	6473	1.7

Table B12

Summary of Resources – Sunrise Underground (depth 300-600m) December 2010

	Volume Mcu.m.	Mass Mtonnes	Relative density	Total moisture % ar	Inherent moisture % ad	Ash % ad	Volatile matter % ad	Total Sulphur % ad	Calorific value kcal/kg ad	FSI
Underground (depth 300m-600m)										
5U2 Seam group										
Measured	0.00	0.00	1.32	2.5	-	6.9	33.3	0.72	7458	1.5
Indicated	0.48	0.65	1.35	3.1	-	10.3	32.6	0.82	7156	1.4
Total Mes+Ind	**0.48**	**0.65**	**1.35**	**3.1**	**-**	**10.3**	**32.6**	**0.82**	**7158**	**1.4**
Inferred	4.41	6.03	1.37	3.8		13.3	32.1	0.91	6891	1.4
5U1 Seam group										
Measured	0.15	0.21	1.37	3.8	-	13.3	31.8	0.77	6891	1.2
Indicated	0.36	0.49	1.37	3.0		13.7	31.9	0.72	6846	1.3
Total Mes+Ind	**0.51**	**0.70**	**1.37**	**3.2**	**-**	**13.6**	**31.8**	**0.74**	**6859**	**1.3**
Inferred	0.93	1.27	1.38	3.1		14.5	31.7	0.74	6769	1.1
5L2 Seam group										
Measured	0.99	1.34	1.36	2.0	0.9	12.0	31.9	0.95	6953	2.9
Indicated	0.66	0.90	1.36	2.0	0.9	12.1	33.4	1.05	7300	3.2
Total Mes+Ind	**1.65**	**2.24**	**1.36**	**2.0**	**0.9**	**12.0**	**32.5**	**0.99**	**7092**	**3.0**
Inferred	0.00	0.00								
5L1 Seam Group										
Measured	2.83	3.88	1.37	4.1	0.8	12.6	32.0	1.05	7037	3.7
Indicated	13.89	19.17	1.38	5.2	0.9	14.3	31.8	1.04	6905	3.2
Total Mes+Ind	**16.72**	**23.05**	**1.38**	**5.0**	**0.9**	**14.0**	**31.9**	**1.04**	**6927**	**3.3**
Inferred	45.98	63.49	1.38	5.0		14.5	31.8	1.03	6886	3.1
Total Measured	3.97	5.42	1.37	3.5	0.8	12.5	32.0	1.02	7011	3.4
Total Indicated	15.40	21.21	1.38	4.9	0.9	14.1	31.9	1.02	6928	3.1
Total Mes+Ind	19.37	26.64	1.38	4.6	0.9	13.7	31.9	1.02	6945	3.2
Total Inferred	51.31	70.80	1.38	4.9		14.4	31.8	1.01	6884	3.0