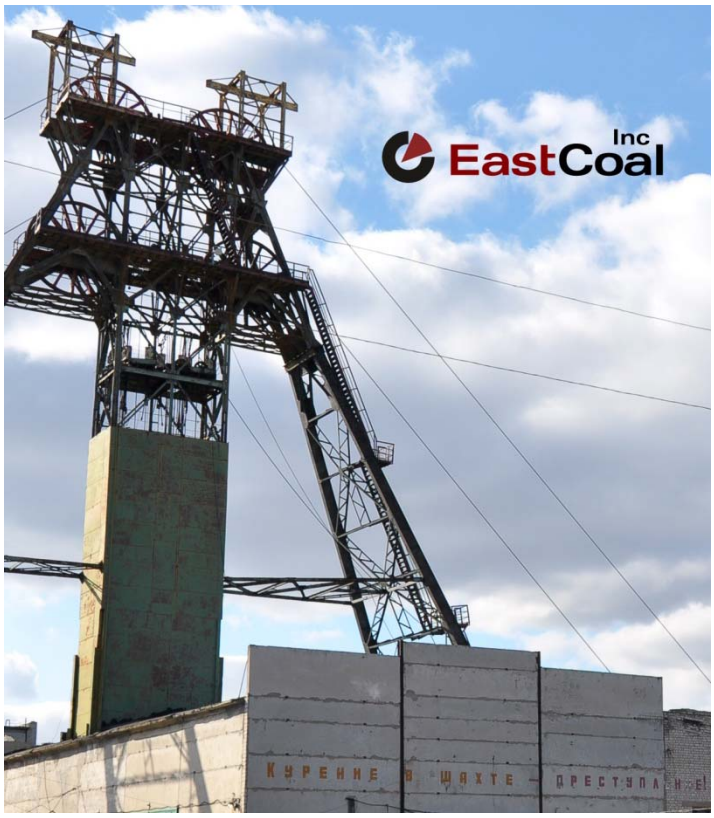

Technical Report on the Verticalnaya Mine
Ukraine
(NI 43-101 Standards)

prepared for

EastCoal Inc.

by

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for

IMC Group Consulting Ltd

March 2011

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3 SUMMARY

At the request of EastCoal Inc. ("EastCoal" or the "Company"), formerly known as Lysander Minerals Corporation, this report has been prepared to fulfill the obligation to file an independent report as described in NI 43-101. The obligation to file an independent report arises from material change to the Verticalnaya Project owned by Skhidna Vugilna Kopania (the "East Coal Company" or "ECC"), which is wholly owned by EastCoal Inc., a British Columbia company listed on the Toronto Stock Exchange Venture Exchange (TSX-V).

Following the exercise of options at the end of November 2009, EastCoal owns 100% of the charter capital of Ukraine Energy Limited, a Ukraine company that in turn owns 51% of the chartered capital of ECC and owns directly 49% of the charter capital of ECC. Accordingly, EastCoal owns all of ECC, which is a Ukraine company that holds the license for the Verticalnaya Mine and, principally through lease and rental agreements, the assets and facilities of the mine.

This technical report covers the Verticalnaya Mine and the Verticalnaya North Project ("VNP") and has been compiled to conform to the disclosure and reporting requirements established by Canadian Securities Administration National Instrument 43-101, Companion Policy 43-101CP and Form 43-101F1.

Initially seams H_{11} and $H_{11}{}^{b}$ will be accessed by two drifts from the VNP surface and subsequently H_8 will be worked from the existing shaft mine infrastructure.

3.1 General

Verticalnaya Mine is in the Donbas coal basin located in Lugansk region near the Russian border. Following its closure in 1998 the mine was passed onto the State Enterprise "Ukruglerestructurizatsiya" (UDKR) whose responsibility is the liquidation of closed mines. IMC understands that Skhidna Vugilna Kompania or ECC has been granted the license to operate the mine as a private enterprise and is developing a mining plan proposed by the Company in conjunction with GOAO Luganskgiproshakht, an entity of the district government responsible for technical design and oversight of mines in the district.

EastCoal has started to initially access the resources in the H_{11} and $H_{11}{}^{B}$ seams in the North West sector of Verticalnaya Mine with new surface drifts. The Company then intents to re-access the H_8 Seam, which is currently flooded below the -675 m horizon, and work both seams simultaneously. Both initiatives are based on a GOAO Luganskgiproshakht plans, commissioned by EastCoal, which has been previously assessed individually by IMC as separate 43-101 Technical Reports in July 2009 and September 2008 respectively. This report assesses the Lysander plans to combine both the previous objects together as an integrated operation.

3.2 Description of Assets

IMC reviewed the asset listed in Table 3-1, which is wholly owned by the Company and shown on the location plan, Figure 3-1 below.

Table 3-1 List of Assets

Asset	Status	Type	Product/Output	Date of Commencement of Operation	Ownership
Project					
Verticalnaya North	Developing	Underground Mine	Anthracite	Planned 2012	100%
Verticalnaya Mine	Care and Maintenance	Underground mine	Anthracite	Planned 2015	100%

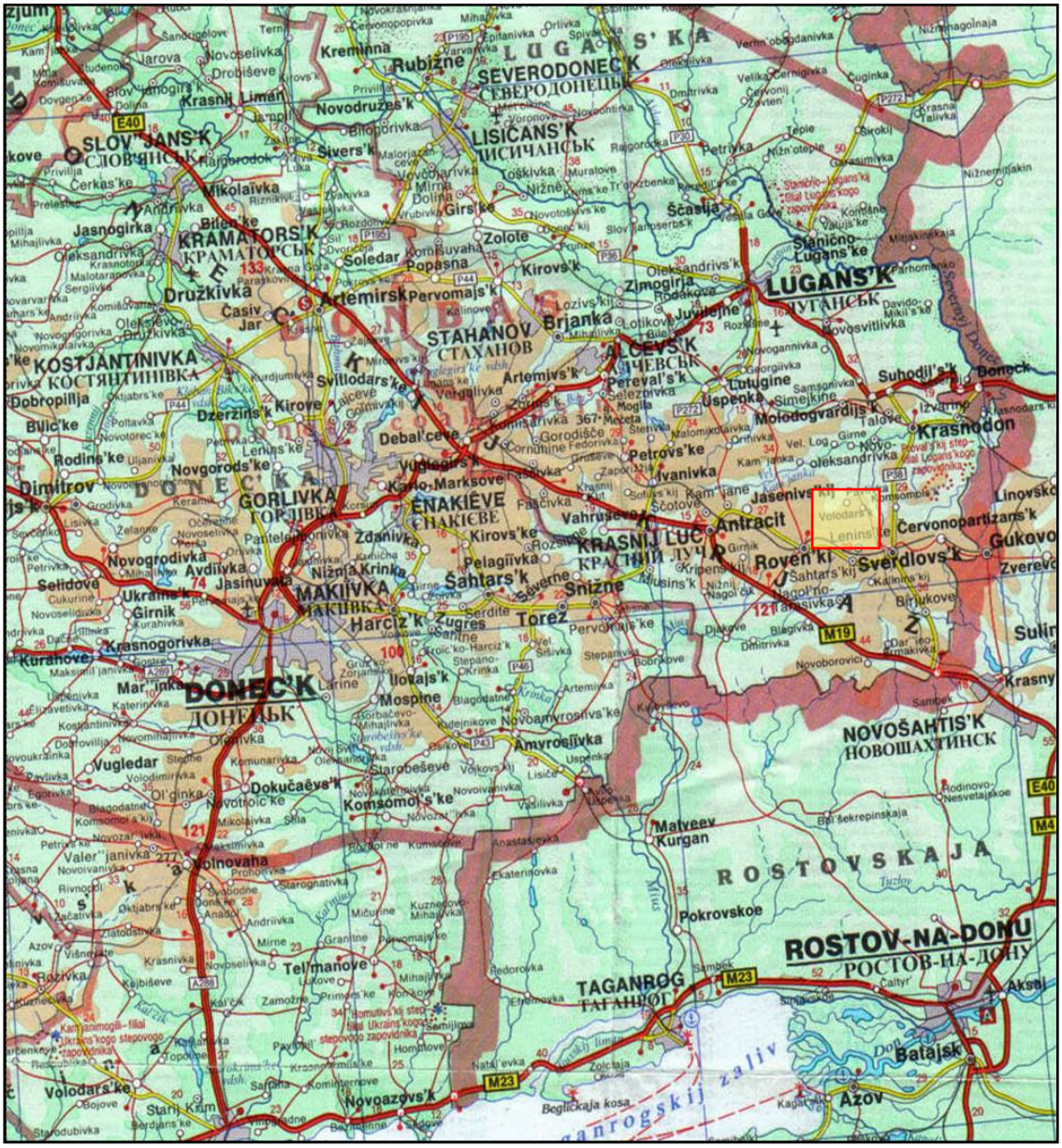


Figure 3-1 Location Plan, Verticalnaya Mine

3.3 Summary of Geology

The geology of the Verticalnaya Mine area including the Verticalnaya North Project area is not complex. Structurally the strata are contained in a southern dipping limb of a syncline and are not disrupted by numerous fault structures although some simple fault structures do occur. The coal seams are contained in strong competent strata, predominantly siltstone and sandstone.

3.4 Summary of Reserves and Resources

Reserves and resources are as stated in Table 3-2 below. The Company propose to extract coal from the H_{11}, H_{11}^{B} and H_8 seams in the areas where they attain a thickness of 0.70 m or more. It is estimated, that by appropriate mining technology, some 13.3 Mt of proved reserves in H_{11} and H_{11}^{B} Seams can be extracted while after the de-watering of the H_8 seam, an additional 11 Mt of probable reserves, plus some of the further resources that will be accessed as the seam is developed, should be extractable.

3.4.1 Nature of Evidence

The area of the mine has been thoroughly explored by numerous cored borehole programmes between 1930 and 1985 totalling over 400 boreholes. The Luganskgiproshakht holds the original borehole data listings and resource evaluations. The data is held in hard copies only with no computer database.

3.4.2 Reserves and Resources Estimation Methods

The resources and reserves were evaluated to conform to the standards set out in the Former Soviet Union (FSU) standards. These standards were meticulous and thorough but did not take account of economic or marketing factors when estimating reserves.

The original reserve blocks and seam data have been used here as the basis to estimate the resources and reserve to the JORC (2004) standards which are equivalent to the CIM (Canadian Institute of Mining, Metallurgy and Petroleum) classifications in this situation.

3.4.3 Reserves and Resources Statement

It is considered that the Verticalnaya Mine will have access to 13.3 Mt of Proved and 11 Mt of Probable Reserves. Table 3-2 below shows the Resources which are inclusive of these Reserves.

Table 3-2 Reserves and Resources Statement

Seam	Proved Reserves (Mt)	Probable Reserves (Mt)	Measured Resources (Mt)	Indicated Resources (Mt)	Total Resources (Mt)
Seam H_{11}	3.9		9.6	3.00	12.6
Seam H_{11}^{B}	9.4		32.0	0	32.0
Seam H_8		11.0	15.7	15.90	31.6
Total	**13.3**	**11.0**	**57.3**	**18.9**	**76.2**

Resources are inclusive of reserves

Reserves are quoted after allowing for all losses. Resources are quoted as in-situ totals, with no allowance for either mining or geological losses and are inclusive of reserves.

3.4.4 Mines and Facilities

Verticalnaya mine is currently under care and maintenance and non-operational. The Company intends to rehabilitate the existing mine infrastructure and develop mining operations in the virgin areas of H_{11}, H_{11}^{b} and H_8 coal seams.

The Company has completed the portals and commenced the drivage of the two surface drifts to access the H_{11} and H_{11}^{b} seams where the first coal production will take place with advancing longwall faces in accordance with a plan initially prepared by Luganskgiproshakht based on the Company mine plan.

Presently the coal resources of H_8 are in the flooded section of the mine, although the water will have had no effect of the resources below the -1,000 m level which are still to be developed. These facilities are to be brought back into production in accordance with a plan initially prepared by Luganskgiproshakht and refined by the Company. De-watering of the flooded roadways commenced in March 2011.

There are no coal preparation facilities at the mine but are planned in two stages.

- A temporary modular barrel washer for the initial ROM production from the H_{11} and H_{11}^{b} seams; and
- A permanent washery to be constructed as part of the rehabilitation plans for H_8 coal seam.

3.4.5 History

Mining operations began initially during 1912 when coal was accessed from its outcrop point on the surface via inclined drifts locally known as “Number 10 Mine”. It was then developed and operated as a shaft and drift mine where the workings progressed to -1000 metres “1245 m below surface”.

The sinking of a second shaft was completed just prior to the mine closure in 1998 and was never fully equipped and the mine never achieved the planned coal outputs and was considered unprofitable and closed and thus passed onto UDKR where it was kept on care and maintenance scheme as a water pumping station to protect the adjacent operating mines from increased water inflows.

3.4.6 Management

IMC's personnel were in regular contact and held numerous discussions with the Company's management at all levels. IMC is satisfied that the Company's management is capable of implementing the proposed production plans based on this contact and on direct observations of the limited operational management team, which IMC understands has and will be enhanced as the mine is redeveloped.

3.4.7 Health and Safety

IMC understands that as the development of the mine begins the new management of the mine will pursue an active safety management policy which was issued in March 2011. Any training programme devised will be approved by the Ukrainian Mine Authorities before it is implemented and a record of each individuals training will be maintained at the mine.

3.4.8 Infrastructure

The shaft mine industrial surface covers some 10.4 Ha including 3.0 Ha of approach roads. Located in a rural area it has electrical power supply, mains water, mains sewage, and good access roads already established. The main administration building is functional, capable of providing the services required for management and workers.

The VNP mine access and surface facilities has good access by road from the main Verticalnaya site and a nearby rail line with facilities for wagon loading. A new 6 kV power supply has been installed from the main Verticalnaya Mine surface sub-station.

The existing Verticalnaya Mine site's main administration building is functional, capable of providing the services required for management and workers which could be used for both the VNP and shaft mine operations.

The existing mine has two shafts. The materials shaft was installed and has been operational for the transportation of men and material since 1975. The second shaft is the skip shaft sunk in 1992 but not yet fully commissioned.

The measured water content of the flooded section of mine workings is calculated to be 2.6 Mm^3. This together with the measured inflows into the mine can be pumped out within 12 months using pumps that are readily available. De-watering operations commenced during March 2011.

The shaft mine has a temporary ventilation system in operation which delivers 30m^3/sec. IMC understands that it is planned to install a new surface fan that will provide 170 m^3/sec.

3.4.9 Mine Development Project

To develop seams H_{11} and H_{11}^b, EastCoal plan to use two inclined drifts for access to the production areas. The existing materials shaft will also continue in operation but when development of the H_8 seam commences, the existing skip shaft will also be equipped for men and materials operation thus access to the H_8 workings will be via either of the two shafts.

3.4.9.1 H_{11} and H_{11}^b Coal Seams

Two inclined drifts (Conveyor and Ventilation) will be driven down the centre of the h_{11} coal reserves from the VNP surface curtilage. When the first 430 m of the two drifts have been completed access to the first longwall to the West of the drifts (West One Longwall "W1") will be developed.

Whilst longwall W1 is being established the drift drivages will continue to provide access to the coal reserves on the east of the drifts allowing the second longwall (East One Longwall "E1") to be developed.

As the inclined drifts are extended and more working places opened additional developments can be introduced and retreat longwall production established. Retreat longwall mining is accepted globally as being significantly more productive than advance longwall, which has also been demonstrated at

Verticalnaya in the past. It can be demonstrated that the projected output from three advance longwalls can be achieved with two retreat longwalls.

Coal production is expected begin during 2012 with two advancing longwall faces. As further coal panels are developed then retreat longwall production will be introduced. There will be a mixture of both advance and retreat longwall between 2012 and 2015 but from 2015 onwards all longwall production will be from retreat faces.

3.4.9.2 H_8 Coal Seam

H_8 coal seam will be accessed and operated via the existing vertical shafts. The skip shaft will not be used for coal winding but will be equipped for the winding of men and materials down to the lower horizon at 1,250 m. Coal and waste from development drivages will be taken out of the mine via conveyor belts.

One of the first operations will be to pump out the water from the flooded area and examine the roadways of the previously developed area of the h_8 seam. It is calculated that this activity will take one year to restore the mine water pumping system and pump out the water whilst simultaneously undertaking repairs to the newly exposed roadways.

The original conveyor roadway above the water line, from -845 to -137 m horizons, will be recovered and repaired whilst the new drift is being driven, which is expected to take longer that the one year period for the water pumping. New permanent conveyor belts and associated equipment will be installed as repairs progresses.

To complete the new conveyor line, a new access drift from the surface will be driven to intersect the H_8 seam at the -137 horizon. Once this new conveyor line has been established two main lateral drivages, conveyor and materials, will be driven into the new reserve block and longwall panels developed on each side. The overall plan is to operate two longwalls simultaneously to generate a continuous ROM production of 1.7 Mtpa.

3.4.10 Coal Preparation

As detailed elsewhere in this Report, the development of the output from the Verticalnaya mining complex is intended to be carried out in two distinct phases. The first phase is based on the development of the $H11^b$ seam which formed the basis of the Verticalnaya North Project (VNP). During this phase, coal from the $H11^b$ seam will be brought to the surface via the new drift. The Company propose to install a temporary modular natural medium 400tph 'Barrel Washer' which will be used to process the ROM coal produced from initially the $H11^b$ and then from the H11 seam until the main Coal Preparation Plant (CPP) is commissioned.

The second phase of the mines development will see output coming from both the H11 and H8 seams. The Company plans to have the permanent Dense Medium Coal Preparation Plant (CPP) constructed and available to treat both H11 and H8 coals independently, dependant on market requirements. The Company's Business Plan envisages a main plant capacity of nominally two 520 tph streams, which will provide for the separate washing of coal from the two coal seams. The proposal to construct the main plant utilising modular construction within a free standing building is in keeping with current thinking across many parts of the industry. It provides for much greater flexibility both at the design and the construction stage, will allow much faster construction, and should be of a lower capital cost than a conventional integrated design.

Following the commissioning of the main CPP, the Company is proposing to utilise the Barrel washing plant for recovering coal from an adjacent tip, although this activity does not form part of this current proposal.

3.5 Environmental Issues and Management

The estimated mass emissions to air of dust and combustion gases are relatively small. The mitigation measures proposed in the Environmental Social Impact Assessment (OVOS (Russian) or EIA), together with establishment of sanitary protection zones, are designed so that ambient Ukrainian air quality standards are not exceeded.

Waste rock from the mine and tailings from the coal preparation plant will be stored on a site already used for dumping low hazard mine waste.

The social impact is assessed as positive on the basis of providing employment for approximately 1200 people from the local communities plus unquantified multiplier effects. The mitigation measures proposed in the Environmental Social Impact Assessment (EIA), together with establishment of sanitary protection zones for this site, are designed so that ambient Ukrainian air quality standards are not exceeded.

A revised environmental assessment has been prepared within the VNP feasibility study and the environmental effects are not significantly different from those of the main Verticalnaya Mine. However a village lies approximately 500 m from the VNP site and therefore the project and environmental management systems are designed to ensure that air quality and noise levels remain within Ukrainian standards.

The Company has concluded a contract for lease of the land for the VNP access and surface facilities on the site of a former clothing factory, which was unused and designated for industrial use. Land in the immediate surroundings of the VNP site is mainly grass and unused for agriculture. EastCoal has obtained additional planning consent for storage of waste rock from the drift development adjacent to the VNP site.

3.5.1 Provision for Rehabilitation

The Company has developed a formal environmental management system and plan and the EIA includes measures for environmental protection generally according to the requirements of Ukrainian environmental regulations and codes.

There is no requirement under Ukrainian Environmental Law to plan or make financial provision for mine closure, although the Company has included an appropriate provision in their business plan to cover the cost of closure restoration in line with international good practice.

A design project is approved for the removal of fertile soil from the VNP site and land reclamation on expiry of the lease contract.

3.6 Statutory Authorisations

3.6.1 Mining Licences and Leases

EastCoal has taken ownership of the assets comprising the Verticalnaya mine, acquiring the mining licences and finalising an agreement for rental of land areas required for implementation of the project. The protocol for acquiring these and commencing mining activities is an integrated, phased process involving:

- Acquisition of a licence to develop the deposit from the Ministry of Ecology and Natural Resources (MENR).
- Gaining permission to rent land areas housing the mine and process facilities, infrastructure, waste storage site and water treatment from the Sverdlovsk Civil Authority.
- Obtaining the mining lease from the Ministry of Coal.
- Obtaining various permits for labour safety and environmental emissions.

EastCoal has the Mining Licence together with an agreement regarding rental of land areas.

The Company has commissioned Luganskgiproshakht to prepare the technical specification for the VNP, including the area and boundaries of the land required. A contract for lease of the land for the VNP was issued by the Regional State Administration on 16.09.2010 and is valid until 19.07.2027. An area of 7.6644 ha is under long-term lease plus 2.3502 ha under short-term lease for 5 years.

3.6.2 Environmental Permits

Approvals necessary for the project implementation have been received. The submission of the ecological certificate has been approved by the Chief of the Department of the State Administration of Ecology and Natural Resources in Lugansk Region, on 18th April 2005, and the state ecological expertise was carried out

by the State Administration of Ecology and Natural Resources in Lugansk Region and approved on 20th May 2005.

Essentially, the State Expertise conclusion permits further progress on financing and development of the project. However construction and mining require further expert review and approval.

At the request of the Company Luganskgiproshakht has revised the original feasibility study, including the environmental impact assessment, to include the VNP. Following a report on the environmental assessment by the State Environmental Department of Lugansk Oblast Expertise, the Ministry of Environment issued a positive conclusion document No. 12/29.09.2010-2179 dated 21.12.2010. The Company has applied for the additional approval required for the proposed coal washing process which was not considered in the feasibility study for the VNP.

3.7 Financial Results

A financial analysis has been provided by the Company and evaluated by IMC over an 18 year period, which includes the initial development work and a final year of closure.

Capital expenditure for developing the mine project for the initial years plus additional expenditure over the remaining life to maintain production is estimated at US$374.8 million. No operating expenses prior to the commencement of commercial coal production have been capitalised in the Company business plan.

Commercial coal production is projected to commence from the H_{11} seam during 2012. Commercial coal production is projected to commence from the H_8 seam in 2015. Full commercial production will be achieved during 2015.

Cash operating costs over the full 19 years of the business plan are projected to average US$38.41 per saleable tonne of production (including development costs during the first years of the project).

A discounted cash flow appraisal has been carried out over the 19 years of the business plan and shows a net present value, when discounted at 10%, of US$615.3 million. A sensitivity analysis has been carried out and the results are shown in Section 25.10 (Page 65). This high return is predominantly because relatively little capital expenditure is needed befroe coal is reached and some income flows from a relatively high value product. In addition, the usually expensive capital expenditure on shafts and/or long drifts are avoided.

Based on the business plan as presented and the subsequent cash flow analysis the projected undiscounted payback period is 7 years. These key project indicators are shown below in Table 3-3 below.

Table 3-3 Key Project Indicators

Key Indicators	Value
Initial Capital Expenditure (2010/12 for H11 and 2011/15 for H8)	US$189.4 million
Net Present Value @ 10%	US$615.3 million
Internal rate of Return	61.1%
Average Operating Cost per Saleable Tonne	US$38.41
Pay Back Period	7 years

4 INTRODUCTION

4.1 Report Preparation

At the request of EastCoal Inc. ("EastCoal" or the "Company"), formerly known as Lysander Minerals Corporation, this report has been prepared to fulfill the obligation to file an independent report as described in NI 43-101. The obligation to file an independent report arises from material change to the Verticalnaya Project owned by Skhidna Vugilna Kopania (the "East Coal Company" or "ECC"), which is wholly owned by EastCoal Inc., a British Columbia company listed on the Toronto Stock Exchange Venture Exchange (TSX-V).

Following the exercise of options at the end of November 2009, EastCoal owns 100% of the charter capital of Ukraine Energy Limited, a Ukraine company that in turn owns 51% of the chartered capital of ECC and owns directly 49% of the charter capital of ECC. Accordingly, EastCoal owns all of ECC, which is a Ukraine company that holds the license for the Verticalnaya Mine and, principally through lease and rental agreements, the assets and facilities of the mine.

IMC Group Consulting Limited ("IMCGCL" or "IMC") of Nottingham, England has been commissioned as independent technical consultants for the preparation of this report. The Qualified Persons, signatories of this report, are engaged as consultancy employees or sub consultants of IMCGCL. IMCGCL has received fees for the preparation of this report. There is no other corporate or commercial relationship between IMCGCL and EastCoal nor does any such relationship exist through the individual signatories, each of whom confirm their independence in the Certificates of Qualified Persons in Section 24 of this report.

This technical report covers the Verticalnaya Mine and the Verticalnaya North Project ("VNP") and has been compiled to conform to the disclosure and reporting requirements established by Canadian Securities Administration National Instrument 43-101, Companion Policy 43-101CP and Form 43-101F1.

4.2 Purpose of the Report

The purpose of the report is to provide an independent assessment of the mine by reviewing pertinent data, including resources, reserves, manpower requirements, environmental issues and the life-of-mine ("LOM") plans relating to productivity, production, operating costs, capital expenditures and revenues.

IMC has reviewed the practice and estimation methods undertaken by the Company for reporting reserves and resources in accordance with the Former Soviet Union (FSU) "Classification and Estimation Methods for Reserves and Resources," last revised in 1981. This procedure establishes the nature of evidence required to ensure compliance with the Classification. Within this is a "Conditions for Estimation of Reserves and Resources" unique to each deposit. IMC has reviewed the reserves and resources statement of the Verticalnaya mine compiled by the Company and has restated the reserves and resources in compliance with the reporting requirements established by Canadian Securities Administration National Instrument 43-101, Companion Policy 43-101CP and Form 43-101F1 In this report, all reserves and resources estimates, initially prepared by the Company in accordance with the FSU Classification, have been substantiated by evidence obtained from IMC's site visits and observation and are supported by details of drilling results, analyses and other evidence and takes account of all relevant information supplied by the management of the Company.

Mining, and in particular underground coal mining, is carried out in an environment where not all events are predictable. Whilst an effective management team can, firstly, identify the known risks, and secondly, take measures to manage and mitigate these risks, there is still the possibility for unexpected and unpredictable events to occur. It is therefore not totally possible to remove all risks or state with certainty that an event that may have a material impact on the operation of a mine, will not occur.

4.3 Sources of Information

The sources of information and data used in the preparation of this report are as follows:

4.3.1 Mining

- These facilities are to be brought back into production in accordance with a plan initially prepared by Luganskgiproshakht and refined by the Company.
- Feasibility Report on the Opening and Operation of Volodarskiy Mine 1250 m level prepared by Luganskgiproshakht
- Technical Report on the Verticalnaya Mine, Ukraine (NI 43-101 Standards) dated September 2008
- Verticalnaya Mine, Ukraine, Feasibility Study of Verticalnaya North Project (VNP) dated July 2009

4.3.2 Coal Preparation

- The 1986 Re-evaluation of Resources Report carried out by the GOAO Luganskgiproshakht Institute
- Washability test report on ROM from seam H_{11} at the adjacent Mine No3 Davievskaya in 1959
- Washability Test report on ROM from the H_8 seam at the Verticalnaya mine sampled at the Isentralnaya Central Washery Plant in 1984.
- ROM and washed coal quality predictions (including a 1960 washability test) from bulk samples taken from seam H_8 at the Verticalnaya mine.
- Washability test report on H_8 produced by CCI Ukraine Ltd in 1998.
- Washability test report on H_8 coal at the Sverdlevskaya washery plant in 1992.
- 1992 Feasibility Report prepared by the GOAO Luganskgiproshakht Institute.
- E-mail correspondence between Brian Everitt and Colin Stocks of EastCoal Inc dated 16th & 18th June 2009, 24th & 31st January 2011
- Telephone conversations with Colin Stocks 31st January 2011

4.3.3 Environmental

- Feasibility Report on the Opening and Operation of Volodarskiy Mine 1250 m level prepared by Luganskgiproshakht
- Contract between EastCoal and Luganskgiproshakht for preparing the technical specification of the VNP, May 2009
- Technical Specification for opening Verticalnaya Mine at 1250m level, Explanatory Note for Land Lease, Luganskgiproshakht, 2008.
- Local area map (approximately 5.5km x 3.5km, scale 1:10000) showing infrastructure, population centres and environmental protection zones in the proximity of Verticalnaya Mine and the VNP site.
- Technical Report on the Verticalnaya Mine, Ukraine (NI 43-101 Standards) dated September 2008
- Verticalnaya Mine, Ukraine, Feasibility Study of Verticalnaya North Project
- Approval of the Head of State Administration for allotment of land for the VNP, March 2010, No 1065.
- Report of the State Expertise on the feasibility study environmental assessment of the VNP, No 12/29.09.2010 – 2179, December 2010.

4.3.4 Financial

The estimates have been prepared using a combination of:

- The business plan provided by the Company and
- The 2006 Luganskgiproshakht Report prepared on behalf of ECC;
- Experience of other coal mines in Russia and Ukraine;
- Experience of other coal mines outside of Russia and Ukraine.

4.4 Scope Personal Inspection

Qualified Person Mike Coultas (Geologist) visited the mine assets with the Company Technical Director on three separate occasions in conjunction with the preparation of this and other reports.

- November 2006
- January 2008
- June 2008

Qualified persons John Warwick (Project Director and Mining Engineer) and Brian Everitt (Coal Process) visited the property with "Other Experts" Peter Robinson (Financial) and Mike George (Environmental) in November 2006. Mike George revisited the property in June 2009 to inspect the proposed site of the Verticalnaya North Project (VNP).

5 RELIANCE ON OTHER EXPERTS

For the preparation of this Technical Report, the Qualified Persons have relied upon the work of another expert in respect of the following contribution and discipline:

For environmental procedures, consents and environmental performance the present report is reliant on the site inspection and reporting performed by Mr Michael George. Michael George is an honours graduate in Applied Chemistry (Kingston-on-Thames Polytechnic, UK. 1972), with over 35 years experience in mineral processing and over 17 years specialist experience in environmental assessment. He has performed services for over eight years as environmental consultant for IMCGCL. He undertook a visit to the Verticalnaya Mine and project site between 26th and 27th February 2007 and is responsible for Section 25.4 and parts of the Section 3 Summary relating to the Environmental Considerations in this Technical Report.

The work of the above expert can be relied upon.

6 PROPERTY DESCRIPTION AND LOCATION

The Verticalnaya mine licence area is in the Dolzhano-Rovenetskiy region of Donbas. The licence area is 52.4 km^2. The centre of the mine licence area is 39˚ 50´E 48˚ 10´N or 42000E 29500N in local coordinates.

The mine licence document lists the coordinates in longitude and latitude. EastCoal has been issued a mining licence for the property, No. 4305 dated 19th July 2007 which allows them to extract coal from seams H_{11}, H_{11}^{B}, H_{10}^{B}, H_8 and H_8^{B} within the licence area. This licence is valid for 20 years from the date of issue expiring on the 19th July 2027.

6.1 The Nature and Extent of the Issuer's Title to, or Interest in the Property including Surface Rights

The mine licence is issued by the Ukraine Ministry of Mines. They are the only authority allowed to give permission for mining within the Ukraine.

In May 2009 EastCoal Inc took ownership of the assets comprising the Verticalnaya Mine, acquiring the mining licences and finalising an agreement for rental of land areas required for implementation of the original project to work the mine and for the VNP site.

The protocol for acquiring these and commencing mining activities is an integrated, phased process involving:

- Acquisition of a licence to develop the deposit from the Ministry of Ecology and Natural Resources (MENR).
- Gaining permission to rent land areas housing the mine and process facilities, infrastructure, waste storage site and water treatment from the Sverdlovsk civil authority.
- Obtaining the mining lease from the Ministry of Coal.
- Obtaining various permits for labour safety and environmental emissions.

6.1.1 Mining Licence

EastCoal Inc has acquired the mining licence for seams H_8, H_{10} and H_{11} under an open tender by the MENR, which is valid to July 2027. Terms of licences include obligations of the owner to work according to safety and environmental laws, make efficient use of the resources, submit summary production reports monthly and detailed annual reports, and pay royalty fees equivalent to US$ 0.25 per tonne coal delivered to the surface on the specified dates.

6.1.2 Rental of Surface Areas

EastCoal requires land area totalling 23.7315 Ha for the mine and process facilities, rail and road infrastructure and waste storage areas. This land area has been rented from the Sverdlovsk district authority and the Company has complied with the following:

- Demonstrate ownership of buildings, facilities on the land rented
- Be in possession of the licence to develop the deposit
- Have written confirmation from the current owners, Lugansk UDKR (the State Enterprise Regional Administration) that the assets can be privatised.
- Approval from the Sverdlovsk regional council signed by the Mayor.

The residual value of the assets is currently estimated at Ukr 23.8 million. The monthly rental with the State Property Fund is US$ 17,000 per month.

The land required for the mine access and surface facilities of the VNP, approximately 1.5 km north west of the main Verticalnaya site, totals 10.0146 Ha. It is owned by the local civil authority and under the administration of the Sverdlovsk District Authority.

A contract for lease of the land for the VNP was issued by the Regional State Administration on 16.09.2010 and is valid until 19.07.2027. The total area of 7.6644 Ha is under long-term lease and an area of 2.3502 Ha is under short-term lease for 5 years.

The Company engaged Luganskgiproshakht Institute to prepare a technical document to support the application to lease this land from the Sverdlovsk Civil Authority, which specified:

- The characteristics of the land.
- Technical details of the project.
- Infrastructure requirements.
- Methods of disposal of waste and water.
- The area and boundaries of the land required.
- Ownership of adjoining land and an estimate of any damage or losses likely to be incurred.
- Provisional plans for rehabilitation of the disturbed area.

IMC understands that the lease was concluded without any objections as the site and surrounding land are currently unused and the local population is generally supportive of resumption in mining because of the employment prospects.

6.1.3 Mine Lease

Following acquisition of the Mining Licence, EastCoal Inc submitted the project plans and drawings to the Ministry of Coal. After review and approval by various departments of the Ministry of Coal, the mining lease is issued. In parallel, EastCoal has obtained permits for mining and use of explosives by demonstrating that the relevant managers and explosive specialists have the necessary experience and qualifications.

The original project feasibility study by Luganskgiproshakht has received positive conclusion following review by the State Expertise committees for labour safety and ecology. A revision of the mining plan was approved before site construction work commenced.

6.2 Conditions of Mining Licence

The licence states that there are additional conditions for mining the coal. These are

- The licence is issued according to the results of the tender (protocol No.13, dated 11th June 2007)
- Conformation with conditions laid down in:
  - State Control of Ecological Recourses in the Lugansk Area, Card No.1272 dated 18th April 2005
  - State Mining Industrial Control No. 01/02-07.04.1/891 dated 20th December 2006
- Complete and in time payment of obligatory payments to State Budget according to the Legislation
- Annual report to "GEOINFORM of Ukraine" Form 5-GR

6.3 The Property Boundaries

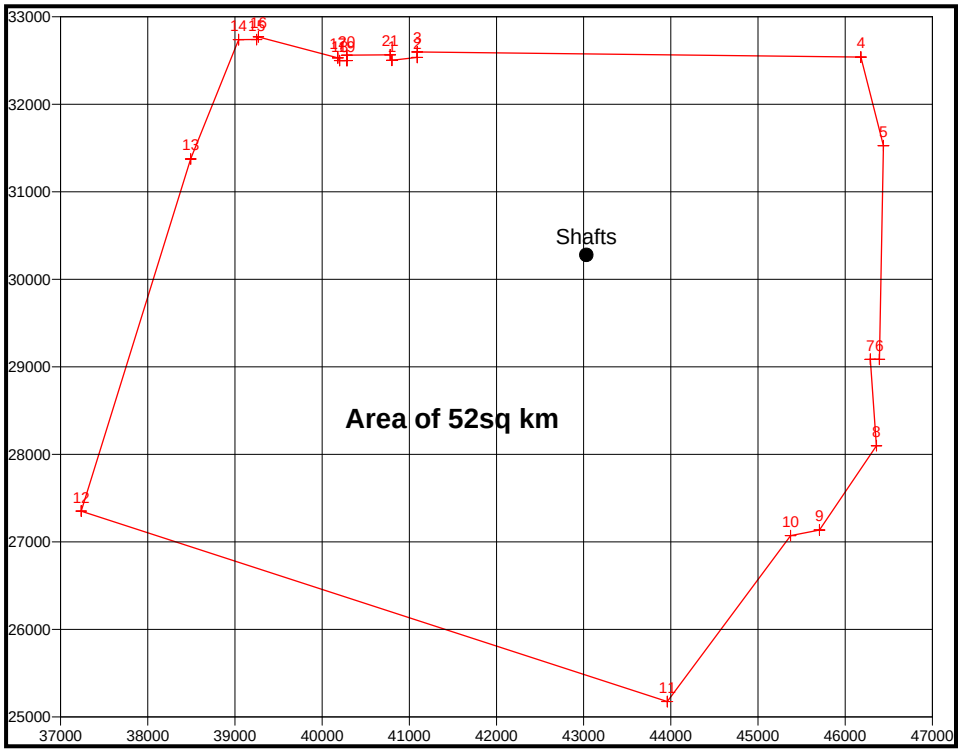


Figure 6-1 Licence Area, Verticalnaya Mine

A list of the co-ordinates, both in latitude/longitude and local grid, shown above are listed below:

Table 6-1 Co-ordinates of the Lease Boundary

Point	Latitude/Longitude						Local	
	East			North			East	North
	Deg	Mins	Secs	Deg	Mins	Secs		
1	39	32	53	48	7	28	40801.00	32503.93
2	39	33	7	48	7	29	41090.29	32536.88
3	39	33	7	48	7	31	41089.89	32598.66
4	39	37	13	48	7	22	46179.18	32539.43
5	39	37	25	48	6	55	46439.10	31527.48
6	39	37	22	48	5	36	46391.80	29086.90
7	39	37	17	48	5	36	46288.39	29086.06
8	39	37	20	48	5	4	46358.40	28098.18
9	39	36	48	48	4	33	45703.77	27135.37
10	39	36	32	48	4	31	45373.07	27070.96
11	39	35	23	48	3	30	43959.24	25175.75
12	39	29	59	48	4	42	37236.03	27352.16
13	39	31	1	48	6	52	38492.35	31375.96
14	39	31	28	48	7	36	39041.54	32738.78
15	39	31	38	48	7	36	39248.33	32740.19
16	39	31	39	48	7	37	39268.80	32771.22
17	39	32	23	48	7	29	40180.39	32530.43
18	39	32	24	48	7	28	40201.29	32499.69
19	39	32	28	48	7	28	40284.00	32500.27
20	39	32	28	48	7	30	40283.57	32562.04
21	39	32	52	48	7	30	40779.88	32565.56

The mine boundaries set out in the licence agreement are dictated by:

- Outcrop of the coal seams on the rise side to the north;
- Tsentrosoyuz mine workings on the east side along the strike of the coal seam;
- Cosmonavtov mine workings on the west side along the strike of the coal seam;
- The final contour line of the current licence area allocated to the dip.

The location of the mine shafts and other surface features were checked using GPS measurements and the results confirm the location of the licence area.

The location of the old mine workings are shown on a map in Section 11, Figure 11.1 and the location of all known mineral zones are shown in map form in Sections 15.1 to 15.3.

6.4 The Terms of any Royalties, Back-in Rights, Payments or Other Agreements and Encumbrances to which the Property is Subject;

Payment to the State Property Fund for the assets is required for the operation of the mine and will be paid as a monthly rental.

6.5 All Environmental Liabilities to which the Property is Subject;

There is an ongoing liability associated with the pumping of water from the mine to protect adjacent operating mines from flooding. The water is treated by oxidation and settlement of solids in a cascade of 3 ponds before discharge to the River Bolshaya Kamyanka.

In 2010 within 6 months of the date of the first of the required environmental permits, the Company carried out a baseline environmental study according to an agreed programme with the State Administration of Ecological Resources and agreed on the following programme for the minitoring of the environment.

- Monitor the ecological state of the environment (subsoil, water bodies, soils, bio-resources) in the area of mining influence including radiation monitoring according to the programme agreed with the State Mining Industry Inspection of Ukraine.

- Dispose mining dumps and waste materials with minimal influence on the environment, and systematically control their state.
- Arrange mine workings, surface infrastructure facilities in such a way to exclude harmful influence on the environment according to the requirements of industrial safety and subsoil protection as well as environmental legislation,
- Reclaim disturbed soils – until the date of permit expires.
- Take all necessary steps to minimise or avoid negative influence of mining practice upon the environment.

Part of the site leased for the VNP is designated industrial land and the Company is required to work according to lease conditions to protect the environment and after completion of mining to restore the land to an agreed condition.

6.6 The Permits that must be acquired to Conduct the Work proposed for the Property, and if the Permits have been Obtained.

Environmental protection in the Ukraine is legislated using a system similar to that adopted by many countries throughout the former Soviet Union. With regard to the exploitation of mineral deposits the primary articles of legislation governing are:

- The Law of Ukraine on Protection of the Natural Environment, No. 1264-XII, 25.06.91.
- The Code of Ukraine on Subsoil, No. 132/94-BC, 27.07.94.

The permitting procedure for mining projects consists of three distinct phases: exploration, project initiation and project operation. Environmental regulation, applied throughout these phases, is established in the primary legislation. The Subsoil Code establishes the basis for the issuing of exploration and mining licences and defines the concept of the rational use of resources. Procedural measures, permitting and the basis for standards are provided in subsidiary legislation, such as

- The Water Code of Ukraine, No. 213/95-BP, 06.06.95.
- The Law of Ukraine on Protection of the Atmosphere, No.2707-XII, 16.10.92.
- The Ground Code of Ukraine, No. 2196-XII, 13.02.92.
- The Law of Ukraine on Waste Products, No. 187/98-BP, 3/5/1998.

A key element of the project initiation phase is the OVOS process, which is equivalent to the international Environmental Social Impact Assessment. The OVOS is used as the basis for the application for permits covering waste management, water abstraction and discharge, and emissions to atmosphere. Further implementation of a project is dependent on receipt of an Environmental Certificate and review of the EIA by the State Environmental Expertise according to the Law of Ukraine on Ecological Expertise, No. 45/95-BC, 09.02.95. The latter was obtained by EastCoal after the procedures for public notification and consultation were concluded.

A large number of rules, regulations, normative documents and Government decisions are taken into account in the development of the EIA including:

- Maximum permissible concentration (MPC) of harmful substances in air.
- Specifications of quality of fishery and domestic water use.
- Maximum permissible concentration, sanitary rules and norms for protection of surface waters from pollution.

Environmental protection is enforced mainly by the requirement to obtain and maintain the environmental permits that establish and regulate an economic mechanism levying payments for permissible or normative amounts of emissions and waste production. Environmental permits, specifying the permissible quantities of air emissions and waste storage are issued annually whereas water usage and discharge permits are

normally valid for 5 years. Renewal is subject to submission of an annual environmental report, compliance with specific provisions and payment of taxes at the required dates. The normative levels must be re-assessed periodically, typically every 5 years for air emissions.

Two critical approvals necessary for the project implementation have been received. The submission of the ecological certificate has been approved by the Chief of the Department of the State Administration of Ecology and Natural Resources in Lugansk Region, on 18.04.2005, under the following conditions:

- Operation within the requirements of the legislation of Ukraine regarding the nature environment protection and providing ecological safety.
- Positive conclusions of the state ecological expertise concerning the project of the coal deposit development, including solving the ecological and hydro-geological problems that may occur in process of coal mining and closing of the mine. Developing special measures for reducing or excluding the negative impact of mining upon the natural environment on the basis of the received conclusions (before beginning the work on the site).
- Obtaining permissions for waste products, their storage and discharge before beginning the work on the site.
- Carrying out the radiation and hygiene evaluation of the deposit and providing the results of the latter to the state administration before beginning the work on the site.
- Registering the special permission in the State Administration of Ecological Resources in Lugansk Region within 10 days upon its obtaining.

The state ecological expertise was carried out by the State Administration of Ecology and Natural Resources in Lugansk Region and approved on 20.05.05 with the following statements:

- The project decisions and all the measures covered by the project regarding the protection and renovation of the environment in the project area, including the social issues, do not violate the current actual state legislation on the natural resource protection, and mainly do not deteriorate significantly the present ecological situation in this area.
- All the materials and documents provided for the state ecological expertise, the technical and economic proof of the practicability of development and preparation of the 1,250 m level of the Volodarskiy mine, East Coal Company Ltd., are estimated as positive and are approved.

Luganskgiproshakht has revised the original feasibility study, including the environmental impact assessment to include the VNP. The impact assessment has received positive conclusion by the Head of the State Environmental Protection Department in Lugansk Region, document No. 12/29.09.2010-2179 dated 21.12.2010.

Environmental permitting has been granted as follows:

- In accordance with a letter dated 29.05.2009 from "Ukrshahtgidrozahist" (previous owner of the mine) all environmental permits for the then care and maintenance operations were in place.
- On 17.06.2010 the Company received “Permit for emission of the detrimental substances to the atmosphere”, which is valid until 17.06.2020.
- In July 2009 the Company received “Permit for emission of the polluting substances to the water”, which was valid until 01.01.2011.
- On 1st January 2011 the Company received “Permit for emission of the polluting substances to the water”, which is valid until 01.01.2014.
- On 1st January 2011 the Company received “Permit for generation and placing of the waste”, which is valid until 01.01.2012 and is renewable annually.

The above constitutes all the required environmental documents that the Company need to operate. IMC understands that an environmental management organization has now been established for the routine management of environmental operational issues, permitting and licensing.

7 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASRTRUCTURE, AND PHYSIOGRAPHY

7.1 Topography, Elevation and Vegetation

The land is at an altitude of approximately 300 m and typical of steppe country with generally flat grassland intersected by shallow gulleys formed by ephemeral and permanent streams. Verticalnaya mine lies in the watershed of the gulleys Dolzhik in the east and Medvezhya in the west, which flow into the River Bolshaya Kamyanka, a tributary of the Severskiy Donets. The Bolshaya Kamyanka is used for fishery and domestic use and is already influenced by discharge of mine waters and community waste water.

The site leased for the VNP mine access and surface facilities occupies a slightly elevated position, at 320 m, approximately 1.5 km north-west of the main Verticalnaya site. The land in the immediate vicinity is gently undulating with vegetation consisting of grass and small trees but no evidence of agriculture or animal grazing. A shallow river valley lying to the east of the site is dammed at several points upstream to form the settlement lagoons for treating water from the main Verticalnaya Mine site.

7.2 The Means of Access to the Property

The surface industrial site covers some 10.4 Ha including 3.0 Ha of approach roads. Located in a rural area with electrical power supply, mains water, mains sewage, and good access roads already established.

7.3 Proximity to a Population Centre and Nature of Transport

The Verticalnaya mine, formerly known as Volodarskiy, is located in the Sverdlovsk district, Lugansk region of Ukraine west of the city of Sverdlovsk. A number of settlements lie in the vicinity including towns of Lunacharsk, Leninskiy, Volodarsk, Ustinovka, and villages of Malomedvezhje, and Fedorovka; the latter only 1.5 km from the mine. Houses of Volodarsk village are visible from the VNP site at a distance of approximately 500 m to the north east.

Mining in the region has been ongoing for almost 100 years resulting in a landscape dominated with numerous waste heaps, mine head gears and settling ponds. Within the bounds of the Verticalnaya lease area are the closed aluminium plant “Intersplav” and the Valyanovskiy gravel plant. The locality is a densely populated and highly developed industrial region, associated mainly with coal mining and manufacturing. Although several mines bordering Verticalnaya are still in operation, the collapse of the coal industry during the 1990s had a high impact on the local economy.

Transport for a potential workforce could easily be established from the local centres of population by a public or Company run buses.

There are loading facilities available for the screening and loading of ROM and waste mineral wound out of the mine from the current men and materials shaft and a railway link line runs within 800 m of the mine site

A rail spur at the nearby gravel plant with wagon loading facilities, approximately 1 km from the VNP site, is under consideration for delivery of coal directly to the power station. However in the early stage of mining coal at VNP delivery will be by road, prior to a link road being constructed to the planned rail loading facilities.

7.4 The Climate and the Length of the Operating Season

The regional climate can be extreme with snow and temperatures of -30ºC in winter rising to +30ºC with dry sun in summer. However, the extensive mining operations throughout the whole of the Donbas are used to working with such extremes so, with adequate precautions, mining operations are continuous throughout the year.

7.5 Sufficiency of Surface Rights for Mining Operations, the Availability and Sources of Power,

Potential Tailings Storage, Potential Waste Disposal Areas

EastCoal has rented a land area of 23.7315 ha for the main mine and 10.0146 Ha for VNP for its mine and process facilities, rail and road infrastructure and waste storage areas as detailed in Section 6.1.2 above.

A main electrical sub-station is built and operational, having two independent power supplies as is stipulated by Ukrainian Mining Law. During the reconstruction of the mine a new sub-station and network of supply cables both on the surface and down the new skip shaft is planned. Also a new control centre will be built.

Land for the building of a coal preparation plant and the disposal of waste material from mining operations is available adjacent to the new skip shaft.

EastCoal proposes to install a natural medium barrel wash plant to process the initial coal production for VNP adjacent to the plant will be a small area of land allocated for coal stocking prior to loading... Other facilities at the site will be the portals for the drift access, mine ventilation equipment, conveying equipment, a small heating plant, haulage houses, weigh bridge, office and security buildings and water treatment facilities.

The total area and boundaries of the land required for the VNP facilities was defined in a technical study by Luganskgiproshakht and submitted with the application to rent the land from Sverdlovsk Civil Authority. EastCoal has concluded a lease contract for the land required for the surface facilities and infrastructure of the VNP.

Waste rock from the drift development will be stored in an allocated area 120m north of the VNP site, in accordance with the Regional State Administration Order No 1065, September 2010.

8 HISTORY

The Verticalnaya Mine is owned by the State Authorities and is now legally leased by EastCoal, which is valid to July 2027. The mine was previously owned and operated by the State authorities who have kept the mine under care and maintenance. During the period when the mine was operational, no coal was mined in the areas of the H_{11}^{B} and H_{10}^{B} seams.

Several phases of exploration drilling have been completed by The Ministry of Coal Industry of USSR since 1930, the most extensive phase being during the 1970's when over 200 cored boreholes were drilled in the area of the Verticalnaya and adjacent mines. The latest review of the geology and resources was completed in 1986 by The Ministry of Coal Industry of USSR. The original borehole data is now held by The Ministry of Coal and Energy of Ukraine.

Original borehole sections, together with seam plans and reports are held at the Ukraine Ministry in Lugansk (Luganskgiproshakht). These documents have been seen and inspected during the visits to the Luganskgiproshakht. EastCoal do have copies of some borehole logs and some of the seam plans and associated documents.

The latest review of the geology and resources was completed in 1986 by The Ministry of Coal Industry of USSR. The original documents of this review are held by the Luganskgiproshakht. EastCoal has copies of the documents from this review and have based their proposals on this 1986 review and evaluation of resources. EastCoal do have copies of some of the seam plans and associated documents. Copies of seam plans and seam data relating to H_{11}^{B} and H_{10}^{B} seams have been used to compile the report.

The H_8 seam has been subject to mining until the suspension of coal production due to flooding. The production has demonstrated that the resource estimates, structural interpretation and mine planning were realistic. There is no reason to question the geological interpretation or estimates of coal quality and quantity.

The data held at the Luganskgiproshakht is typical of the comprehensive borehole data listings, coal analysis results, seam plans and reserve block definitions, prepared by the former USSR Ministries. From this data the coal resources have been calculated according to the FSU standards. The Luganskgiproshakht also holds information gathered during the mining of the H_8 seam at the Verticalnaya mine and from other

mines in the area. An independent check of the resources in the H_{11} seam has been completed from copies of the exploration data held by Luganskgiproshakht and EastCoal.

There are no proposals for further exploration either by the Ukraine Ministry of Coal or by EastCoal.

9 GEOLOGICAL SETTING

The coal bearing strata of the Dolzhano-Rovenetskiy Region of Donbas are of Carboniferous age. Superficial deposits in the area are a thin (up to 25 m) covering of Quaternary clays and loam

The coal resources within the Verticalnaya mine lease area are situated on the northern limb of a broad syncline structure. The strata dip toward the south at 18º (c.1 in 3) from sub-crop along the northern perimeter of the mine. Towards the central area and southern perimeter of the mine, the southerly dip of the strata flattens becoming 8º to 10º (c.1 in 7) close to the axis of the synclinal structure. To the west of the mine perimeter, the strata have an easterly component to the dip which also flattens toward the south and east.

The strata are displaced by a number of faults which occur in two zones. These faults strike north north-east to south south-west. One such zone occurs in the central area of the mine and has been encountered during the mining of the H_8 seam. The displacements along these faults vary from 2 or 3 m to over 10 m. The second fault zone is in the west of the area close to the mine perimeter, some 3.5 km from the central faulted area. These faults have displacements of 10 to 50 m and effectively form a western limit to the mine. The eastern perimeter of the mine is also delineated by a fault just outside the lease boundary.

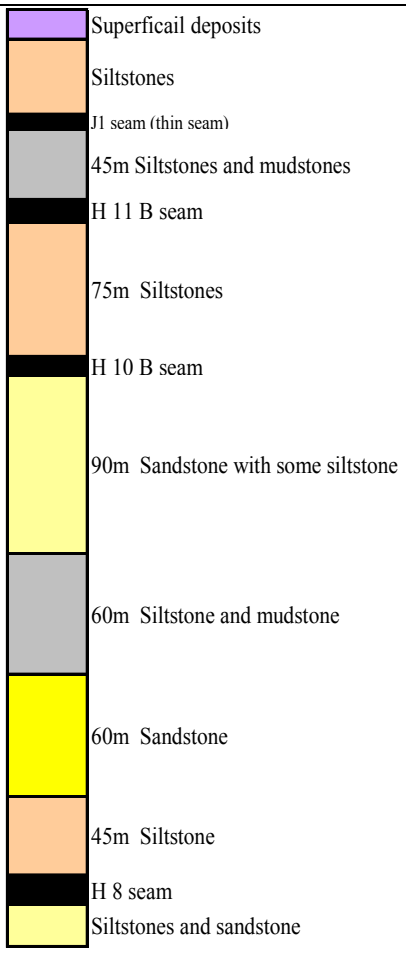


Figure 10-1 Generalised Vertical Section

10 DEPOSIT TYPES

The deposit type is determined as being an underground mineable deposit and would be extracted utilising shortwall, and/or longwall extraction techniques from surface drifts and shafts.

The coal resources are primarily contained in two seams, the H_{11} seam and the H_8 seam some 350 m below. The seams are contained in the series known as $C_{2\text{-}3}$ Formation. This formation also contains several other coal seams, one of which, the H_{10} seam, reaches potentially recoverable thicknesses of greater than 0.60 m.

The coal deposits are of anthracite grade having volatile matter content of less than 8% on a dry, ash free basis. Moisture content of the coal is between 1.5% and 3%. The calorific value of the coal is typically 8000 kcal/kg (daf). Ash contents are variable but average 15% to 20% on a dry basis.

The coal seam structure, thickness and

quality are well defined by the exploration programs undertaken and the mining history of the area confirms the quality of coal being mined.

11 MINERALISATION (COAL SEAMS)

The coal seams are contained in competent rock strata, 85% of which are described as sandstone or sandy shale (siltstone). Between the H_{11} and H_8 seams there are two competent sandstone horizons, one of some 30 m in thickness and one of some 60 m in thickness. The sandstone and siltstone rocks have compressive strengths in the range 35 to 165 MPa. However, the majority of the immediate roof and floor strata of both the H_{11} and H_8 seams have strengths in the range 59 to 78 MPa (70 MPa average).

Within the Verticalnaya mine, the H_8 seam has been worked extensively in the eastern portion of the mine down to the -1000 m level (a depth of some 1250 m). The H_{11} Seam is not worked within the mine area.

The EastCoal propose to begin working coal from the H_{11} seam and resume working coal from the H_8 seam. The H_{11} seam is approximately 320 m to 350 m above the H_8 seam, separated by predominantly competent sandstone and siltstone strata.

The H_{11} seam is a split seam occurring throughout the mine area with only a relatively small area where the splits combine to form a single seam (H_{11}). This single seam area occurs close to the central faulted area and from the +50 m to -650 m levels. It has a thickness from 1.24 to 1.46 m with an average of 1.34 m.

In the majority of the mine area the upper spit of the seam (H_{11}^B) is of exploitable thickness, being 0.60 m or thicker. This upper leaf is known as the H_{11}^B and where it is 0.60 m or greater in thickness, EastCoal propose to mine this split. The H_{11}^B seam occurs at levels from +200 m to below the -1000 m level.

The generalised vertical section of the coal bearing strata in the area of the mine shaft is shown not to scale (See Figure 10-1).

The H_8 seam has been worked down to the -1000 m level in the eastern part of the mine area. These workings became flooded to the -675 m level and mining ceased. The reason for abandoning the workings was the loss of groundwater control due to pump failure.

There are coal resources below the -1000 m level in H_8 seam but these can only be exploited after the water level has been pumped down. The H_8 seam below the -1000 m level has an average thickness of 1.15 m. It has been estimated that the mine workings, flooded to the -675 m level in H_8, contain some 2.65 Mm^3 of water. In addition it has been estimated that the recharge is between 315 and 422 m^3/hour (seasonal variation) down to the H_8 seam. A sustained pumping capacity of some 700m^3/hour will be needed to clear water from the H_8 workings within a period of one year. To the west of the faulted area and the abandoned workings, the H_8 seam becomes thin being predominantly less than 0.60 m thick and is of no current economic interest.

The areas of historic workings within the H_8 seam are shown in Figure 11-1 below:-

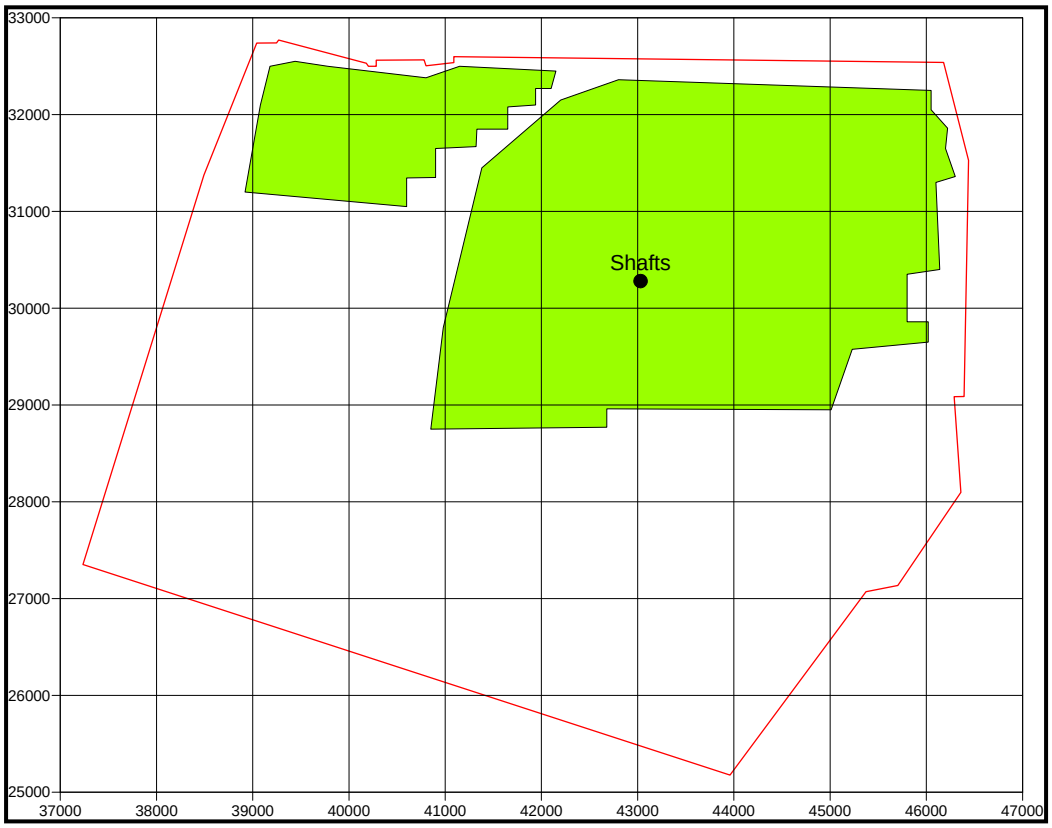


Figure 11-1 Previous Workings, H_8 Seam, Verticalnaya Mine

12 EXPLORATION

Exploration of the coal bearing strata in the area of the Verticalnaya mine began in 1930 and the latest phase of drilling was completed in the 1970's. Six exploration and drilling phases have taken place over this time totalling some 416 boreholes. The majority of these were cored boreholes drilled between 1966 and the late 1970's through to the most recent boreholes in 1985. Together with data collected during the mining of H_8 seam and mining in the adjacent areas, the deposit is regarded as being well defined.

The exploration work was directed by The Ministry of Coal Industry of USSR. The latest review of the geology and resources was also completed in 1986 by the same ministry. This original data is now held by The Ministry of Coal and Energy of the Ukraine. EastCoal has copies of some of the data and have based their proposals on the 1986 review and evaluation of resources. The data examined at the Ukraine Ministry in Lugansk (Luganskgiproshakht), now the professional institute with responsibilities to coal mining, is typical of the comprehensive borehole data listings, seam plans and reserve block definitions, prepared by the former USSR Ministries. From this data the coal resources have been calculated according to the FSU standards. The Institute also holds information gathered during the mining of the H_8 seam at the Verticalnaya mine and from other mines in the area.

The standards maintained during the exploration were very thorough and documentation and interpretation were to a high standard and can be relied upon.

It is proposed that, as part of the VNP, to drill some further exploration boreholes into the H_{10}^B seam from the H_{11}^B workings in order to further define the resources and confirm the coal quality.

13 DRILLING

The mine lease area was subject to investigation drilling from 1930. The original drilling logs are in the archive of the Ukraine Ministry of Coal in Kiev. Original borehole sections, seam plans and

documentation are held by the Luganskgiproshakht. The drilling consisted of both open hole and core drilling with some geophysical logging in the later phases of investigation. Borehole deviation measurements were standard.

The borehole spacing varies from some 200 m to 1,100 m and is sufficient to delineate the coal resources in term of physical characteristics and coal quality. The thickness of both the H_8 and H_{11} seams are well defined and the borehole spacing is sufficient to delineate the Measured Resource status under the JORC classification.

Coal samples were collected from the drill core and subject to analysis, primarily for ash, sulphur and volatile matter with additional analysis for calorific value on some samples. In addition to these, some coal samples were subject to wash analysis in order to evaluate the yield for the coal washing process. Rock strength measurements were recorded for non coal strata in order to assist mine planning. The borehole distribution within and immediately adjacent to the mine area is shown on the plan below:-

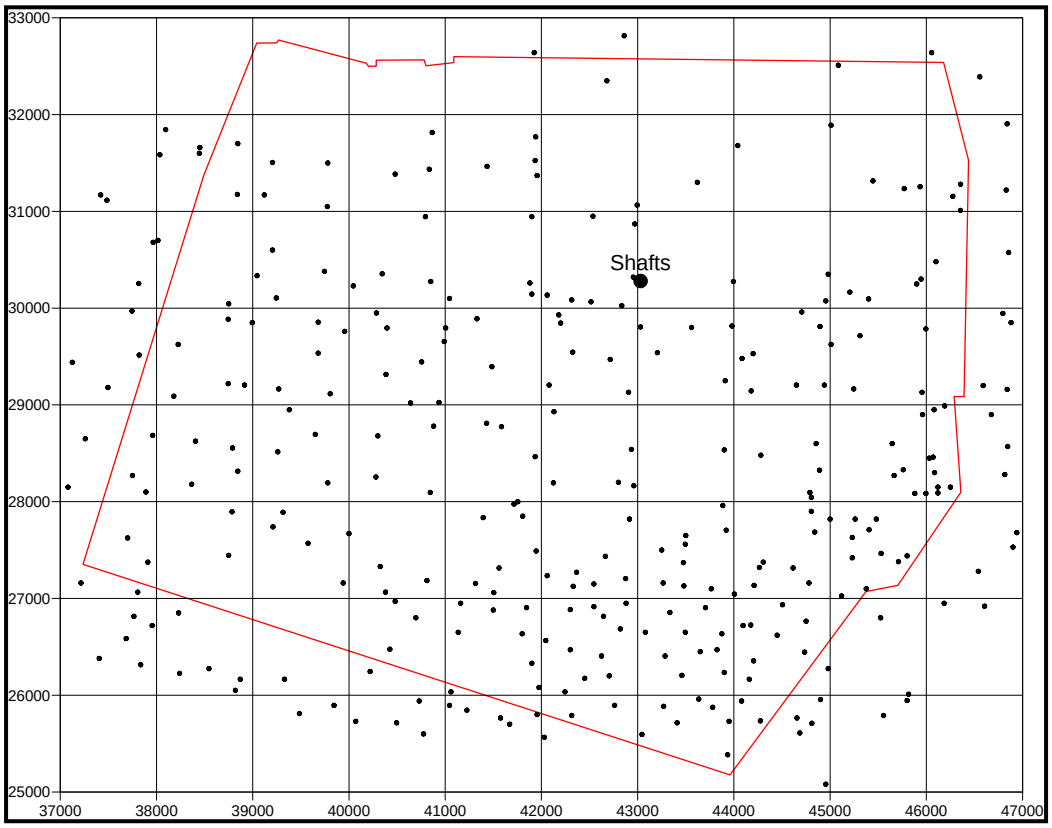


Figure 13-1 Distribution of Boreholes

Drilling and coal analyses were conducted to the standards set down by the State Authorities. Historically, these procedures have proved to be thorough and reliable and can be relied upon in this case. The mine area is well defined by the boreholes. The mine area is not geologically complicated and the structure and coal quality are well defined.

14 SAMPLING METHOD AND APPROACH

The methods and systems employed throughout the exploration of the coalfield area would have been based on Standards laid down by the Ministry of Coal of the former USSR. A review of the specific methods employed to generate the information under review has not been carried out. However, the level of detail and the method of reporting of the information reviewed are consistent with that found on many other projects throughout the FSU which have proved to be comprehensive, detailed and reliable. Every aspect of seam depth, thickness and quality was recorded and logged from the borehole programme. In addition,

the nature of the strata was analysed, including rock characteristics and strengths. Coal samples taken during the exploration phase were analysed for quality, primarily for ash, sulphur and volatile content but also moisture and calorific value.

15 SAMPLE PREPARATION, ANALYSES AND SECURITY

The quality data reviewed has been obtained over a considerable period of time both during the exploration phase and the subsequent operational period of the mine. It is considered that the methods and procedures employed in obtaining representative samples, maintaining an appropriate chain of custody, together with sample preparation and subsequent analysis would also have been based on the Standards laid down by the Ministry of Coal of the former USSR and the appropriate GOST Standards. Most of the test-work was carried out by the appropriate State Authorities. The washability tests carried out in 1998 were undertaken by the independent company CCI Ukraine Ltd who it is understood are certified under ISO 9001/2000.

There would appear to be no reason to question the adequacy of the procedures employed or the validity of the results obtained.

The quality of the coal seams is well defined by the results of the drilling programmes and analytical data is reported for the seams occurring throughout the mine area. The quality of the coal in the areas which EastCoal plan to extract are summarised below.

15.1 Seam H_{11}

The quality data of boreholes reporting quality data in the H_{11} seam in the area planned to be extracted by EastCoal is shown below:-

Table 15-1 Individual Borehole Coal Quality Data for Seam H_{11}

Ash %d	Sulphur %d	Volatiles %daf	Calorific Value kcal/kg
7.80	1.00	2.20	7880
8.41	1.10	2.26	
7.60	1.48	2.51	
20.51	1.49	2.06	
8.34	1.43	1.76	
4.40	1.70	2.50	8100
4.80	1.40	2.50	
13.70	1.40	2.40	8000
17.52	1.69	3.92	7980
14.60	1.10	2.60	

15.2 Seam H_{11}^{B}

The quality data of boreholes reporting quality data in the H_{11}^{B} seam in the area planned to be extracted by EastCoal is shown below:-

Table 15-2 Individual Borehole Coal Quality Data for Seam H_{11}^{B}

Ash %d	Sulphur %d	Volatile %daf	Calorific Value kcal/kg
16.8	1.2	2.0	7930
15.7	1.0	3.5	
12.7	1.4	2.8	7780
15.7	1.8	4.6	
12.4	1.3	2.4	8025

Ash %d	Sulphur %d	Volatile %daf	Calorific Value kcal/kg
20.7	1.4	2.6	7880
23.0	1.3	1.2	
5.2	1.4	2.7	
21.9	1.5	4.0	
19.9	2.3	2.1	7680
15.3	1.9	2.4	7860
8.3	1.9	2.2	7980
17.0	1.8	2.7	
11.7	1.3	2.6	
4.9	1.6	1.8	
19.0	1.6	2.5	
26.0	1.4	2.3	7880
20.0	2.1	1.3	
9.5	2.0	1.5	
13.2	2.0	2.1	8100

15.3 Seam H_8

The quality data of boreholes reporting quality data in the H_8 seam in the area planned to be extracted by EastCoal is shown below:-

Table 15-3 Individual Borehole Coal Quality Data for Seam H_8

Ash %d	Sulphur %d	Volatiles %daf	Calorific Value kcal/kg
5.5	1.1	3.6	8020
11.0	1.7	5.4	
10.5	2.0	4.3	
6.3	2.0	4.8	7150
11.2	2.4	5.8	7775
20.0	2.5	2.6	
9.4	2.5	2.8	
13.7	2.6	4.2	7025
11.8	3.2	3.8	7810
13.5	3.4	3.9	
9.6	3.5	3.1	
10.9	4.0	3.0	
18.7	4.3	3.1	
10.8	2.6	5.6	7810

In addition to the coal quality data from the borehole programme, there is historic data from the mining of seam H_8 which confirms the quality of this seam.

The coal quality reported by the 1986 Luganskgiproshakht evaluation, using all the quality data is summarised below:-

Table 15-4 Summary of Quality Data

Seam	Coal Ash%d			Sulphur%d			Volatiles%daf			CV Kcal/Kg		
	Min	Max	Av	Min	Max	Av	Min	Max	Av	Min	Max	Av
H_8	4.3	39.3	15.6	0.8	7.3	2.8	1.7	5.8	3.5			8200
H_{11}	3.2	34.3	19.1	0.8	2.7	1.4	1.5	5.4	2.6	7780	8130	7987
H_{11}^B	2.1	40.0	15.4	0.8	4.2	1.9	1.3	7.1	2.8	7660	8100	7900

16 DATA VERIFICATION

During the visits to the Luganskgiproshakht, and the Verticalnaya Mine in 2008, original plans, reports and data listings were examined, including the report of the 1986 resource evaluation. These plans and reports include the interpretation of the borehole data showing seam structures, seam thickness and seam qualities. Copies of the seam plans and the 1986 evaluation document are held by EastCoal and have been used in the verification of the coal resources for all licensed seams.

During the visit to the Verticalnaya mine, it was possible to inspect an exposure of the H_8 seam and the roof and floor strata. In addition, it was possible to inspect the pumping equipment currently in use by the care and maintenance staff.

From the copies of the data used to evaluate the reserves, a check on the reserve calculation was completed for two listed reserve blocks from the 1986 estimate. The comparison of tonnage estimated is tabulated below:-

Table 16-1 Comparison Check on Reserve Blocks

	Seam H_8 Block 8 (Tonnes)	Seam H_{11} Block 30 (Tonnes)
1986 Evaluation	259,000	658,000
2008 Check	256,200	659,200

As would be expected, the reserve check is in good agreement with the 1986 evaluation, the small differences being attributed to measurement of the block area.

In addition to the above check, the resources of the central area of the H11 seam have been re-evaluated from the borehole data. This evaluation was done using computer software. The results are tabulated below:-

Table 16-2 Re-evaluation of Tonnages for H_{11} Seam

	Measured Resources (Mt)
1986 Evaluation	9.587
2008 Re-evaluation	9.934

The re-evaluation is in good agreement with the 1986 evaluation and gives confidence in acceptance of the 1986 Luganskgiproshakht evaluation.

The quality of the coal in the central area of H_{11} was also re-evaluated using computer software and the result is tabulated below:-

Table 16-3 Re-evaluation of Coal Quality for H_{11} Seam

	Ash (d)%			Total Sulphur (d)%			Volatile Matter (daf)%		
	Max	**Min**	**Average**	**Max**	**Min**	**Average**	**Max**	**Min**	**Average**
H_{11} Seam	20.0	7.6	14.7	1.7	1.1	1.5	3.9	1.8	2.7

This evaluation of quality compares well with the reported coal quality and gives confidence that the data can be relied upon.

17 ADJACENT PROPERTIES

There are two adjacent mines to Verticalnaya mine with workings in similar seams located to the east and west along the strike of the seams. These are:

- Tsentrosoyuz mine workings on the east side along the strike of the coal seam;
- Cosmonavtov mine workings on the west side along the strike of the coal seam;

No further details are available for these mines.

18 PROCESSING

18.1 Data Sources

The data which has been used in the preparation of this element of the report has been derived from a number of sources. The data is all historical in nature and was generated during the exploration of the area from the 1930's to the 1970's and from the previous operation of the mine up to its closure in 1998.

The data consists of:

- ROM and washed coal quality predictions (including a 1960 washability test) from bulk samples taken from seam H_8 at the Verticalnaya mine when it was still operational.
- Washability Test report on ROM from the H_8 seam at the Verticalnaya mine sampled at the Isentralnaya Central Washery Plant in 1984.
- Washability test report on H_8 produced by CCI Ukraine Ltd in 1998.

The majority of this information was obtained from the 'Geological Report on the additional exploration and re-evaluation of the anthracite reserves of the Volodarskava (Verticalnaya) Mine' carried out by the Production Association of Mine Geology and Technical Drilling 'Ukruglegeologiay' in 1986. The format of the reports and the level of detail included are indicative of the high standards which were laid down by the Ministry of Coal – USSR and which governed exploration, sampling, and analysis activities across the former Soviet Union.

Other data on washability predictions were made available by the Ukrainian Institute for Coal Preparation R&D.

In addition to the above, a further report was reviewed relating to a washability test carried out in 1998 by the independent company CCI Ukraine Ltd, on Run of Mine (ROM) coal from the H_8 seam at the Volodarskaya (Verticalnaya) mine immediately before operations ceased.

With regard to establishing the representative nature of the data, the procedures and methods employed by the State Institutes to generate this data were well established and governed by the appropriate GOST Standards.

Operational data from the H_{11} seam at the neighbouring Mine No.3 Davieskaya together with the uncomplicated geological nature of the area would support the view that the washability and quality data can be considered generally representative of what will be expected from the target seam $H11^b$ within the VNP area of the mine.

Additional coal samples will be obtained from both h8 and h11 coal seams for washability testing. The results of these tests in addition to the information already available will be used when designing the planned wash plants

18.2 Coal Quality and Classification

Section 15 includes a table which summarises all the main quality parameters from all of the data used in the 1986 re-evaluation report.

This data is supported by testing and analytical procedures carried out during the operation of the mine, the results of which correlate well with the borehole results, confirming the quality of the coal within the target seams.

The coals from the proposed seams are characterised by their high degree of metamorphism. Quality data from the 1986 report indicates very high vitrinite reflectance indices, with Ro values for H_{11} and H_8 seams of 5.24% and 5.25% respectively, very high fixed carbon contents of around 96 – 97%, and very low volatile matter content. On the basis of the analytical results, the coals can be identified as Anthracite of class 'A' under the Russian coal classification system and as 'Anthracite/meta-anthracite' under the ASTM classification system.

18.3 Coal Quality and Washability Characteristics

The coals from Verticalnaya mine when it was operating were transported to a number of central washeries for preparation for the market. The mine itself did not have a preparation facility of its own.

The quality data and distribution of boreholes reporting quality data in the H_{11}^{B} seam in the area planned to be extracted by EastCoal in the plan is shown in Table 18-1 below.

Table 18-1 Individual Borehole Coal Quality Data for Seam H_{11}^{B}

Ash %d	Sulphur %d	Volatile %daf	CV kcal/kg
5.2	1.4	2.7	
17.0	1.8	2.7	
15.3	1.9	2.4	7830
11.7	1.3	2.6	
19.9	2.3	2.1	7680
4.8	1.6	1.8	
23.0	1.3	1.2	
15.7	1.8	4.6	
12.7	1.4	2.8	7780
12.4	1.3	2.4	8025
20.0	2.1	1.3	
20.7	1.4	2.6	7880
15.7	1.0	3.5	
16.8	1.2	2.0	7930
19.0	1.6	2.5	
8.3	1.9	2.2	7980
21.9	1.5	4.0	
13.2	2.0	2.1	8100
26.0	1.4	2.3	7880
9.5	2.0	1.5	

In addition to the coal quality data from the borehole programme, there is historic data from the mining of seam H_{11}^{B} at the mine to the west of the Verticalnaya North Project area although this data was not available.

The coal quality reported by the 1986 Luganskgiproshakht evaluation, using all the quality data for seam H_{11}^{B} is summarised in Table 18-2 below:-

Table 18-2 Coal Quality Summary for Seam H_{11}^{B}

Seam	Coal Ash (%d)			Sulphur (%d)			Volatiles (%daf)			Calorific Value (kcal/kg)		
	Min	Max	Av	Min	Max	Av	Min	Max	Av	Min	Max	Av
H_{11}^{B}	2.1	40.0	15.4	0.8	4.2	1.9	1.3	7.1	2.8	7660	8100	7900

The data points covering the area of seam H_{11}^{B} forming the basis of the Verticalnaya North Project (VNP) indicate that clean coal ashes and full seam ashes are widely variable, ranging from

- Full seam 4.8% to 20.1%
- Clean Coal 2.4% to 20.1%

In order to predict potential yields from the proposed development, understand the washability characteristics of the coals, and to evaluate the processing technology required, results of washability tests carried on coals from both H_{11} and H_8 seams have been used. The results of these tests are reproduced in the following tables:

Table 18-3 Results of Washability Test H_8 Coal 1960

Fractional												
Size Range mm	<1.6			1.6-1.8			1.8-2.0			>2.0		
	Mass	Ash%	S%	Mass	Ash%	S%	Mass	Ash%	S%	Mass	Ash%	S%
100 – 50	0.3	6.9	1.5	75.2	11.2	2.0	6.1	23	3.1	18.4	74.1	3.8
50 -25	0.3	7.2	1.9	55.5	8.2	2.2	5.6	23.3	2.4	38.6	61.8	3.8
25-13	0.5	6.3	1.5	53.7	8.3	2.2	15.9	19.0	2.3	29.9	65.8	3.9
13-6	0.7	6.8	1.7	70.4	9.0	2.3	9.9	24.1	2.1	19.0	76.0	3.3
6-3	2.1	6.2	1.1	79.1	7.5	1.8	8.1	27.6	2.4	10.7	74.6	3.9
3-1	2.9	4.6	1.9	80.8	9.6	1.7	11.4	25.1	3.1	4.9	63.5	3.6
Cumulative												
Size Range mm	<1.6			1.6-1.8			1.8-2.0			>2.0		
	Mass	Ash%	S%	Mass	Ash%	S%	Mass	Ash%	S%	Mass	Ash%	S%
100 – 50	0.3	6.9	1.5	75.5	11.2	2.0	81.6	12.1	2.1	100	23.5	2.4
50 -25	0.3	7.2	1.9	55.8	8.2	2.2	61.4	9.6	2.2	100	29.7	2.8
25-13	0.5	6.3	1.5	54.2	8.3	2.2	70.1	10.7	2.2	100	27.2	2.7
13-6	0.7	6.8	1.7	71.1	9.0	2.3	81.0	10.8	2.3	100	23.2	2.5
6-3	2.1	6.2	1.1	81.2	7.5	1.78	89.3	9.3	1.6	100	16.3	1.8
3-1	2.9	4.6	1.9	83.7	9.4	1.64	95.1	11.3	1.8	100	13.9	1.9

These tests were carried out on ROM coal from the H_8 seam at the Verticalnaya mine in 1960. Whilst the mining area at the time was outside of the current lease area, it is reasonable to assume that these washability characteristics will closely represent those expected from the H_8 seam within the lease area.

In addition to and in support of the above information the results of a washability test carried out on the ROM coal from the H_8 seam at the Verticalnaya Mine sampled at the State Washery Plant 'Isentralnaya' in 1984 were included in the 1986 re-evaluation and are reproduced below.

Table 18-4 Size distribution & Fractional Composition H_8 1984 Test

Size Range (mm)	Yield (%)	Ash Content (%)	Sulphur Content (%)
+150	4.5	8.5	3.3
150 – 70	2.4	12.6	2.6
70 – 25	14.7	32.9	3.3
25 – 13	11.5	38.2	5.3
13 – 6	17.2	28.1	4.4
6 – 3	11.35	24.8	3.8
3 – 1	25.08	19.7	2.7
1 – 0.5	5.94	23.4	2.3
0.5 – 0	7.33	34.2	2.4
Total	**100**	**26.4**	**3.5**
Includes			
0.5 – 0.1	5.35	30.6	2.3
0.1 - 0	1.98	43.4	2.4

Table 18-5 H_8 Washability Test Results Isentralnaya Central Washery 1984

Fractional												
Size mm	**- 1.6 RD**			**1.6 – 1.8 RD**			**1.8 – 2.0 RD**			**+ 2.0 RD**		
	Yield %	**A %d**	**S %d**	**Yield %**	**A%d**	**S %d**	**Yield %**	**A %d**	**S %d**	**Yield**	**A %d**	**S %d**
+150	-	-	-	4.5	4.9	2.8	-	-	-	-	-	-
150 x 70	-	-	-	2.2	5.4	2.8	-	-	-	0.2	92.0	0.2
70 x 25	-	-	-	9.2	7.7	3.1	0.6	20.0	9.9	4.9	87.4	2.8
25 x 13	0.1	5.4	1.3	6.0	7.4	3.4	0.6	27.3	10.8	4.8	79.3	8.0
13 x 6	0.8	2.6	0.8	10.9	6.6	3.3	0.6	24.0	10.4	4.9	77.4	5.8
6 x 3	1.38	1.5	2.0	5.98	4.7	2.3	0.93	16.5	7.0	3.06	78.7	6.4
3 x 1	4.29	1.2	0.7	14.48	4.3	2.2	1.54	17.2	6.7	4.77	76.0	4.7
1 x 0.5	0.47	2.3	0.7	3.5	4.8	1.6	0.52	16.0	5.1	1.45	81.1	3.4
0.5 x 0	0.15	1.8	0.7	2.88	6.7	1.3	1.37	13.8	3.3	2.93	73.1	2.7
Cumulative												
+150	-	-	-	4.5	4.9	2.8	-	-	-	-	-	-
150 x 70	-	-	-	2.2	5.4	2.8	-	-	-	2.4	12.6	2.6
70 x 25	-	-	-	9.2	7.7	3.1	9.8	8.4	3.5	14.7	34.7	3.3
25 x 13	0.1	5.4	1.3	6.1	7.5	3.4	6.7	9.3	4.0	11.5	38.5	5.7
13 x 6	0.8	2.6	0.8	11.7	6.3	3.1	12.3	7.2	4.1	17.2	27.2	4.6
6 x 3	1.38	1.5	2.0	7.36	4.1	2.2	8.29	5.5	2.7	11.35	25.2	3.7
3 x 1	4.29	1.2	0.7	18.77	3.6	1.8	20.31	4.6	2.2	25.1	18.1	2.7
1 x 0.5	0.47	2.3	0.7	3.97	4.5	1.5	4.49	5.8	1.9	5.9	24.3	0.8
0.5 x 0	0.15	1.8	0.7	3.0	6.5	1.3	4.37	8.8	1.9	7.3	34.6	2.2

The data indicates that the coals of the target seams are relatively uncomplicated with respect to their washability characteristics and the 1986 Re-evaluation concludes that they are of 'easy' to average washability in accordance with the Russian GOST Standard 10100-75

With regard to establishing the representative nature of the washability data, the procedures and methods employed by the State Institutes to generate this data were well established and governed by the appropriate GOST Standards.

Operational data from the H_8 seam at Verticalnaya and the H_{11} seam at the neighbouring Mine No3 Davieskaya together with the uncomplicated geological nature of the area would support the view that the washability and quality data can be considered generally representative of what will be expected from the target seams within the lease area.

Sulphur Content

All of the quality data reviewed indicates widely varying sulphur content in the coal across both the H_8 and H_{11} seams throughout the area, with the H_{11} seam having an average sulphur content some 1.0% lower than the H_8 seam.

The 1986 re-evaluation of the resources included results of tests which were carried out to establish the composition of the sulphur in the H_{11} and H_8 seams. Results of these tests are reproduced below.

Table 18-6 Composition of Sulphur from 1986 Re-evaluation Report

Seams	Composition of Sulphur%											
	Pyritic			Sulphide			Organic			Total		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
H_{11}^B	1.05	3.20	1.89	0.01	0.09	0.03	0.46	1.01	0.70	1.62	4.16	2.16
$H_8+H_8^B$	0.43	4.05	1.95	0.0	0.23	0.03	0.20	1.30	0.69	0.82	5.00	2.70

These results indicate that a significant amount of the total sulphur in both seams is in the form of pyrite.

To establish the potential for reducing the ash and total sulphur content of the H_8 seam coal, washability tests were carried out on two samples of coal from the H_8 seam shortly before the mine ceased operating in 1998. The results of these tests carried out by an independent company CCI Ukraine Ltd have been reviewed.

The summary results of these tests at the target working density at the time of 1.8RD are reproduced in the following table.

Table 18-7 Summary Results of Washability Data

Sample Number	35	36
Concentrate Yield%	84.37	84.28
Concentrate Sulphur%	2.27	1.57
Sulphur of initial +1.0mm sample%	3.17	2.05
Sulphur reduction% points	0.9	0.49
Concentrate Ash%	3.37	2.75
Ash of Initial Sample%	6.4	6.1
Ash reduction% points	3.03	3.35

These results together with the data from the other washability tests indicate the effect of the removal of some of the pyritic sulphur through the beneficiation process.

The projected total sulphur contents in the coal concentrates from the H_8 and H_{11} target seams are given as 1.8/1.9 for H_8 and 1.3 for H_{11}.

On the basis of the data reviewed these projections are considered reasonable. Actual results will be influenced by the concentration and dissemination of the pyritic sulphur within the coal matrix throughout the licence area, and to a certain extent by the beneficiation process employed.

Ash Chemistry

An indication of the ash characteristics of the coal from H_8 as reported as part of the 1986 re-evaluation is reproduced below

Table 18-8 Indication of the Ash Characteristics of the Coal from H_8

Ash Composition%						Melting Temperatures ^{O}C		
Fe_2O_3	Al_2O_3	SiO_2	CaO	MgO	SO_3	T1	T2	T3
15.31	17.89	51.57	1.88	1.89	1.34	1060	1100	1150

Phosphorous is recorded as averaging 0.009%[d] in H_{11} and 0.01%[d] in H_8.

19 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATION

The resources and reserves of the Verticalnaya mine area were re-estimated in 1986 in line with principles of the system of the Ministry of Coal Industry of USSR. This work was carried out by what is now the Luganskgiproshakht. The system was founded upon the definition of reserve blocks based upon the borehole interpretation. Such features as seam splits, faults or other geological boundaries were used to delineate the blocks. The H_{11} and H_{11}^{B} seams were defined by 64 such blocks and the H_8 seam by 47 blocks.

From these blocks an average seam thickness and specific gravity for the block area were used to calculate the in-situ tonnage of coal.

19.1 Resources

Under this system each block was categorised as A, B, C1 or C2, which reflected the density of data points available for each reserve block. Of these, categories A, B and C1 define resources with sufficient data to enable mine planning and coal extraction to be evaluated with the C2 category being assessed as requiring further information.

The 1986 evaluation of resources included coal greater than 0.60 m thick and with less than 40% ash. Using these two modifying factors or limits, the remaining resources in the seams of interest to EastCoal, from this 1986 estimate, are as follows:-

Table 19-1 GKZ Resources Classification, Verticalnaya Mine as at June 1st 2008

Seam	Classification			Total (Mt)
	A (Mt)	B (Mt)	C_1 (Mt)	
Seam H_{11}	0.00	0.60	12.00	**12.60**
Seam H_{11}^{B}	0.00	8.00	24.00	**32.00**
Seam H_8	1.10	12.30	18.20	**31.60**
Total	**1.10**	**20.90**	**54.20**	**76.20**

For this report however, the resources and reserves are also quoted with respect the JORC Standard (2004). For this Standard, the resource and reserve categories not only reflect the confidence level in the data but also take into account the modifying factors such as legal, technical, economic and social factors addressed by the Mine Plan.

The JORC Standard assessment also takes into account modifying factors used in the original GKZ assessment, that is, coal greater than 0.60 m thick and with less than 40% ash. This led to the resource status under the JORC Standard as shown in the statement below.

Table 19-2 JORC Assessment of Resources, Verticalnaya Mine as at June 1st 2008

Seam	Measured Resources (Mt)	Indicated Resources (Mt)
Seam H_{11}	9.60	3.00
Seam H_{11}^{B}	32.00	-
Seam H_8	15.70	15.90
Total	**57.30**	**18.90**

This assessment has not changed since 2008 as no further exploration or in-seam development has been undertaken.

19.2 Reserves

From these Measured and Indicated Resources, under JORC Standards reserves can be assessed. In the 2008 assessment the coal included in the Company Business Plan was defined as Proved or Probable Reserves after applying mining and geological losses that were considered reasonable. The reserves are as estimated below:-

Table 19-3 Proved and Probable Reserves as at 1st June 2008, Verticalnaya Mine

Seam	Proved Reserves (Mt)	Probable Reserves (Mt)	Remarks
Seam H_{11}	5.8		Mining and fault losses applied 40%
Seam H_{11}^{B}	10.4		Mining losses applied 30%
Seam H_8		11.0	Mining losses applied 30%, Flooded Seam
Total	**16.2**	**11.0**	

Extraction of the H_8 reserves is dependent upon the pumping out of the flooded workings which will then allow access to virgin areas of the H_8 seam.

However, recently a layout plan for H_{11} and H_{11}^{B} produced by EastCoal along with a schedule has outlined the extraction of these seams in more detail and has allowed calculation of tonnages from faces to be used in the assessment. This leads to a reassessment of the reserves as shown below. The assessment for Seam 8 remains unchanged in both category and tonnage until a detailed plan is produced and the flooded part of the mine pumped dry allowing access to the resources.

Table 19-4 Proved and Probable Reserves as at 1st February 2011, Verticalnaya Mine

Seam	Proved Reserves (Mt)	Probable Reserves (Mt)	Remarks
Seam H_{11}	3.9		Based on mining plan and layout
Seam H_{11}^{B}	9.4		Based on mining plan and layout
Seam H_8		11.0	Mining losses applied 30%, Flooded Seam
Total	**13.3**	**11.0**	

Plans showing the location of these reserves are shown in Section 26.

Table 19-5 Reserve and Resource Statement as at 1st February 2011, Verticalnaya Mine

Seam	Proved Reserves (Mt)	Probable Reserves (Mt)	Measured Resources (Mt)	Indicated Resources (Mt)	Inferred Resources (Mt)
Seam H_{11}	3.9		9.6	3.00	
Seam H_{11}^{B}	9.4		32.0	0	
Seam H_8		11.0	15.7	15.90	
Total	**13.3**	**11.0**	**57.3**	**18.9**	

Note: - Resources are inclusive of reserves

20 OTHER RELEVANT DATA AND INFORMATION

See Section 25 below in relation to the proposed mine development.

21 INTERPRETATION AND CONCLUSIONS

IMC concludes from the independent technical review that:

- management's geological and geotechnical knowledge and understanding is of a satisfactory level to support medium and long term planning for the mine rehabilitation;
- the mine plans appropriately consider geological and geotechnical factors to minimise mining hazards;
- all statutory rights and permits are now in place to develop the mine;
- the Company's proposed mining equipment planned in the capital forecasts is suited to its mine plans and is adequate, with minor adjustments, for the production plans;
- the planned coal processing plant and other infrastructure is capable of supplying appropriate quality products to the markets at the forecast production plans;
- environmental issues are well managed and there are no issues that could materially impede mine development nor are any prosecutions pending;
- the assumptions used in estimating both capital and operating costs are appropriate and reasonable;
- capital and operating costs used in the financial models incorporating minor adjustments by IMC reflect the mine plans, development and construction schedules and the forecast production levels;
- Special factors identified by IMC are well understood by management and appropriate action to mitigate these risks is being taken. Further, the mine plans and cost forecasts appropriately account for these risks; and
- Based on a review of the available documentation, the Company's technical proposals for the surface minerals handling and coal preparation facilities would appear adequate to meet the requirements of the Business Plan.
- Yield projections are reasonable but there is the possibility of them being slightly lower dependent to some extent on final product quality requirements.
- Product quality projections are considered to be achievable based on the data reviewed and the proposed beneficiation systems employed.

22 RECOMMENDATIONS

EastCoal currently has an uncertainty that needs to be addressed as soon as is practically possible in the developing H_8 seam mining programme:

1. The currently flooded lower levels of the H_8 seam should be pumped out as soon as practically possible to asses the access roadway condition and allow the refinement of the H_8 development and production proposals and schedule. EastCoal estimate that this should take 12 months using the existing pit bottom pumps and a new larger pump to be installed on the inclined drift from the 674 m to the 1000 m horizons

23 REFERENCES

The following references were used by the Qualified Persons and Other Experts in the compilation of this report:

1. The 1986 Re-evaluation of Resources Report carried out by the GOAO Luganskgiproshakht Institute.
2. Pre-Feasibility Report on the Verticalnaya Mine, Ukraine (NI 43-101 Standards) prepared for Lysander Minerals Corp. September 2008
3. Washability Test report on ROM from the H_8 seam at the Verticalnaya mine sampled at the Isentralnaya Central Washery Plant in 1984.
4. ROM and washed coal quality predictions (including a 1960 washability test) from bulk samples taken from seam H_8 at the Verticalnaya mine.
5. Washability test report on ROM from seam H_{11} at the adjacent Mine No3 Davievskaya in 1959.
6. Washability test report on H_8 produced by CCI Ukraine Ltd in 1998.
7. Washability test report on H_8 coal at the Sverdlevskaya washery plant in 1992.
8. 1992 Feasibility Report prepared by the GOAO Luganskgiproshakht Institute.

24 DATE AND SIGNATURE

24.1 Certificates of Qualified Persons

CERTIFICATE of AUTHOR

As the co-author of a portion of this Technical Report on the Verticalnaya Mine, Ukraine, dated 1st March 2011, I, J S Warwick, B Sc (Hons) FIMMM, C Eng, Eur Ing do hereby certify that:

1. I carried out this assignment for:

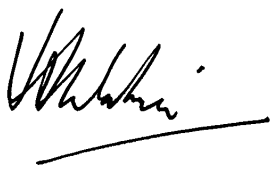
   IMC Group Consulting Limited
   Icon Office Building
   Lake View Drive
   Sherwood Park
   Nottingham, NG15 0DT
   United Kingdom

2. I hold the following academic qualifications:

B.Sc.	Electrical Engineering (Hons)	Newcastle University, UK (1973)
B.Sc.	Mining Engineering (Hons)	University of Nottingham, UK (1975)

3. I am in good standing as a Fellow of the Institute of Materials, Minerals and Mining, and also as a Chartered Engineer with the Engineering Council UK, registration number 29053, European Engineer (Eur Ing) registration number 08932. I also hold a Mine Manager's 1st Class Certificate.
4. I have worked as a mining engineer in the mining industry for a total of 33 years since graduation from university and have worked for more than 14 years in the provision of consultancy services. I have 30 years of experience specifically in underground coal mining.
5. I do, by reason of education, experience and professional registration, fulfil the requirements of a Qualified Person as defined in National Instrument 43-101. My work experience includes the management and performance of numerous technical studies relating to the audit, evaluation and valuation of coal projects and operating mines in many parts of the world.
6. I visited the Verticalnaya mine site on 11th November 2006 and I have also spent the interval 10th – 16th November 2006 in the offices of ECC in Ukraine, undertaking an audit of the production and other technical data for use in the report.
7. I am responsible for the compilation of the report titled "Technical Report on the Verticalnaya Mine, Ukraine (NI 43-101 Standards)" dated 1st March 2011 and have specifically undertaken preparation of Section 2, 3, 4, 5, 21, 22, 25-1, 25-4, 25-5, 25-6, 25-7 and have contributed jointly to other sections.
8. I am independent of the parties involved in the transaction for which this report is required, as defined in Section 1.4 of NI 43-101.
9. I have no prior involvement with the property that is the subject of this Technical Report.
10. I have read NI 43-101 and the portions of this report for which I am responsible have been prepared in compliance with the instrument.
11. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make this report not misleading.

Dated this day 1st March 2011.



J S Warwick, CEng

CERTIFICATE of AUTHOR

As the co-author of a portion of this Technical Report on the Verticalnaya Mine, Ukraine, dated 1st March 2011, I, M Coultas, B.Sc. M.Sc. FGS. Chartered Geologist do hereby certify that:

1. I carried out this assignment for:

   IMC Group Consulting Limited
   Icon Office Building
   Lake View Drive
   Sherwood Park
   Nottingham NG15 0DT
   United Kingdom

2. I hold the following academic qualifications:

B.Sc.	Geology (Hons)	Manchester University (1976)
M Sc	Engineering Geology	Leeds University (1992)

3. I am in good standing as a Chartered Geologist and Fellow of the Geological Society.
4. I have worked as a geologist in the mining industry for a total of 34 years since graduation from university and have worked for more than 20 years in the provision of consultancy services including the management of multi-disciplinary technical studies and the evaluation of coal deposits.
5. I do, by reason of education, experience and professional registration, fulfil the requirements of a Qualified Person as defined in National Instrument 43-101. My work experience includes the management and performance of numerous technical studies relating to the audit, evaluation and valuation of underground and opencast coal projects and operating mines in many parts of the world.
6. I visited the Verticalnaya mine site in June 2008 and I have also spent the interval in August 2008 in the offices of IMC, undertaking an audit of the estimation procedures employed to arrive at the resource and reserves estimates submitted in this Technical Report.
7. I am responsible for the compilation of the report titled "Technical Report on the Verticalnaya Mine, Ukraine (NI 43-101 Standards)" dated 1st March 2011 and have specifically undertaken preparation of Section 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19 and have contributed jointly to other sections.
8. I am independent of the parties involved in the transaction for which this report is required, as defined in Section 1.4 of NI 43-101.
9. I have no prior involvement with the property that is the subject of this Technical Report.
10. I have read NI 43-101 and the portions of this report for which I am responsible have been prepared in compliance with the instrument.
11. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make this report not misleading.

Dated this day 1st March 2011.

M Coultas, CGeol

CERTIFICATE of AUTHOR

As the co-author of a portion of this Technical Report on the Verticalnaya Project, Ukraine, dated 1st March 2011, I, Brian Everitt, do hereby certify that:

1. I carried out this assignment for:

   IMC Group Consulting Limited
   Icon Office Building
   Lake View Drive
   Sherwood Park
   Nottingham NG15 0DT
   United Kingdom

2. I hold the following academic qualifications:

Mechanical Engineering	AMEME Honours
Coal Preparation Technology	C&G 051

3. I am in good standing as a Fellow of the Minerals Engineering Society, a Fellow of the Coke Ovens Managers Association and am registered as an Incorporated Engineer, membership number 352939 with the Engineering Council.

4. I have worked as a mechanical engineer in the mining industry for a total of 44 years including 34 years as a coal preparation engineer and have worked for more than 6 years in the provision of consultancy services including 6 years in the management of multi-disciplinary technical studies and the evaluation of coal deposits.

5. I do, by reason of education, experience and professional registration, fulfil the requirements of a Qualified Person as defined in National Instrument 43-101. My work experience includes the management and performance of numerous technical studies relating to the audit, evaluation and valuation of coal projects and operating mines in many parts of the world.

6. I visited the Verticalnaya Mine site on 11th November 2006 and I have also spent the interval 10th – 16th November 2006 in the offices of ECC in Ukraine, undertaking a review of the coal quality and washability data from both exploration and operational records together with reviewing the proposed processing systems for the project in support of this Technical Report.

7. I am responsible for the compilation of the report titled "Technical Report on the Verticalnaya Mine, Ukraine (NI 43-101 Standards)" dated 1st March 2011 and have specifically undertaken preparation of Section 3, 18, 25-1, 25-2, 25-3 and have contributed jointly to other sections.

8. I am independent of the parties involved in the transaction for which this report is required, as defined in Section 1.4 of NI 43-101.

9. I have no prior involvement with the property that is the subject of this Technical Report.

10. I have read NI 43-101 and the portions of this report for which I am responsible have been prepared in compliance with the instrument.

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

Dated this day 1st March 2011

B Everitt, CEng

CERTIFICATE of AUTHOR

As the co-author of a portion of this Technical Report on the Verticalnaya Project, Ukraine, dated 1st March 2011, I, Winsor Lewis, do hereby certify that:

1. I carried out this assignment for:

   IMC Group Consulting Limited
   Icon Office Building
   Lake View Drive
   Sherwood Park
   Nottingham NG15 0DT
   United Kingdom

2. I hold the following academic qualifications:

B Sc	Physics (Hons)	Imperial College University of London (1974)

3. I am in good standing as a Fellow of the Chartered Institute of Management Accountants (1991), membership number 033277

4. I have Worked for over 20 years in mining as a financial expert, research engineer and social mitigation expert and, internationally, has completed many reviews of deep coal mine operations in many countries.

5. I do, by reason of education, experience and professional registration, fulfil the requirements of a Qualified Person as defined in National Instrument 43-101. My work experience includes the management and performance of numerous technical studies relating to the audit, evaluation and valuation of coal projects and operating mines in many parts of the world.

6. I have not visited the Verticalnaya Mine site or the offices of ECC in Ukraine.

7. I am responsible for the compilation of the report titled "Technical Report on the Verticalnaya Mine, Ukraine (NI 43-101 Standards)" dated 1st March 2011 and have specifically undertaken preparation of Section 3, 25-8, 25-9, 25-10, 25-11, 25-12 and have contributed jointly to other sections.

8. I am independent of the parties involved in the transaction for which this report is required, as defined in Section 1.4 of NI 43-101.

9. I have no prior involvement with the property that is the subject of this Technical Report.

10. I have read NI 43-101 and the portions of this report for which I am responsible have been prepared in compliance with the instrument.

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

Dated this day 1st March 2011

W Lewis, FCMA

24.2 Consent of Qualified Persons

CONSENT

(Qualified Person – J S Warwick)

TO: EastCoal Inc

AND TO: The TSX Venture Exchange (TSX-V)
Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission

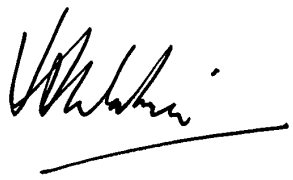
RE: Technical Report

Reference is made to the Report (the "Technical Report") dated 1st March 2011, entitled "Technical Report on the Verticalnaya Mine, (NI 43-101 Standards)" prepared for EastCoal Inc and to which the undersigned has contributed.

The undersigned hereby consents to the public filing with the regulatory authorities referred to above of the Report and to extracts from, or a summary of the Technical Report in the disclosures of EastCoal Inc.

The undersigned acknowledges that the filing statement of EastCoal Inc dated ___ March, 2011 with the TSX-V and on SEDAR by EastCoal Inc constitutes the disclosure document and that it fairly and accurately represents the information in the Technical Report.

Dated this ___ day of March 2011.



J S Warwick

CONSENT

(Qualified Person – M C Coultas)

TO: EastCoal Inc

AND TO: The TSX Venture Exchange (TSX-V)
Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission

RE: Technical Report

Reference is made to the Report (the "Technical Report") dated 1st March 2011, entitled "Technical Report on the Verticalnaya Mine, (NI 43-101 Standards)" prepared for EastCoal Inc and to which the undersigned has contributed.

The undersigned hereby consents to the public filing with the regulatory authorities referred to above of the Report and to extracts from, or a summary of the Technical Report in the disclosures of EastCoal Inc.

The undersigned acknowledges that the filing statement of EastCoal Inc dated ___ March, 2011 with the TSX-V and on SEDAR by EastCoal Inc constitutes the disclosure document and that it fairly and accurately represents the information in the Technical Report.

Dated this ___ day of March 2011.

M Coultas

CONSENT

(Qualified Person – B Everitt)

TO: EastCoal Inc

AND TO: The TSX Venture Exchange (TSX-V)
Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission

RE: Technical Report

Reference is made to the Report (the "Technical Report") dated 1st March 2011, entitled "Technical Report on the Verticalnaya Mine, (NI 43-101 Standards)" prepared for EastCoal Inc and to which the undersigned has contributed.

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Dated this ___ day of March 2011.

B Everitt

CONSENT

(Qualified Person – W Lewis)

TO: EastCoal Inc

AND TO: The TSX Venture Exchange (TSX-V)
Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission

RE: Technical Report

Reference is made to the Report (the "Technical Report") dated 1st March 2011, entitled "Technical Report on the Verticalnaya Mine, (NI 43-101 Standards)" prepared for EastCoal Inc and to which the undersigned has contributed.

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Dated this ___ day of March 2011.

W Lewis

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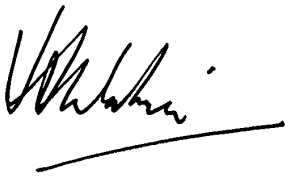
Project Personnel J Warwick (Project Director & Mining Engineer); W Lewis (Financial Analyst); M Coultas (Geology); B Everitt (Process); M George (Environmental).

Key Words IMC; ECC; Ukraine Coal; Ukraine; Donetsk; Lugansk; Underground; Anthracite; Longwall; Shearer; Plough

	Signature	**Name / Designation**
Production:		Mike Coultas Geologist
Verification:		Winsor Lewis Financial Analyst
Approval:		John Warwick Project Director

25 ADDITIONAL REQUIREMENTS FOR REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

25.1 Mining Operations

Verticalnaya mine is currently has:

- The original mine facilities under care and maintenance which are non-operational; and
- Two surface drifts under development from the Verticalnaya North Project curtilage.

The Company intends to rehabilitate the existing mine infrastructure and develop mining operations in the virgin areas of H_{11} H_{11}^{b} and H_8 coal seams.

Presently the coal resources of H_8 are in the flooded section of the mine, although the water will have had no effect of the resources below the -1000 m level which are still to be developed.

These facilities are to be brought back into production in accordance with a plan prepared and refined by Luganskgiproshakht in conjunction with the Company management.

25.1.1 Historical Mining Methods and Production

Mining operations began initially during 1912 when coal was accessed from its outcrop point on the surface via inclined drifts locally known as “Number 10 Mine”. Later during 1975 mainly for ventilation purposes a vertical shaft was sunk down to the then lower workings at the -600 m horizon, “845 m below surface”. This shaft was then used for the transportation of men and materials. Also installed within the same shaft is a second winding facility (Cage and balance weight) designed to wind out around 350 t/d of waste rock from development drivage.

As the mine working progressed even deeper to -1000 m level, “1245 m below surface”, the government provided capital investment for the sinking of a second shaft again for improved ventilation and also to be utilised for the winding of mineral (Skip shaft). The main objective of the new shaft was to replace the long string of conveyor belts installed along the length of the existing inclined drifts. The sinking of this shaft was completed just prior to the mine closure in 1998 and was never fully equipped.

At that time due to lack of investment required to maintain the mine equipment, mine management were unable to achieve the planned coal outputs shown Table 25-1 below. Therefore the mine was considered unprofitable and closed and thus passed onto the State Enterprise “Ukruglerestructurizatsiya” (UDKR) whose responsibility is the liquidation of closed mines and the maintaining of some of those mines on a care and maintenance scheme as water pumping stations to protect the adjacent operating mines from increased water inflows from the closed mines.

Table 25-1 Historic Run of Mine Production

1990 (t)	1991 (t)	1992 (t)	1993 (t)	1994 (t)	1995 (t)	1996 (t)	1997 (t)	1998 (t)
380,000	310,000	278,000	235,000	100,000	132,000	13,000	10,000	24,000

25.1.2 Proposed Mining Methods

Prior to the closure of the mine during 1998 production was by longwalls operated using the retreat method of mining. Records show that although the outputs were low due to the lack of investment in new longwall equipment, the general geological conditions on the longwall and the access roadways to the longwall were very good. Caving behind the longwall as it retreated did not create any problems, so with modern heavy duty longwall supports strata along the longwall face should be controllable and the Company intends to resume this production methodology.

The existing access roadways to the longwalls were supported by steel arches which were systematically withdrawn as the longwall retreated with no undue strata control problems. The Company intends to use Advanced Technology (AT) roof bolting systems for the following reasons.

- Better roof control;
- Less steel to transport, easier to handle

- Greater rates of development advance can be achieved compared to conventional steel arches;
- Simpler gate-end support systems can be used at the ends of the longwalls, reducing the time taken to turn round the cutting machine, hence increasing the cutting time of the machine (more coal production);
- Fewer accidents to mine workers due to falls of ground and the fact that the materials being handled are much lighter in weight.

Provided that roof bolting is introduced through the internationally accepted methods IMC would support this approach.

25.1.3 Mine Development and Production

To the north of the main mine site H_{11} coal seam outcrops, and access into the seam will be via two inclined drifts which will be driven from a point near to outcrop. The site of the drifts portals is some 1.5 km to the north of the main mine curtilage to differentiate is called "Verticalnaya North" now referred to as the Verticalnaya North Project (VNP)

H_8 coal seam has been mined in the past being accessed via two existing shafts, known as the skip and materials shafts. From the current shaft bottom area two declines were driven in-seam as the h_8 seam workings progressed to the lower levels. These declines are currently flooded and will require de-watering to regain access to the remaining coal reserves located below the water line.

25.1.3.1 H_{11} and H_{11}^{B} Coal Seams

The geological resources of H_{11} coal seam are in two zones H_{11}, which has the full seam section of coal some 1.2 to 1.3 m thick, and H_{11}^{B}, which is a split seam having a minable section of between 0.7 and 0.8 m thick.

Two inclined drifts (Conveyor and Ventilation) will be driven down the centre of the H_{11} coal reserves from the VNP surface curtilage. When the first 430 m of the two drifts have been completed access to the first longwall to the West of the drifts (West One Longwall "W1") will be developed.

Whilst longwall W1 is being established the drift drivage will continue to provide access to the coal reserves on the east of the drifts allowing the second longwall (East One Longwall "E1") to be developed.

To produce "early coal" the first longwall operations will use the advance method of mining, operating simultaneously in both the West and East blocks. To generate the target tonnage of 1 Mtpa of saleable coal then three operating advance longwalls will be established and maintained.

As the inclined drifts are extended and more working places opened additional developments can be introduced and retreat longwall production established. Retreat longwall mining is accepted globally as being significantly more productive than advance longwall, which has also been demonstrated at Verticalnaya in the past. It can be demonstrated that the output from three advance longwalls can be achieved with two retreat longwalls.

The current longwall schedule plans for W1, W2 and W4 and E1, E2, E3, E4 and E5 as advance and all other subsequent longwalls to be retreat.

The inclination of the coal seam is 18° therefore all longwall gate roadways will be driven along the strike maintaining the longwall face on full dip.

The thicker section of the seam (H_{11}) is irregular in shape with some associated faulting. Therefore some of the longwalls planned will operate in both H_{11}^{B} and H_{11} as they work across particular blocks of coal reserves. The longwall equipment planned will be a plough system utilising individual props as support, so as the seam section changes then only the individual props will require changing.

Coal production is expected begin during 2012 with two advancing longwall faces. As further coal panels are developed then retreat longwall production will be introduced. There will be a mixture of both advance and retreat longwall between 2012 and 2015 but from 2015 onwards all longwall production will be from retreat faces.

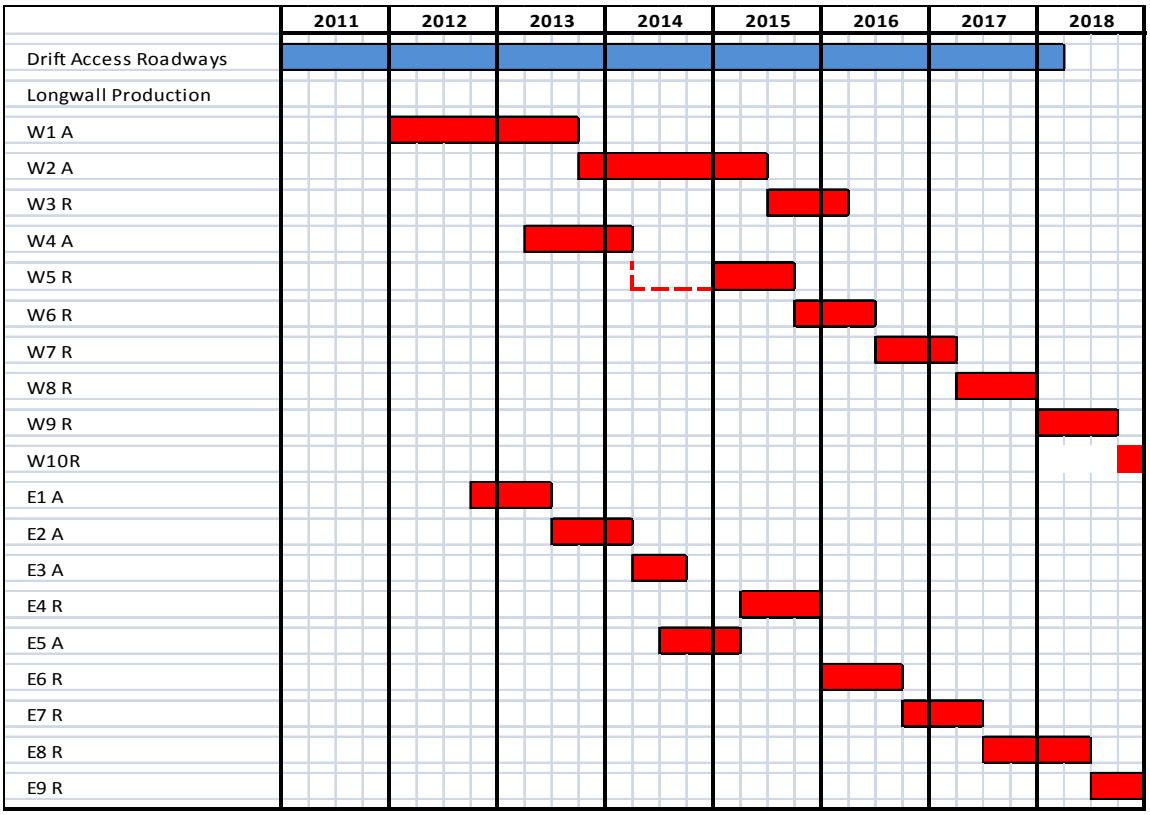


Figure 25-1 H_{11} and H_{11}^{B} Development and Production Schedule

25.1.3.2 H_8 Coal Seam

H_8 coal seam will be accessed and operated via the existing vertical shafts. The skip shaft will not be used for coal winding but will be equipped for the winding of men and materials down to the lower horizon at 1,250 m. Coal and waste from development drivages will be taken out of the mine via conveyor belts.

A cross measure drift will be driven from the surface coaling drift which will intersect the h^{11} seam at the +30 horizon before continuing on to the h_8 seam. The bottom of the drift will intersect the previous coal conveyor route of h_8 coal seam at -137 m horizon. Whilst the drift is being driven the old conveyor route from the -137 m horizon down to the -1,250 m horizon will be repaired and re-equipped.

Using a conveyor belt for coal clearance compared to skip winding provides the following advantages.

- Higher production capacity, not restricted by maximum skip capacities or a batching process;
- Longer periods of operation per day, skip and shaft maintenance with an average of 4 hours per day;
- Coal from the two seams can be kept separate if required for process and marketing purposes; and
- Provision of a walk-able outlet as a second means of egress.

By using a conveyor belt for coal clearance the equipping of the skip shaft for the winding of men and materials from the lower 1,245 horizon can be delayed until revenues are being generated.

One of the first operations will be to pump out the water from the flooded area and examine the roadways of the previously developed area of the h_8 seam. It is calculated that this activity will take one year to restore the mine water pumping system and pump out the water.

To-date some 120 m of flooded roadway have been recovered, showing little or no signs of deterioration associated with being submersed under water for a long period of time. Therefore it is anticipated that the

roadway conditions will not have deteriorated significantly and the repair of the main materials and conveyor drifts will not be significant.

The original conveyor roadway above the water line, from -845 to -137 m horizons, will be recovered and repaired during the same one year period that water pumping is undertaken. New permanent conveyor belts and associated equipment will be installed as repairs progresses.

Having recovered and re-instated the conveyor belts and materials system down to the coal reserves below the 1,250 horizon then development of the coal reserves below that point can commence.

Two main lateral drivages, conveyor and materials, will be driven into the new reserve block and longwall panels developed on each side. The overall plan is to operate two longwalls simultaneously to generate a continuous ROM production of 1.7 Mtpa.

H_8 coal seam has a uniform seam section of 1.2 m and below the -1250 horizon the seam gradients, being nearer to the seam synclinal base, is approximately 8° which is compatible with high output longwall coal production.

The initial first longwalls on either side of the main roadways will use the "Z system" of mining with a long advanced heading on the solid rib side, which is re-used as a retreating gate road for the adjacent panel. After the two initial longwalls all subsequent faces will be worked as conventional retreat longwalls. Once the two longwall scenario has been established the planned coal production of 1.7 Mtpa ROM can be maintained.

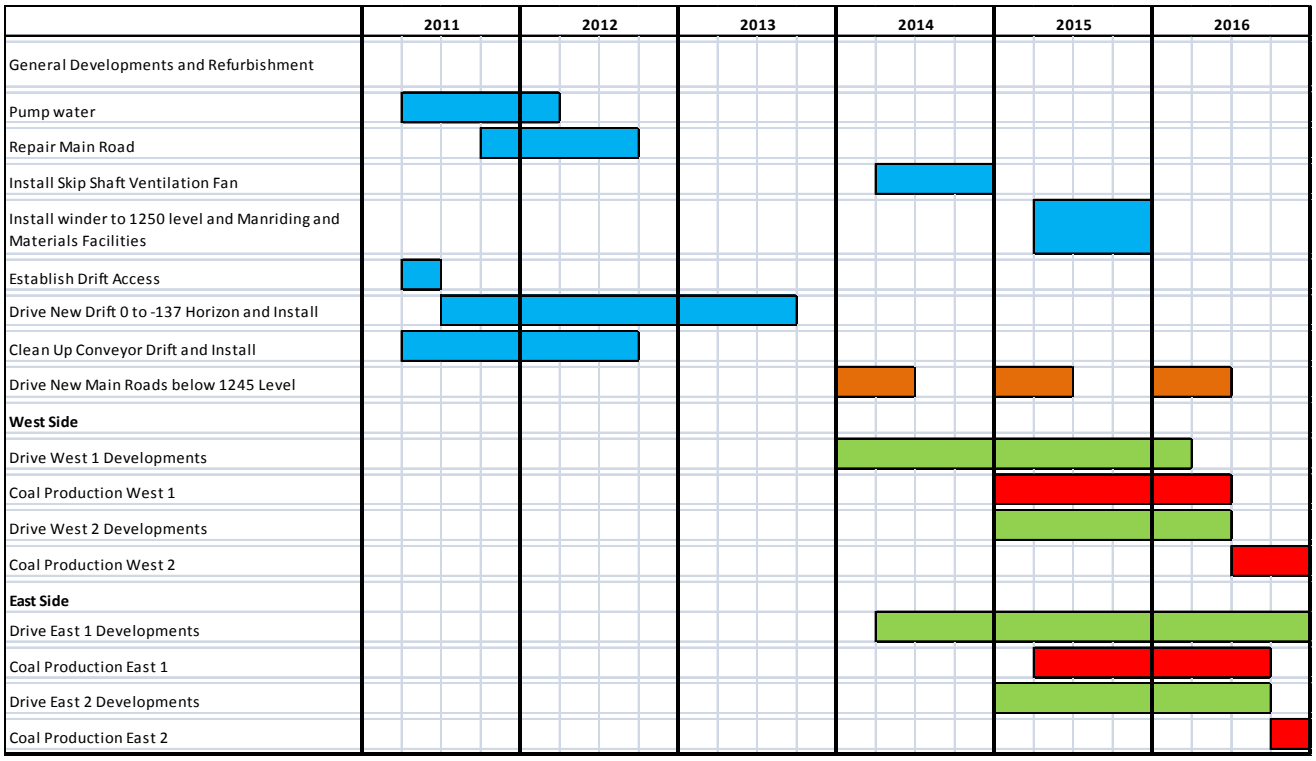


Figure 25-2 H_8 Development and Production Schedule

25.1.3.3 Combined Production

The combined production from seams H_{11} and H_8 is shown below in Table 25-2.

The mining projection shows the build-up of annual tonnages over the first six years of mining operations. The overall objective being to build the mine production rate to one that can be sustainable. Obviously, future mine plans will change but the focus always has to be on the production targets. After year four all

the reserves in both target seams will be fully accessed and the target tonnage of 3 Mt ROM should be sustainable.

Table 25-2 Combined ROM Production Plan

Seam Production (t)	2011	2012	2013	2014	2015	2016	2017	2018
H_{11}	9,000	336,000	869,000	1,196,000	1,356,000	1,284,000	1,136,000	1,185,000
H_8	0	0	0	9,000	119,000	1,615,000	1,839,000	1,849,000
Total	9,000	336,000	869,000	1,205,000	1,475,000	2,899,000	2,975,000	3,034,000

IMC has reviewed the Company development and production plans for the development and re-establishment of the mine operations together with the proposed mining equipment specifications and consider both the development and production rates and the pre-production phasing to be achievable.

25.1.4 Coal Processing Options

Whilst H_8 coal seam is being re-covered and prepared for coal production the initial coal will be produced from the H_{11} coal seam at VNP. IMC understands that the ultimate plan is to build a Coal Preparation Plant (CPP) designed to handle the coal produced from both coal seams at the main mine site. In the general development plan coal will be produced from H_{11} for some three years prior to the main CPP being commissioned.

25.1.4.1 Phase 1

The initial phase of the project is based on the output from the seam H_{11} and H_{11}^{B}.

At this point in time, during this initial phase, the Company have taken the decision to incorporate a temporary coal processing facility based around using a natural medium barrel washer and associated equipment.

The Company's intention is to generate further detailed and specific washability data from the target seams as they are accessed during the early stages of development. From this information, they propose to review the coal preparation plans and if necessary amend the design for the temporary plant.

The Company have provided indicative information of the proposed temporary washing process and ROM pre-sizing system. IMC have not reviewed the Company's proposals for ROM stocking and reclaiming, any untreated smalls extraction which would be required for producing powers station product, or the subsequent clean coal classifying and product storage, loading and despatch systems.

The coal itself is known to be very hard, with a Hardgrove Index <40. This together with the proposed plow extraction system to be used on the H_{11}^{B} faces should produce a ROM product with a high proportion of large (+100 mm) coal.

In the original feasibility study, the Company recognised the potential for maximising coal recovery from the screening operation and planned to incorporate a hand picking facility to remove and recover +100 mm clean coal from the screen oversize. This has now changed as all ROM product will pass through the wash plant after first passing through a +150 mm sizer.

The Company are not planning to include a fines cleaning and/or recovery system into the temporary plant at this stage. It would therefore be beneficial for the Company to consider pre-screening the ROM and crushing the oversize rather than feeding all of the ROM through the sizer and increasing the amount of fines produced.

The lack of fines recovery as proposed for the main plant will also reduce potential yields and it may be that EastCoal will consider this aspect before the final design for the temporary plant is made following the results of the new washability tests planned for 2011. Any fines recovery system included in the temporary plant could subsequently be utilised in the main plant.

Output rates during this initial phase of the mines development are envisaged to gradually increase from around 20k tonnes per month and will increase at times to around 130k tonnes per month (25 days).

The product grades proposed to be produced from the main process are:

AKO	(+25 mm)
AM	(13-25 mm)
AC	(6-13 mm)
PCI Fines	(0-6 mm)
Power Market fines	(0-6 mm)

The Company have indicated that it is their intention to produce the same a range of qualities from the temporary process plant.

IMC understand that it is the Company's intention to use mobile screens for producing the various products from the temporary plant.

Whilst data reviewed suggests that these coals are of easy to average washability, the choice of a natural medium process for the initial stages of the mines operation will compromise the ability to maximise yields of clean coal (within the limitations of the system), and, produce a consistent clean coal ash at the level required by particular market sectors.

A natural medium barrel plant will operated at a maximum cut point of around 1.8 RD and will have high medium viscosity at this density

The Company's Business Plan projections based on the available data indicate that to maximise yields of clean coal, the beneficiation process would need to operate at around 1.9 to 2.0 RD and the proposals for the main plant would allow this by the proposed use of a dense medium system with a magnetite/ferrosilicon separating medium.

The issue of ash contents in the clean coal products relative to market requirements will be further assessed following the availability of new washability data, and it is possible that during the operational phase, it may be necessary to balance yield against ash of clean coal when producing for particular market sectors.

It is intended that the temporary plant will be enclosed within a steel framed building and provided with appropriate heating.

25.1.4.1.1 Clean Coal Handling and Despatch

In the initial phases of production the Company proposes that saleable coal will be despatched by road trucks to the customer. All trucks will be weighed on despatch. As revenue generation proceeds, the Company will move to establishing a rail loading facility.

The Company also propose to incorporate in-line weighing systems to monitor despatched weights.

25.1.4.1.2 Summary of the Temporary Process

On the basis of the information reviewed, it is considered that the beneficiation system currently proposed should be capable of treating the projected outputs. The mobile screening systems proposed should be capable of preparing the range of products envisaged. Maximum yields will not be achieved utilising the proposed natural medium washer, and the Company may need to compromise yields further during this initial stage to target specific high value markets.

Final decisions on detailed process arrangements will not be made until the results of the latest washability data from H_{11} and H_8 seams are available in the near future.

25.1.4.2 Phase 2

The Company plans to construct the main coal preparation plant to coincide with the commencement of production from the H8 seam. At that stage, the new plant will also treat the output from the H_{11} seam.

At this point in time, the proposed plant will be designed to treat up to 3.0 Mtpa of ROM coal. Plant design capacity has been based on the following criteria:

Table 25-3 Criteria used in Plant Design

Annual Throughput	**3.0 Mtpa**
Days per year	365
Public Holidays	12
Sundays	50
Shutdown	14
Available Days	289
Hours per day	24
Available Hours	6,936
Utilisation	85%
Utilised Hours	5,896
Throughput required	509 t/hr
Assume	520 t/hr

The average utilisation factor of 85% is considered high and may be difficult to achieve on a consistent basis.

It is proposed that the relatively simple process design will utilise free standing structures to accommodate the process systems within an independent building. Equipment will be serviced by a travelling overhead crane within the building and extensive use of high wear resistant materials is proposed throughout the system.

In view of the differing quality characteristics of the two seams and the quality requirements of the target markets, it is proposed to provide systems to enable the coals from each seam to be processed independently or together dependent on production and marketing requirements at the time.

25.1.4.3 ROM/Raw Coal Preparation

ROM storage capacity in the form of two 20,000 tonne capacity stockpiles is proposed immediately prior to the processing plant for the coal from each seam.

ROM from the drifts will be fed through individual sizers to reduce the top size to 100 mm, with the 100 mm – 0 raw coal then passing to the relevant stockpile from where it is fed at a controlled rate to the raw coal sizing/dry fines extraction screens.

Raw coal will be fed from the stockpiles at a controlled rate to 'banana' screens for separation at nominally 16 mm.

It is proposed that -16 mm raw coal from H8 seam will be blended with washed coal from the large coal dense medium section of the plant at a controlled rate utilising a computer based blending system to produce a consistent quality product whilst minimising the amount of coal to be washed.

The -16 mm raw coal from the H11 seam will be fed to the small coal dense medium cyclone section of the plant for the production of a low ash washed coal aimed primarily at the export PCI market.

25.1.4.4 Fine Coal Treatment

The Company does not propose to incorporate fine coal cleaning within the system design.

Fine coal from the dense medium systems will be fed to a common hydro-cyclone system for classifying at nominally 0.1 mm with the +0.1 mm passing to a screen bowl centrifuge for de-watering before being blended with the clean coal product, or passing to discard.

The -0.1 mm material will pass to a conventional thickener with the thickener underflow being fed to lagoons.

It is suggested that should it prove possible to dewater this material sufficiently for it to be included in the final product, then the appropriate equipment will be installed at a later date.

25.1.4.5 Summary of Proposed Process

On the basis of the process description and flowsheets provided in the Company's Business Plan, together with the range of washability and quality data reviewed, it is considered that the proposed beneficiation systems should be capable of treating the projected outputs and preparing the range of products envisaged.

A more detailed review of the proposed process design prior to final design stage may offer the opportunity of increasing the percentage of higher value graded products but this would be subject to a cost/ benefit analysis and the marketing opportunities available at the time.

25.1.4.6 Saleable Product Handling

The plant flow sheets do not include the systems required for the preparation, storage and despatch of the saleable products.

It is understood that the systems proposed in the feasibility study for Verticalnaya Mine carried out by GOAO Luganskgiproshakht will be incorporated into the scheme.

This system consists of a double row of bunkers with a total capacity of 2500 tonnes, over the top of which is a set of classifying screens and travelling conveyors. One row of bunkers was for the 0-6 mm products and the other row for the range of graded products.

Coal is out loaded from the bunkers on a batch basis by conveyor to two wagon loading points. The system does not include facilities for flood loading of wagons for the power station or PCI markets.

Graded products are loaded into wagons using boom loaders to minimise degradation.

This arrangement is typical of plants of the former USSR and is considered inflexible, limited in capacity, capital intensive and costly to maintain. It is possible that this system may not provide the flexibility needed to allow EastCoal to fully exploit the potential of this coal in a wider range of markets. EastCoal should also take the opportunity to reconsider this aspect of their plans prior to final design stage.

25.2 Recoverability

The coal from both the H_8 and H_{11} seams are very hard with HGI's below 40. The coals are highly resistant to breakage and are amenable to controlled sizing.

The Company has made an estimation of the anticipated size distribution of products. This estimation has been based on the actual distribution of products from test work carried out at the Sverdlovskaya coal preparation plant in 1992 and which was included in the feasibility study carried out by the GOAO Luganskgiproshakht Institute also in 1992. It is understood that the Company has taken this original information and made adjustments based on their own experience and the modern mining techniques which it proposes to employ. The 1992 projections and the modified projections are summarised below.

Table 25-4 Anticipated Product Size Distribution

Anticipated Product Size Distribution		
Size Fraction (mm)	**1992 Projection**	**Modified Projection**
+100	1.4	0
100 - 50	0.73	3
50 - 25	13.59	7.3
25 - 13	10.85	8.4
13 - 6	12.9	18.7
6 - 0	52.3	42.4

These projections are considered reasonable at this stage.

From the washability data reviewed and included under Section 18, clean coal concentrate yields are shown to range between 79 and 84% at around the proposed operating densities, with ash contents from 4.5 to 9.5%. It is considered that the coal from the target seams in the licence area will have washability characteristics similar to those defined in the documentation reviewed and reproduced in this report.

Proposed target markets will require product qualities which will necessitate the controlled blending of untreated smalls with clean coal to achieve the desired ash contents. The initial proposal was that in the initial stages of the mine development, all development coals would be sold into the local power station market as an untreated quality under appropriate commercial arrangements, this has changed under the current plans, with all development material being processed through the barrel washer.

Projected yields of saleable product in the initial phases are indicated at around 75%, with succeeding years, following the introduction of the main CPP projected at between 76 to 82%, increasing to around 85% in the latter years of the mine plan. The washability data for the two seams indicate that these are reasonable estimates, however, it would appear from the data that to achieve these yields all of the -1.0 mm coal fines are included in the saleable concentrate. This may be possible subject to other quality parameters not being compromised, in particular moisture contents and calorific value.

Saleable yields will also be influenced by the market split of products.

25.3 Markets

The market outlook is positive. Demand is rising and Ukraine is importing significant quantities of coal. For power generation and heating, government policy dictates a trend to coal and away from natural gas.

Coal prices in Ukraine have increased but are still below world market prices. There is no legal barrier to exports.

The government has significant influence over coal prices through its control of a large part of the hard coal output and through its guidelines for purchasing by power stations.

The Company anticipates that coal prices will increase further; however, no increases are assumed in the Companies projections. Initially all coal will be sold to the Ukrainian markets. During this initial period export markets will be sourced with the intention of building up export sales to 50% of the coal produced.

25.3.1 PCI Category Coal

PCI coal is expected to comprise 23.5% of output. It is used for pulverised coal injection into steel furnaces. Its thermal values, carbon content and price make PCI an attractive replacement for coke. Globally and in Ukraine, steel plants are increasing their use of PCI coal. Modern furnaces are designed to optimise PCI use. World PCI prices have risen to approach US$300 per tonne, well above prices assumed by the Company.

25.3.2 Anthracite AKO, AM and AC Categories

These categories comprise 44.0% of planned production. They provide a relatively clean, smoke free source of energy and, for some uses, a source of carbon. Uses include industrial, commercial and residential heating; cement making; production of iron ore aggregates; glass manufacturing; sugar production; and uses in chemical industries. The Company expects there will be considerable demand in Ukraine for these product categories.

25.3.3 PSF Category Coal

Coal fines will be sold by EastCoal for power generation by power stations. They are expected to comprise 32.5% of total production. Power station demand is strong and considerable growth is expected.

25.3.4 Projected Prices

Prices used for domestic sales in the Company's projections are shown in Table 25-5.

Table 25-5 Summary Coal Prices

Grade	$/tonne
AKO	132.05
AM	121.60
AC	121.60
Fines PSF	96.90
Fines PCI	136.80

25.4 Environmental Considerations

25.4.1 Status

The Verticalnaya mine, which covers a surface area of 23.73 ha, is leased by EastCoal who have responsibility for care and rehabilitation of the site. Rehabilitation activities have been restricted to general clearance and housekeeping and IMC found the surface area and facilities in a reasonable condition. However the boiler house cyclones for gas cleaning and the stack appear in need of repair, this situation will be addressed when EastCoal build the new boiler planned. When EastCoal took control of the mine the mine water settling ponds are overgrown with vegetation which was cleared at the time and a regular inspection and clearance programme has now been implemented to prevent further overgrowth.

EastCoal has an ongoing liability to pump water from the Verticalnaya mine to protect adjacent operating mines from flooding. The water is pumped at the rate of approximately 400m^3/hr and is of relatively good quality with a pH of 7 but containing 3 to 5 g/l of dissolved salts. Water treatment consists of oxidation using continuous dosing with sodium chlorite followed by settlement of solids in a cascade of 3 ponds before discharge to the River Bolshaya Kamyanka.

The area and boundaries of the land required for the mine access and surface facilities of the Verticalnaya North Project have been defined. EastCoal is using the site of a former clothing factory approximately 1.5 km north of Verticalnaya. A concrete pad and some small concrete buildings are all that remain of the previous activities were removed when the site was cleared prior to the construction of the two drift portals. IMC understands that this land is designated for industrial use.

The area surrounding this site is not under private ownership and consists of open grass land with scattered trees and appears unused for agriculture or grazing. A change to industrial use has been agreed as part of the lease contract. Some previous disturbance of the area is evidenced by vehicle tracks, rail embankments and a small amount of municipal waste. The environmental assessment does not identify any protected species in the area.

Major features visible from the area of the VNP include:

- A rail line to the west.
- Overhead power lines
- The head gear of Verticalnaya Mine, approximately 1.5 km south.
- Houses of Volodarsk village approximately 500 m to the east/north east.

25.4.2 Environmental Impact Assessment

Part 3 of a study prepared by Luganskgiproshakht, Feasibility Report on the Opening and Operation of Volodarskiy Mine 1250 m level, is an Estimation of the Influence on the Environment, an EIA. The EIA is similar in format to an international class Environmental Social Impact Assessment and its approval by the State Ecological Expertise is an essential phase of the permitting process for commencement of mining.

Luganskgiproshakht has revised the environmental assessment (EIA) to take account of environmental effects arising from operations at the VNP site and the impact on sensitive receptors outside the sanitary protection zone

In IMC's opinion the EIA has assessed all of the critical issues in sufficient detail and proposed suitable methods to prevent or mitigate adverse impacts. The main elements of the EIA comprise:

- Detailed calculations of emissions from the mine and coal preparation plant and assessment of the main impacts on the surrounding area and population.
- Proposed control measures to minimise the impacts.
- Calculation of payments for environmental damage due to negative impact.
- Socio –economic issues

The critical issues identified in the EIA are:

25.4.2.1 Emissions to Air

The coal deposit is not classed as having potential for methane generation. The major components and sources of emissions to air are:

- Particulate matter (soot, ash) and combustion gases (sulphur dioxide, nitrogen oxides, carbon monoxide) from the coal fired boiler plant.
- Wind blown dust from coal handling operations and waste stockpiles.
- Dust entrained in mine ventilation air.
- Welding aerosols and abrasive dusts from the mechanical workshops.

According to Ukrainian regulations, sanitary protection zones must be established around processes that emit hazardous substances and residential properties are excluded from within the boundaries. The EIA proposes protection zones of:

- 500 m radius around the main surface facilities.
- 500 m radius around the waste storage facility.
- 200 m around the settling ponds and domestic sewage treatment facility.

The EIA includes detailed calculations to estimate the emissions from each source and predictions of the impacts on ambient air quality. In order for ground level concentrations of sulphur dioxide and coal dust to remain below maximum concentration limits at the perimeters of the protection zones, the EIA includes provision for increasing the height of the boiler chimney and replacing the relatively inefficient cyclone gas cleaning system with wet scrubbers.

According to the EIA, operation of the mine has only minor impact on ambient air quality as shown in Table 25-6, which compares the estimated ground level concentrations of pollutants during mine operation with maximum concentration limits and existing background levels.

Table 25-6 Predicted Air Quality compared with Limits & Existing Background Concentration

Substance	mg/m^3		
	Maximum concentration limit	**Existing background concentration**	**Maximum ground level concentration – mine operating**
Sulphur dioxide	0.5	0.2	0.27
Nitrogen oxides	0.085	0.034	0.038
Carbon monoxide	5.0	2.0	2.025
Coal ash	0.3	0.12	0.122
Coal dust	0.11	0.044	0.199
Welding aerosol	0.5		<0.00005

The environmental assessment of the VNP identifies 16 stationary sources of emissions and estimates 107 t/yr of gaseous and 62.8 t/yr of solids emissions. The coal fired heating plant, annual coal consumption of 1,734 t, is the main source of gaseous emissions which include sulphur dioxide and carbon monoxide. Ash is also emitted from the heating plant and coal dust is generated during material handling, screening and loading operations.

Stationary sources of particulate emissions will be equipped with cyclone abatement systems, which are designed to capture up to 95% of solids entrained in exhaust gases. The chimney of the heating plant will be 30m high to provide sufficient dispersal of gases.

As part of the revised environmental assessment, the impact on the surrounding land, and in particular local villages, was assessed with reference to Ukraine air quality standards given in Table 25-6. The distance from some areas of Volodarsk to the VNP site is estimated at approximately 500 m, which corresponds to the boundary of the sanitary protection zone applied to the VNP surface facilities and waste rock dump.

The environmental assessment includes detailed calculations to estimate the emissions from each source and predictions of the impacts on ambient air quality. In conclusion, the ground level concentrations of sulphur dioxide, carbon monoxide and coal dust remain below maximum allowable concentrations at the perimeters of the sanitary protection zones.

25.4.2.2 Discharge to Surface Water

Waste waters from the mining operation comprise:

- Sanitary waste at the rate of approximately 130m^3/day
- Mine water pumped to the surface at the maximum rate of 600m^3/hr.
- Rain water run-off from the surface facilities.

Sanitary waste will be collected and treated using an existing facility comprising 3 large tanks, approximately 1km from the mine, before discharge to the river. The treatment system is conventional and consists of mechanical separation, sand filtration and then biological treatment using reed beds.

Rain water run-off from the area of the main surface facilities will be collected in two reservoirs, each of 300m^3 capacity, in which solids are settled before the water is discharged.

Water pumped from the mine will be purified by continuous, controlled dosage of sodium chlorite using existing equipment and the pumped to a pond for settlement of suspended solids. The existing pond, approximately 1km from the mine surface facilities, requires cleaning to remove accumulations of silt and vegetation and repair to the dam. After renovation the total settlement volume will be 15000m^3. Treated water will be partly recycled for use as technical water in mining and processing; the remainder will be discharged to the Medvezhya, a tributary of the River Bolshaya Kamyanka.

The untreated mine water is of relatively good quality but high in mineral salts. Except for barium, vanadium, manganese and titanium it is within standards for technical and community use as shown in Table 25-7. The EIA indicates that the barium concentration will be significantly reduced by precipitation of barium sulphate, which will be removed by settlement along with some of the suspended solids in the pond. Manganese and titanium concentrations may also be reduced by aeration in the spillway of the pond and subsequent precipitation.

Table 25-7 Untreated Mine Water Discharge compared with Fishery and Technical Water Standards

Substance	mg/l		
	Mine water maximum concentration	Fishery water standard	Technical and community water standard
Suspended solid	70		
Mineral salts	Up to 5000		
Sulphates	2200		

Substance	mg/l		
	Mine water maximum concentration	Fishery water standard	Technical and community water standard
Chlorides	500		
Barium	0.7		0.1
Vanadium	0.005	0.001	0.1
Manganese	0.35		0.1
Copper	0.035	0.01	1
Molybdenum	0.002		0.25
Nickel	0.007	0.01	0.1
Lead	0.005	0.1	0.03
Strontium	2.3		7
Titanium	0.23		0.1
Zinc	0.023	0.01	1.0

Waste waters from mining and operations at the VNP site are assessed in the feasibility study and include.

- Sanitary waste;
- Rain water run-off from the surface facilities;
- Mine water from the drifts.

Sanitary waste water is relatively low in volume and will be collected at the VNP site for treatment using an existing facility at the central site.

Rain water run-off from the area of the VNP surface facilities will be collected in reservoirs in which solids are settled before the water is discharged.

Water from the drifts of VNP will be pumped to the surface and then by pipeline to a new sedimentation pond constructed in a shallow river valley to the east. This will have a capacity of 23,000m^3 and cover an area of 0.22ha. Following clarification the water is treated to remove mineralisation and bacteria, using a UV system, and reused at the mine for dust suppression and fire fighting. Excess water will be discharged to the river. The estimated characteristics of the main constituents of the mine water before and after treatment are given in Table 25-8 below. Since the natural mineralisation in river water is approximately 2000mg/l the discharge is not likely to impact on the water quality. Other parameters in the treated water, such as suspended solids, pH and hydrocarbons are in line with international standards for discharge of coal mine waters.

Table 25-8 VN Mine Water before and after Treatment

Substance	mg/l	
	Before treatment	After treatment
pH	8.2	8.2
Suspended solid	80	15
Mineral salts	1500-2000	1000-1200
Sulphates	600	510
Chlorides	100	80
Nitrates	40	11.2
Nitrites	0.08	0.02
Phosphates	0.4	0.4
Iron	0.3	0.3
Manganese	0.012	0.012
Hydrocarbons	21.5	12.2

25.4.2.3 Waste materials

From the Central Site, process waste materials consisting of waste rock, mined at the rate of approximately 660 t/day, and slurry from the coal preparation plant will be stored on an existing dump site approximately 1.5 km from the mine and linked by a gravel road.

The potential for self ignition of the waste rock will be minimised by limiting the height of each stack to 12m and covering the sides and top with a minimum of 0.8 m of clay. On completion of each stack the slopes will be planted with grass and trees.

Tailings slurry from the coal preparation plant will be pumped to a storage facility to be constructed on the site of the existing waste dump. The dam with a height of 8 m and capacity of 270,000 m^3 will be constructed using a synthetic membrane liner to protect the subsoil and groundwater from seepage of contaminated water. Clarified water from the dam will be stored in an adjacent collection pond and returned to the coal preparation plant.

Waste rock from the VNP drift development will be stored on an allocated area, 120m north of the VNP surface facilities, with a capacity for 730,000t. Spontaneous combustion will be prevented by limiting each level to 10m and placement of a 0.3m thick clay layers between layers of rock.

IMC understands that tailings waste from the coal washing plant will be thickened, filtered and sold as a product.

Non-process waste will be collected, segregated and removed by approved organisations.

25.4.2.4 Noise

The mine ventilation fans will be the main source of noise but the impact on residential areas will be minimised by the establishment of a sanitary protection zone with boundaries 600 m from the fans.

At the VNP site, noise from the ventilation fans and coal screening are significant issues in view of the potential for exceedance of noise level standards at some residential areas of Volodarsk located at some 500m distance. EastCoal proposes to install ventilation fans in a building with necessary noise abatement and provide a vertical diffuser.

25.4.2.5 Surface Deformation

The mine lease area is below open countryside and therefore issues and costs associated with subsidence are not expected to be significant. Generally there is little observable impact on the surface even though the area has been mined for almost 100 years.

Volodarsk village is not within the boundary of the mining license and will not be affected by mining or drift development.

25.4.2.6 Radioactive Substances

During previous operations the mine was tested for radioactivity and concentrations were below the Ukrainian regulatory standards. However these checks must be repeated before final approval for mining. The VNP is expected to be similar to Verticalnaya Mine

25.4.3 Environmental Management and Monitoring Programmes

In 2010 within 6 months of the date of first of the required environmental permits, the Company carried out a baseline environmental study according to an agreed programme with the State Administration of Ecological Resources and agreed a the following programme for the minitoring of the environment.

- Monitor the ecological state of the environment (subsoil, water bodies, soils, bio-resources) in the area of mining influence including radiation monitoring according to the programme agreed with the State Mining Industry Inspection of Ukraine.
- Dispose mining dumps and waste materials with minimal influence on the environment, and systematically control their state.
- Arrange mine workings, surface infrastructure facilities in such a way to exclude harmful influence on the environment according to the requirements of industrial safety and subsoil protection as well as environmental legislation,
- Reclaim disturbed soils – until the date of permit expires.
- Take all necessary steps to minimise or avoid negative influence of mining practice upon the environment.

EastCoal has now moved onto a provisional monitoring programme where air emission monitoring will be carried out using certified laboratories according to Ukrainian regulation at specified interval as shown in Table 25-9.

Table 25-9 Schedule of Air Emission Monitoring

Monitoring	Schedule	Basis
Inventory of sources and content of emissions of harmful substances into the atmosphere.	Annually or in accordance with the State Administration of Ecological Resources once in 5 years.	The Law on atmospheric air protection, No. 2707-XII, 16.10.92,
Permissions for emission of harmful substances into the atmosphere from the Ministry of Ecological Safety.	Within the terms stated by the State Administration of Ecological Resources.	The Law on atmospheric air protection, No2707-XII, 16.10.92,; the Decision of the Cabinet of Ministers of Ukraine No.364 29.05.98
Making obligatory payments for emission of harmful substances into the atmosphere.	Monthly.	The Law on natural environment protection No. 1264-XII 25.06.91.
Laboratory control.	Twice a year.	The Law on atmospheric air protection, No.2707-XII, 16.10.92

Monitoring, according to regulations, is undertaken to assess compliance and environmental payments are based on actual emissions, discharges and waste production. Exceeding the permit conditions normally incurs additional taxation based on a higher unit rate for the excess. The calculation of payment for environmental impact is a complex procedure and is made for each pollutant according to various statutory rules and normative factors such as:

- The mass or volume of emission or discharge equivalent to permissible levels.
- The mass or volume of emission or discharge exceeding permissible levels.
- The specific payment per tonne of pollutant based on the hazard classification.
- Coefficients taking into account any ecological peculiarities or socio-economic conditions.

A Preliminary monitoring programme for the VNP site has been established being similar in scope to the above programme.

25.4.4 Summary of Key Environmental Issues

The estimated mass emissions to air of dust and combustion gases are relatively small. The mitigation measures proposed in the EIA, together with establishment of sanitary protection zones, are designed so that ambient Ukrainian air quality standards are not exceeded.

In general the systems proposed to minimise the impact of mine and waste water discharge are appropriate and consistent with international practice. According to the EIA the surface waters in the Donbas basin are already influenced by discharges from communities, mining and other industries and any further impact from the Verticalnaya mine is not likely to be significant. However, IMC considers that there should be facilities installed for removal of oil and grease from the mine water and surface water settlement facilities.

Waste rock from the mine and tailings from the coal preparation plant will be stored on a site already used for dumping low hazard mine waste. This is good practice and avoids the need to use and disturb greenfield areas. According to EastCoal there is no possibility that the site has been used for depositing other types of more hazardous waste. However IMC recommends that EastCoal receives validation of this from the Ministry of Coal or Lugansk UDKR and protection from any future liability associated with clean up of existing waste materials.

According to the EIA the storage facility for tailings will be constructed using appropriate measures to protect groundwater and this method has been approved by the State Expertise. However, according to the EC BREF on Best Available Techniques for Management of Tailings and Waste Rock, the best technique involves dewatering of coal tailings and storage in dry form. IMC recommends that EastCoal evaluates the potential advantages and costs of this technique.

The social impact is assessed as positive on the basis of providing employment for approximately 1200 people from the local communities plus unquantified multiplier effects.

The proposed site for the VNP mine access and surface facilities is on land designated for industrial use. Grassland in the immediate vicinity of the VNP site shows evidence of disturbance by previous activities, is not privately owned and is not presently used. IMC has not identified any significant liabilities associated with this site.

On the basis of the environmental assessment, the potential for significant environmental impact of the VNP is considered low to moderate. However, since Volodarsk village lies on or close to the boundary of an environmental protection zone around the VNP, the facilities and environmental management system require careful design in order to comply with Ukrainian air quality standards and noise limits. Suitable provisions are included in the VNP feasibility study. The environmental assessment concludes that there is negligible risk to health as a result of mining activities.

Water discharged from the VNP will be treated to an acceptable standard for reuse or discharge to the river.

There are adequate facilities for storage of waste rock with easy access.

25.4.5 Provision for Rehabilitation

25.4.5.1 Ongoing Rehabilitation

At this stage, EastCoal has a formal environmental management system and plan. However, the EIA includes measures for environmental protection generally according to the requirements of Ukrainian environmental regulations and codes. These include:

- Abatement of major emissions to air and establishment of sanitary protection zones around the major emissions sources.
- Pumping and treatment of mine water and re-use where practicable.
- Treatment of sanitary waste water
- Storage of mine waste rock and immediate capping and cultivation of the waste dumps.

- Storage of waste slurry from the coal preparation plant in a safe manner designed to protect ground water pollution.
- Collection and removal of other waste materials.

25.4.5.2 Closure Restoration

There is no requirement under Ukrainian Environmental Law to plan or make financial provision for mine closure. Luganskgiproshakht has estimated a total cost of Ukr34.6 million for:

- Sealing of the shafts and drifts.
- Dismantling and removal equipment and buildings.
- Technical and biological restoration of the waste dump.
- Grading and contouring of the industrial site followed by re-vegetation.

This general plan for restoration is consistent with accepted principles. However there is no provision for environmental monitoring following closure. In addition the owner's may retain a future liability for continuation of pumping water from the mine to protect adjacent mines from flooding. This should be clarified in the terms of the mining licence.

As recommended by IMC EastCoal has amended their business plan to include a mechanism for provision of funds to cover the cost of closure restoration in line with international good practice.

During recent works at VNP the top soil was removed and stored ready for use during land restoration at the end of the lease period for the VNP site.

25.5 Management

Currently there are a limited number of management and workers employed at the mine for care and maintenance and VNP development supervision. Some of the original teams have been retained to continue with their duties. Others whose skills are not required and those who wished to leave of their own accord have been offered a redundancy package based on the current Ukrainian system.

IMC understands that the management team has now been extended as part of the VNP development programme where the civil and mining works are currently being undertaken with contractors. As the underground workings are developed mine management will employ their own workers.

IMC's personnel were in regular contact and held numerous discussions with the Company's management at all levels. IMC is satisfied that the Company's management is capable of implementing the proposed production plans based on this contact and on direct observations of the limited operational management team.

25.6 Health and Safety

IMC understands that as the development of the mine begins the new management of the mine will pursue an active safety management policy which was issued in March 2011 and is summarised below.

It is the Health and Safety policy of EastCoal. (the "Company"):

(a) To give high priority to safeguarding the Health and Safety of all its employees whilst at work and provide working systems, procedures and environments which, so far as is reasonably practicable, are safe, without risk to health and meet the 'best practices' of the coal industry globally.

(b) To conduct all operations in such a way to ensure so far as is reasonably practicable that people not in its employment, but who could be affected, are not exposed to health, safety and environmental concerns due to the Company's undertakings.

(c) To achieve high standards in managing all health and safety matters and comply with or exceed all relevant legislatory requirements.

(d) To organize and arrange its affairs to ensure compliance with the policy.

(e) To pursue progressive improvements in health and safety performance, with legal requirements defining the minimum level of achievement.

This policy and the Company's health and safety performance will be reviewed periodically by the Health, Environment and Safety Committee of the Board of Directors of the Company.

Any training programme devised will be approved by the Ukrainian Mine Authorities before it is implemented and a record of each individuals training will be maintained at the mine.

All mining operations will be carried out and managed according to the requirements of the Ukrainian Mining Law and Regulations, personnel protective clothing will be issued to all workers and the mine atmosphere will be monitored at all times to ensure a good working environment is maintained.

It will be the policy of mine management to pursue a zero accident policy. If unfortunately an accident does occur then a full investigation will be undertaken to ascertain the cause of the accident and to implement new procedures to prevent a reoccurrence of similar accidents. Any accident will be recorded and reported in the prescribed manner to management, workers, workers representatives and mining authorities.

25.7 Infrastructure

25.7.1 Surface

25.7.1.1 Shaft Mine

The surface industrial site covers some 10.4 Ha including 3.0 Ha of approach roads. Located in a rural area with electrical power supply, mains water, mains sewage, and good access roads already established.

The main administration building is functional, capable of providing the services required for management and workers. A mine boiler is installed and operating and it is planned to install a new boiler house to replace the existing one designed to provide for the extra heating requirement when the mine is re-developed.

There are 2 fire protection tanks each having a capacity of 250 m^3 and a new clean water tank of 200 m^3 has just been constructed.

Portable air compressors are used to supply the needs of the mine at the moment and a permanent compressor house will be constructed during the re-development of the mine.

There are loading facilities available for the screening and loading of ROM and waste mineral wound out of the mine from the current men and materials shaft.

A railway link line runs within 800m of the mine site

Land for the building of a coal preparation plant and the disposal of waste material from mining operations is available adjacent to the new skip shaft.

25.7.1.2 VNP Drift Mine

The existing infrastructure at or close to the VNP site includes:

- Good access from the main Verticalnaya site by public highway and tracks.
- A nearby rail line and loading facilities.
- Water treatment lagoons.
- Waste storage facilities.

On the Verticalnaya site the main administration building is functional, and capable of providing the services required for management and workers. EastCoal plans to use the administration buildings and wash house at the main Verticalnaya site to support the VNP.

A small boiler will be installed at the VNP site for local heating of any buildings and the mine ventilation air.

25.7.2 Shaft and Drift Mine Access

25.7.2.1 Shaft Mine

Prior to closure the mine was serviced by a combination of both inclined drifts and shafts.

Coal and waste materials from the mine workings travelled out of the mine along conveyors installed on the inclined drifts to the mine surface (Original mine surface that began life in 1912). Since the mine closed in 1998 the condition of the surface drifts deteriorated and they have been sealed off.

The main ventilation fan was also situated at the entrance to the inclined drifts so an alternative temporary ventilation scheme has to be installed at the mine shaft site, In addition to the sealing of the inclined drifts all surface structures at the entrance to the inclined shafts has been salvaged and removed.

The shaft site has two shafts. The materials shaft was installed and has been operational for the transportation of men and material since 1975. It has two winding systems, one for the winding of twin deck cages used for the transportation of men and materials. The other winding system has a single cage and balance weight that is used for shaft exams, maintenance and the winding of mineral from rock drivage and roadway repair works to keep it separate from the main run of mine product on the conveyor belts.

The second shaft is the skip shaft sunk in 1992 but not yet fully commissioned. It was designed to operate with a twin winding system; each will consist of two 25 tonne skips but the Company intend to convert it to a men and materials shaft.

25.7.2.2 VNP Drift Mine

EastCoal has constructed the portals and started the drivage of the two surface drifts to access the H_{11} and H_{11}^{b} seams.

25.7.3 Shaft Mine

25.7.3.1 Underground Roadways

Prior to its closure the mine was operating longwalls in H_8 coal seam between the horizons -600 and -1000 m, all the main roadways to access those reserves were driven along the dip of the coal seam and the adjacent strata both above and below the coal seam is very competent sandstone.

A 60 m section of one of the access roadways which had been flooded for over 6 years was observed during an underground mine visit and there were no signs of deterioration in any form neither to the steel roadway supports or adjacent strata.

25.7.3.2 Mine Water

When EastCoal took over the mine the operating water pumping scheme maintained the water level at the -675 m horizon. The pumping has recently been increased to start to dewater the flooded workings.

During 2004 the water inflow into the mine was measured and logged over a period of six months with the following results: -

- Minimum water inflow of 315 m^3/Hour, and
- Maximum of 422 m^3/hr.

The measured water content of the flooded section of mine workings to be pumped out is calculated to be 2.6 Mm^3; this together with the current measured inflows indicate the mine can be pumped clear of water within one year using high capacity pumps that are readily available.

After the water has been pumped out of the flooded section of the mine the estimated mine water inflows into the mine are 250 m^3/hour at the -600 horizon and 210 m^3/hour at the -1000 m horizon which is considered to be a minimal amount for a mine of this depth and the pumps installed will have no problem in handling these amounts of water inflow. Water is pumped out of the mine via a bore-hole installed with three 150 mm diameter pipes. The discharge point on the mine surface was observed and the mine water being pumped was very clean not requiring any treatment before discharge into the local water drainage

system. Some of the mine water is passed through a water purification plant for re-use in both the mine baths and for dust suppression purposes underground.

25.7.3.3 Ventilation

The mine has a temporary ventilation system in operation which delivers 30 m^3/s. It is planned to install a new surface fan that will provide 170 m^3/s. The new fan will provide adequate ventilation for the mine works planned although as the working progressively get deeper a ventilation bore-hole to supply intake air to the lower workings will be required.

Within the limits of the current lease area the geothermal gradient on the average is calculated to be 2.1ºC per 100 metres of depth. The temperature of rocks in the current mine workings is on the average plus 37ºC, but with a new ventilation fan the ambient temperature within the working area should be reduced.

25.7.3.4 Methane Gas

The measured amount of methane gas contained within the coal seam does not exceed 0.8 m^3/tonne of coal with the average of 0.1 m^3/tonne of coal. Therefore the mine under the Ukrainian Mining legislation is classed as a naked flame mine i.e. none gassy.

The coal seams under the same classification system are considered not to be dangerous with regard to coal dust explodibility and spontaneous combustion. Also there is no gas under pressure within the coal seam and surrounding strata eliminating the danger of sudden gas outbursts or rock bumps.

25.7.3.5 Mineral Transportation

The transport system for mineral from longwalls and development was via conveyor belt to the original mine inclines developed when the mine was started during 1912. Since the mine was closed in 1998, a section of inclined drifts between the -137 m horizon and the surface have deteriorated to such an extent that they have now been sealed off. When the mine is reopened mineral will be transported out of the mine via a new conveyor system installed in a combination of new and refurbished roadways.

25.7.4 Men and Materials

Men and materials were wound into the mine via the materials shaft to the -600 level. From there they were transported via a network of rope haulage systems to the deeper mine workings. These systems will need re-installing when the water is pumped out of the flooded section of these workings.

IMC would support the Company's approach to developing the underground and surface infrastructure at both the shaft and the drift mines and considers adequate time and capital has been included in the development and rehabilitation schedules in the business plan.

25.8 Taxes

At the present moment mining companies activity in Ukraine is controlled by the Constitution of Ukraine, the Ukrainian Mining Law, the Bowels Code, Environmental Protection Law of Ukraine, Search and rescue services Law of Ukraine, the Civil Defence Law of Ukraine, Labour safety Law of Ukraine and other acts.

According to the Taxation Law regime of Ukraine the rates of taxes, charges and other obligatory payments in Ukraine and also privileges relating to taxation are established exclusively by the taxation laws. The coal industry enterprises are tax payers in accordance with general practice established by operating tax laws.

The main source of investment to the enterprises of Ukraine which is not subject to the taxation is payments in the authorised capital of the company. Thus the person who is the participant of any society in Ukraine has the right to form an authorised capital stock or to increase the authorised capital stock by money resources or property. Such investments entering and withdrawal is not assessed.

25.8.1 Charges and Taxes

25.8.1.1 Profits Tax

The Tax legislation in Ukraine as for September 15th, 2008 doesn't contain any privileges for coal-mining enterprises (mines). The taxation is being executed on the basis of general taxation.

Section III of the Tax Code of Ukraine, which regulates company profit taxation has been revised and the new rates will come into force on 01.04.2011. Profit tax rates will be gradually reduced as follows:

- From 01.04.11 to 31.12 23%
- From 01.01.12 to 31.12 21%
- From 01.01.13 to 31.12 19%
- From 01.01.14 16%

Profits tax is to be paid for any income received by residents or non-residents from any kinds of activity within the territory of Ukraine, including interest, dividends, royalties and any other kind of passive income.

Profit of the tax payer (of the mine) is computed by the following calculation:

Gross Revenue – Total Expenses = Taxable Profit

The profit is calculated quarterly on the result accruing through the year. The accounting periods for the profits tax is quarterly and yearly. Declarations for the profits tax are to be made quarterly and at the end of the year the annual declaration is to be made. Based on results the profits tax is paid to the State Treasury.

25.8.1.2 Dividends Taxation

The Issuer of the corporate rights can make the decision on payment of dividends to participants of the company. Payment of dividends is made proportionally to the share of the participant (shareholder) in the authorised capital stock of the enterprise/issuer of such corporate rights irrespective of whether activity of such enterprise-issuer was profitable throughout the accounting period under the presence of other sources for dividends payment or whether there is available profit calculated by the rules of the tax account. The enterprise/issuer which pays the dividends pays an advance payment of the profits tax at a rate of 25% of accrued dividends which is included into the total tax sum in subsequent declaration, i.e. in the following period the accrued profits tax will be decreased by the sum of the paid dividends.

25.8.1.3 Non-Residents Taxation

Taxation of non-residents is ruled by the Article 13 of the Enterprises' profits taxation Law of Ukraine № 334/94-BP from 28.12.1994.

Any income of the non-residents received from the economical activity within the territory of Ukraine (including the dividends paid by the resident which are subject to taxation at a rate of 15%). The resident intending to transfer to the non-resident any payouts from the revenue received by such non-resident and originated in Ukraine has to withhold the tax at a rate of 15% from the sum of the revenue and, except as otherwise provided by the international regulations of agreements, to remit the tax to the budget within the period of such payout.

According to the article 10 of the Convention signed by Ukraine and the United Kingdom of Great Britain and Northern Ireland concerning the elimination of double taxation and prevention of tax evasion relating to the profits tax and property price appreciation tax from 10.02.93:

Dividends can be assessed in other contractual states, in this case Great Britain.

The dividends may be also subject to taxation in the contractual State the resident of which is the company paying dividends according to the Legislation of the State (Ukraine) in the case if the recipient actually has the right for the dividends and is the subject to dividends taxation within the State the tax doesn't have to exceed:

a) 5% of the total sum of the dividends in the case when the right for the dividends belongs to the voting company which controls straight or immediately at least 20% of the capital of the company paying dividends (in the case of UK) and at least 20% of the authorised capital (in the case of Ukraine).

b) 10% of the total sum of dividends in other cases

25.8.2 Value Added Tax (VAT)

Value-added tax in Ukraine is discharged according to the Value-Added Tax Law of Ukraine № 168/97 from 03.04.1997. The rate of the tax is 20% to the assessment basis as stated in the article 4 of the Law and is added to the price of the goods (services). The sum of the tax liable to payment to the state budget for the results of the accounting period calculated in the declaration is defined as the difference between the accounting period tax liabilities and the tax credits. If in the result of such calculation the declaration shows a net positive sum it is to be paid to the state budget, if the sum is negative the payer has the choice to a credit on their account or compensate against the tax payer's account.

The VAT payer can choose monthly or quarterly reporting tax period. VAT payers (mines) hand over declarations under the VAT monthly and by results of the declaration pay the tax. At export of goods 0% rate of VAT is applied. Thus it is likely that the sum of the VAT paid to suppliers of raw materials, works and services for manufacture of the exported goods will exceed the sum of the VAT collected, that is the sum of the tax credit will exceed the sum of tax obligations and the tax payer will have a right to receipt from the state budget of the net overpayment of VAT.

25.8.3 Currency Exchange Regulation

Currency exchange regulation within Ukraine is regulated by the Procedures of foreign currency exchange Law of Ukraine № 185-94/BP from 23.09.1994 according to which inclusion of the exported goods currency earnings should be transferred to Ukrainian enterprise accounts not later than in 180 calendar days after customs registration of cargo. The same rule governs the import of goods when the resident of Ukraine lists an advance payment for the goods outside of Ukraine. Such goods should be delivered to Ukraine not later than in 180 calendar days after customs registration of cargo otherwise the advance payment is to be returned. For infringement of the above-stated terms a penalty can be applied to the infringing Company at a rate of 0.3% of the late payment (cost of the goods which were failed to deliver) for each day of delay.

25.8.4 Customs Duties

According to the Custom schedule of Ukraine stated by the Law of Ukraine N 1109-V from 31.05.2007 the coal export duty in Ukraine is 0%. Thus coal production exports outside the customs border of Ukraine are realised without additional expenses.

25.8.5 Charges for Remuneration of Labour Fund

Essential tax loading in Ukraine make the charges for remuneration of labour fund which consist of:

- Pension fund charges 33.2%
- Unemployment case charges 1.3%
- Accidents on manufacture charges 1.9%
- Social insurance 1.5%

25.8.6 Mining Royalty and Geological Works Charges

As stated in the Article 19 of the Bowels Code of Ukraine the mines can be operated only by the enterprises holding a special licence. EastCoal has such licence established according to legislation of Ukraine at a price of 2,475,200 Hrivnas. At the present moment prior to the commencement of coal extraction additional payments are not paid. However after the commencement of coal mining the enterprise should pay annual payments for the mine operation. Annually payments for mine operation are established by State budget of Ukraine Law of Ukraine for corresponding year. So according to the State budget 2008 of Ukraine Law base specifications of payments for mine using were established. Thus after the commencement of coal mining the enterprise should pay 2 Hrivnas for each tonne of coal including anthracite (provided that at the moment of the extraction commencing the rate of the payment will not be changed).

Geological works charges executed at the expense of the state budget makes 0 Hrivnas 47 Kopecks for one tonne of the extinguished coal. However specifications of the given charge are subject to indexation taking

into account officially established index of inflation. In connection to this the sum of 47 Kopecks varies constantly depending on inflation fluctuation in the country. The given charge is paid once in a quarter.

25.9 Capital and Operating Cost Estimates

A model has been provided for the mine development. This has been structured separately for the two seams- for both capex and opex and a combined P&L and cashflow are then generated. The overall concept is that H_{11} and H_{11}^{B} seam is developed quickly from the surface which generates some cash in the early years the water in the flooded section of H_8 is pumped out and the seam is redeveloped and put into full production. From a cashflow point of view this is sensible.

Estimates of capital and operational expenditure have been made using prices as at the end of September 2010 and the project is deemed to start at the beginning of October 2010. In total, the capital expenditure in the model covers a 15 period year up to the end of 2024.

25.9.1 Capital Estimate

Capital expenditure for developing the mine project for the initial years plus additional expenditure over the remaining life to maintain production is estimated at $US 374.8 million. Phasing of this expenditure, by seam, over the term of the project is shown in Table 25-10 below.

Table 25-10 Capital Expenditure by Seam

Year		H_{11} US$ million	H_8 US$ million	Total US$ million
1	2010	753	-	753
2	2011	21,007	5,976	26,983
3	2012	7,074	6,252	13,326
4	2013	18,216	26,442	44,658
5	2014	10,824	22,176	33,000
6	2015	15,540	55,152	70,692
7	2016	10,824	10,926	21,750
8	2017	12,636	6,126	18,762
9	2018	9,504	10,812	20,316
10	2019	12,876	14,856	27,732
11	2020	12,636	14,856	27,492
12	2021	16,008	6,126	22,134
13	2022	2,880	19,542	22,422
14	2023	8,424	6,126	14,550
15	2024	-	10,242	10,242
	Total	159,202	215,610	374,812

In the initial years of development (2010-15), the capital investment totals US$189.4 million. This relates to developments in both seams and the related infrastructure.

In Table 25-12 and Table 25-12 below, this initial capital expenditure is broken down into major components for each seam development by year.

Table 25-11 Seam H_{11} - Capital Expenditure by Major Item

Item	2010	2011	2012	Total
	US$ '000	US$ '000	US$ '000	US$ '000
Complete Surface preparation	48	-	-	48
Complete purchase of 6 kV cable and install	229	-	-	229
Prepare Drift Portals	300	-	-	300
Install Temporary sub-station for in-seam development activities	-	496	-	496
Install materials handling equipment at conveyor drift	135	135	-	270
Install materials handling system for auxiliary drift	-	336	-	336
Construction of surface explosives store	41	-	-	41
Construction of temporary mine water settling tank 250 m^3	-	78	-	78
Construction of surface building at entrance to conveyor roadway	-	296	-	296
Construction of surface building for auxiliary shaft	-	771	-	771
Construction of fire-fighting tanks and pumps	-	168	-	168
Construction of engine house including haulage engine for a auxiliary shaft	-	146	-	146
Construction of fan building including access tunnel and ventilation fan	-	900	-	900
Construction of heater including tunnel for frost protection	-	480	-	480
Construction of surface drainage ponds and pipe drainage network	-	58	-	58
Construction of surface materials handling area and stockyard	-	124	-	124
Construct truck weighbridge	-	64	-	64
Final restructuring works on site	-	23	-	23
Construction engine house including haulage for conveyor drift	-	120	-	120
Purchase and installation of main conveyor belt	-	450	-	450
Temporary Barrel Washer VNP	-	3,600	-	3,600
West Plough Faces	-	2,250	-	2,250
East Plough Faces	-	-	2,250	2,250
Conveyor Roadway Equipment	-	648	648	1,296
Ventilation Roadway Equipment	-	480	480	960
Electrical Equipment	-	576	576	1,152
Purchase and construct screening and loading plant and equipment	-	-	240	240
Contingence Capital	-	-	2,880	2,880
Total Drivages	-	8,809	-	8,809
Total Initial Investment	**753**	**21,007**	**7,074**	**28,834**

Expenditure in later years is for roadway development and replacement of equipment due to normal wear and tear.

Table 25-12 Seam H_8- Capital Expenditure by Major Item

	US$ '000					US$'000
Item	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
New pumps	240	0	0	0	0	240
De-watering pumping cost	360	360	0	0	0	720
Contractors X-measures Drift	1,620	4,536	3,402	0	0	9,558
Contractors In-seam drivage	0	0	0	0	0	0
Roadway repairs	510	600	0	0	0	1,110
Longwall Drivage	0	0	0	0	0	0
Conveyors	360	360	360	2,160	720	3,960
Haulages	396	396	0	2,376	792	3,960
Gathering arm Loader	600	0	0	0	0	600
Chain Conveyor	120	0	0	0	0	120
Roadheaders	0	0	0	7,200	0	7,200
Longwall Complex	0	0	0	0	24,000	24,000
Longwall Complex repair	0	0	0	0	0	0
Electrical switchgear	0	0	0	0	600	600
Electrical switchgear repair	150	0	0	0	0	150
Hydraulic pump and equipment	0	0	0	0	720	720
Hydraulic pump and equipment repair	0	0	0	0	0	0
General Expenditure	0	0	0	0	720	720
Temporary ventilation upgrade	60	0	0	0	0	60
Shaft Collar and ventilation access	0	0	0	600	0	600
Main Ventilation Fan	0	0	0	3,840	0	3,840
Install winder and headgear to 1250 level	0	0	0	0	24,000	24,000
Install manriding and materials facilities to Horizon 1250	0	0	0	0	0	0
Boiler	0	0	0	0	3,600	3,600
Surface Buildings	960	0	0	0	0	960
Main Electrical Sub Station, distribution and control centre	0	0	5,280	0	0	5,280
Coal Preparation Plant	0	0	12,000	6,000	0	18,000
Rail Connection	0	0	5,400	0	0	5,400
New Haulage Road from VNP to the Main Mine	600	0	0	0	0	600
Total	**5976**	**6,,252**	**26,442**	**22,176**	**55,152**	**115,998**

Expenditure in later years is for roadway development and replacement of equipment due to normal wear and tear.

25.9.2 Operating Costs Estimate

Operating costs are based on a cashflow model provided by the company in the business plan and amended as appropriate, based upon the knowledge and experience of our own engineers and updated for inflation from the date of the original plan to reflect prices as at the end of September 2010. They are deemed to be realistic and achievable but even so, in such a venture, the potential for error can still be of the order ±20%.

Table 25-13 Cash Operating Costs Estimated for Life of Mine Average

Item	$US000	$US/t
Total Company Employment Cost	305,447	(8.58)
Mining Contractors	167,614	(4.71)
Total Materials	179,016	5.03
Fuels	6,019	0.17
Electric Power	123,704	3.48
Maintenance	148,804	4.18
Royalty	7,602	0.21
Payment for using Depth	7,906	0.22
Other Costs	38,179	1.07
Coal Preparation Costs	43,542	1.22
Mine Overheads	17,023	0.48
Company Overheads	6,375	0.18
Depreciation H_{11}	146,045	4.10
Depreciation H_8	169,471	4.76
Total Cash Operating Costs	**1,366,749**	**38.41**
Total Capital Expenditure	**$US'000**	**374,812**
Total Run of Mine Coal Production	**'000 tonnes**	**35,580**

25.10 Economic Analysis

The results detailed below of the economic analysis and the accompanying sensitivity analyses are based on the Company Model Production Scenario for Verticalnaya.

25.10.1 Economic Analysis of the Verticalnaya Mine

IMC have prepared an economic analysis of the Verticalnaya Project, presented as Table 25-16, based upon the assessment of Proven and Probable Reserves scheduled for extraction within the production schedule prepared by the company and adjusted, as appropriate.

Sales revenues have been assessed on the basis of 5 grades of coal being sold into the domestic market. The model assumes that a recovery of saleable coal from ROM of 92% is achieved through coal washing in the mines own coal preparation plants, using a temporary barrel washer to start for H11 seam and then using a dense-medium plant..

Average sales prices per tonne have been based on the coal prices recommended by the Ukrainian Government, on the price forecast in the CIS coal monthly bulletin from 2011 and using a relaxation of 5%. As a result, selling prices used in the model are as follows:

Table 25-14 Selling Prices

Grade	$/tonne
AKO	132.05
AM	121.60
AC	121.60
Fines PSF	96.90
Fines PCI	136.80

An exchange rate of 8 UAH: 1 USD has been assumed.

The mine first registers an annual profit in year 4 of the projection, which offsets immediately the losses accumulated to this time. Annual profits then generally increase throughout the projection period as firstly production increases, effectively reaching full production in year 7 and then as a result of reducing development and manpower requirements after this time.

An evaluation of the project based upon a discounted cash flow (DCF) methodology has been completed using a discounting rate of 10% and an eighteen year life of mine, including the initial development period and a closure period, as described in Section 25.12. This analysis has been prepared on all-equity, post-tax basis. This evaluations, and results at differing discounting rates, are given in the table below.

Table 25-15 Evaluation of the Project at a Range of Discounting Rates

Discount Rate	NPV (US$ million)
-2%	751.9
-1%	681.9
10% (base rate)	615.3
+1%	555.8
+2%	502.7

The internal rate of return of the project, as described above, is 61.1%

Table 25-16 Summary of Profit and Loss

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Production									000t									
Run of Mine (ROM		73	409	1012	1441	2633	3805	3437	3278	3296	3375	3388	3052	3757	2625	1800	425	0
Saleable		8	309	799	1130	1955	2910	2731	2707	2666	2773	2731	2703	3308	2365	1656	391	
									$000									
Revenues		711	36601	94500	133549	231502	344565	323363	320652	315686	328232	323266	320067	391691	280030	195962	46298	
Operating Costs																		
Total Company Employment Cost	531	3079	11722	16590	21387	28970	30316	24448	24195	23422	23556	25727	23755	26311	21437	11352	7218	0
Mining Contractors	0	0	6927	12736	12640	19496	24615	24593	19238	19857	16821	8794	1896	0	0	0	0	0
Total Materials	216	1606	4820	7749	12202	17787	20076	15733	14909	13470	13924	17361	12742	15604	10816	5963	2473	100
Fuel	77	308	308	308	456	456	456	456	456	456	456	456	456	456	456	228	228	20
Electric Power	235	1194	2724	4281	5993	8613	11641	11074	10997	10867	11206	11073	10985	12905	9914	6459	2445	135
Maintenance	83	487	2161	4402	6422	10193	14553	13735	13625	13438	13926	13734	13608	16372	12065	8195	2417	30
Royalty	12	50	116	224	345	526	735	696	690	681	705	696	689	822	615	411	134	0
Payment for using Depth	0	2	84	217	307	531	791	742	736	724	753	742	735	899	643	450	106	0
Other Costs	162	848	1468	1661	2537	2863	3239	3168	3159	3143	3185	3168	3157	3396	3024	1699	1200	75
Coal Preparation Costs	0	0	912	1402	2335	3160	4114	3935	3911	3870	3977	3935	3907	4512	3570	2258	994	0
Mine Overheads	236	944	944	944	1269	1269	1269	1269	1269	1269	1269	1269	1269	1269	1269	725	725	100
Company Overheads	25	150	250	450	500	500	500	500	500	500	500	500	500	500	500	500	500	500
Depreciation H_{11}	63	2798	4492	8743	11287	12059	12608	12652	12451	13163	14446	15400	11596	7384	6815	0	0	0
Depreciation H_8	0	576	1128	3347	5684	11428	12594	13359	14711	16335	18097	18818	19794	16773	16829	12610	10388	0
Total Cash Operating Costs	1640	12043	38056	63054	83365	117852	137505	126360	120938	121196	122820	121673	105090	107203	87953	50849	28830	960
Operating Profit	-1640	-11332	-1455	31446	50184	113649	207060	197003	199714	194490	205411	201593	214977	284487	192077	145114	17468	-960
Profit after Interest	-1640	-11332	-1455	31446	50184	113649	207060	197003	199714	194490	205411	201593	214977	284487	192077	145113	17466	-963
Profit Tax	0	0	0	3234	8029	18184	33130	31520	31954	31118	32866	32255	34396	45518	30732	23218	2795	0
Net Profit/(Loss)	-1640	-11332	-1455	28213	42155	95466	173930	165483	167760	163371	172545	169338	180581	238969	161344	121895	14672	-963

25.10.2 Sensitivity Analysis

A sensitivity analysis for cash flow and net present value (NPV) has been undertaken with respect to variation in sales prices, output, operating and capital investment costs. Mining and marketing of coal contain variables that are not always predictable. Potential variables include those directly associated with the mining and processing operations, such as cost and production levels, as well as those that are external to the mining and processing operations, such as market prices.

While IMC concludes that the NPV of the Verticalnaya operations, as presented above, is realistic relative to the life of mine plans (based on reserves but not resources), a sensitivity analysis has been prepared for the following variables.

25.10.2.1 Operating Cost

This could vary as a result of changes in component costs, such as labour or supplies, or from variances in productivity. IMC has calculated a sensitivity of plus 10% in operating cost.

25.10.2.2 Production

Production level can be affected by variances in productivity or market place demands. IMC has calculated a sensitivity of minus 10% in production.

25.10.2.3 Capital Cost

Variances in capital costs could result from quantity or market prices of capital items. IMC has calculated a sensitivity of plus 10% in capital costs.

25.10.2.4 Coal Prices

IMC calculated the sensitivity impact of a minus 10% change in coal prices.

A summary of the effect of sensitivity of the valuation of reserves to these variables is given in Table 25-17 below.

Table 25-17 Sensitivity Analysis of Reserve Valuation

NPV (US$ million)	Base Case	Operating Cost (+10%)	Production (-10%)	Capital Cost (+10%)	Coal Price (-10%)
Based on post tax results	615.3	497.0	510.0	575.7	598.2

25.11 Payback

The financial appraisal and cash flow analysis has been carried out on the basis of all-equity funding and as such no interest is shown.

On this basis the project shows an undiscounted payback period of 7 years.

25.12 Mine Life

Based on the reserves and resources available to the mine within the existing mining licence area the mine has a life of 18 years including the initial development period and a final year for closure.

There are additional resources in the H_8 seam adjacent to the proposed workings in the existing licence area. Should the Company be able to acquire the appropriate licences and permits to work this area then the mine life could be extended beyond the 18 years assumed in the financial appraisal and economic analysis.

26 ILLUSTRATIONS

The following illustrations should be read in conjunction with the development plans for the mine contained in Section 25.1.3 above.

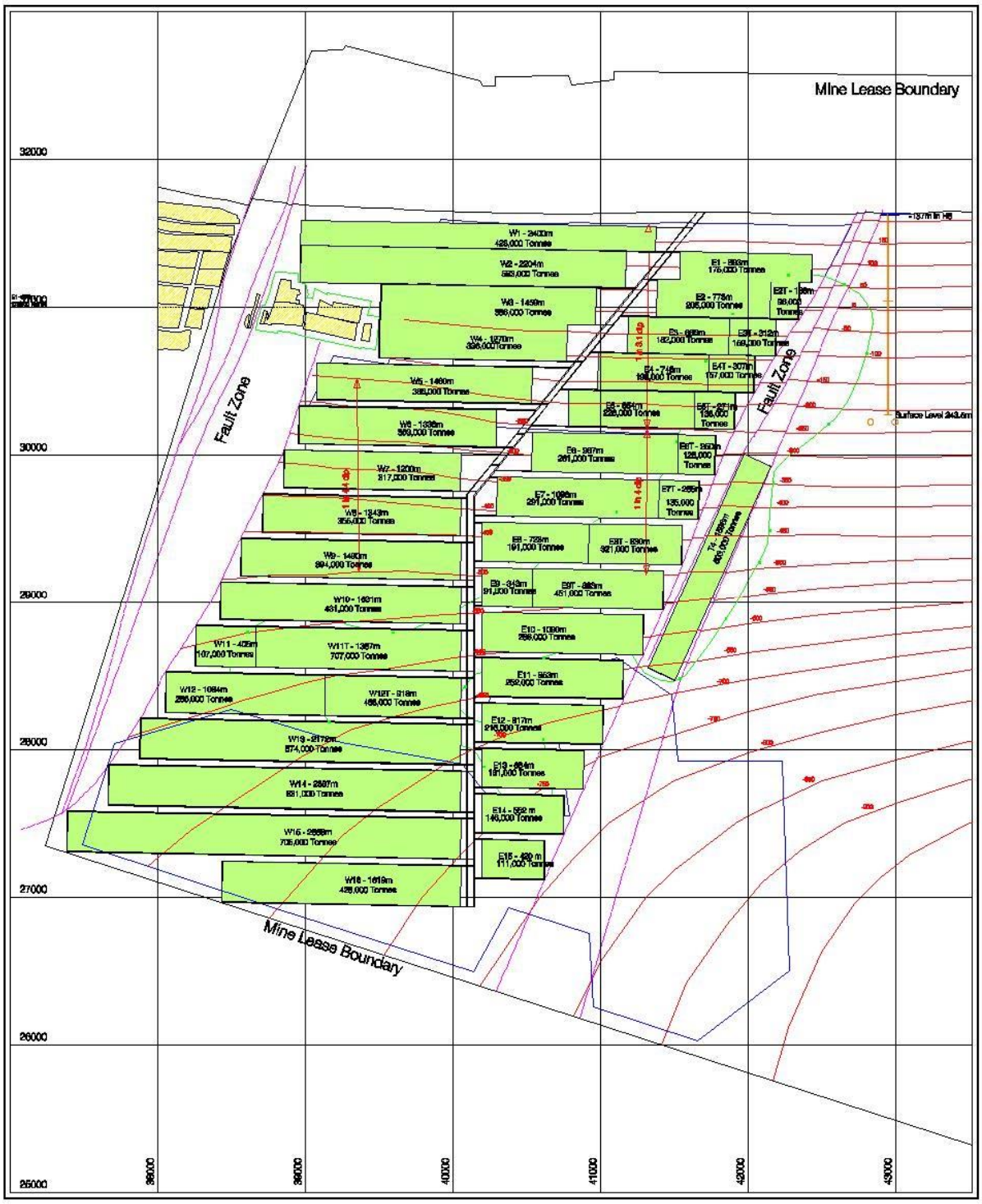


Figure 26-1 H_{11} and H_{11}^{B} Proposed Seam Layout

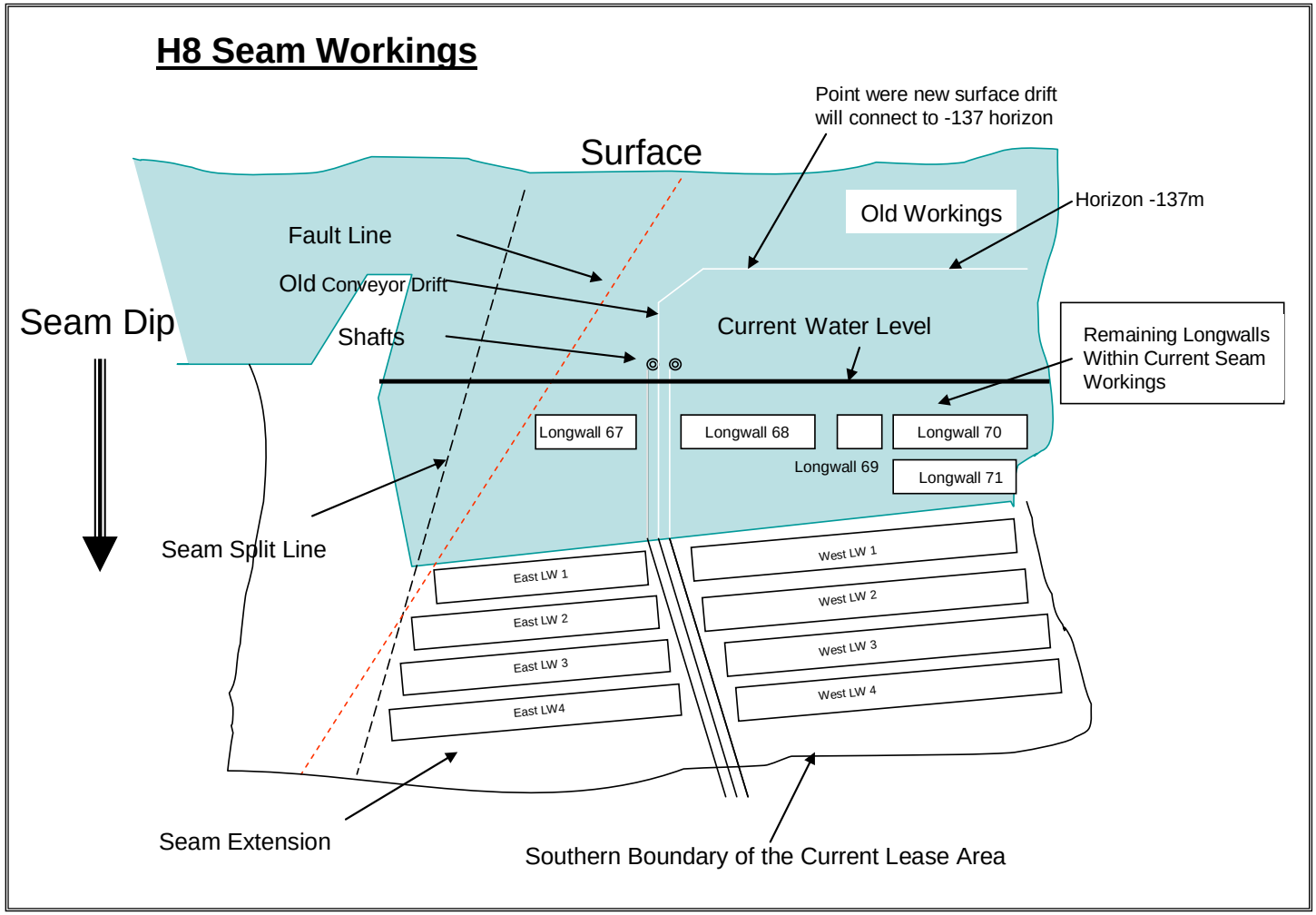


Figure 26-2 H_8 Proposed Seam Layout

26.1 Glossary of Terms

$	United States Dollars.
A	Amps.
ADB	Air Dried Basis, analysis of coal whereby coal is air dried at ambient temperatures leaving the inherent moisture within the coal.
AFT	Ash Fusion Temperature – A physical measurement of the temperature at which a cone of ash begins to soften, deform and flow. This is performed under either an oxidising or reducing atmosphere. Temperatures are reported as Initial deformation, spherical, hemispherical and flow.
Air Dried Basis	Air dried basis, analysis of coal where by coal is air dried at ambient temperatures leaving the inherent moisture within the coal.
Air pollution.	The presence of contaminant or pollutant substances in the air that do not disperse properly and interfere with human health or welfare or produce other harmful environmental effects.
AKO, AM, AL	Grades of sized anthracite
Anthracite, Anthracitic	A rank class of coal having more than 86% fixed carbon and less than 14% volatile matter on a dry, mineral-matter-free basis (as defined by ASTM). This class of coal is sub-divided into semi-anthracite, anthracite and meta-anthracite on the basis of increasing fixed carbon and decreasing volatile matter.
Anticline	A strata fold that is concave downwards.
Arch	Steel support used in mining roadways of inverted 'U' shape.
Ash	The incombustible residue from mineral matter contained as either contamination (rocks) or inherent within the coal. On combustion the mineral matter is reduced to ash the refractory component of mineral matter. Some minerals dissociate on heating to release carbon dioxide or moisture.
Ash content	The inert percentage of a laboratory sample of coal remaining after incineration to a constant weight under standard conditions.
Ash free	A theoretical analysis calculated from basic data expressed as if the total ash had been removed.
Best Practice	Operating procedures that are recognised in the international mining community which maximise productivity and return on investment commensurate with stewardship of the assets.
Billion	One thousand million.
Bituminous coal	A class of coal high in carbonaceous matter, having less than 86% fixed carbon, and more than 14% volatile matter on a dry mineral-matter-free basis, (as defined by the American Society for Testing and Materials (ASTM).
Blending	Mixing two or more materials together to give a mixture of the desired quality.
Bolted roadways	Roadways that are supported using full column resin bolts (a drill hole filled with quick setting resin and through which a steel rod is rotated to mix resin and hardener).
Borehole or bore hole	A hole made with a drill, auger or other tool for exploring strata in search of minerals.
Bunker	An excavation made to store coal or ore, usually to provide a buffer facility.
By-product	Material, other than the principal product, that is generated as a consequence of an industrial process.
Calorific value, (CV)	The heat value of coal per unit weight. This is normally reported in kilocalories per kilogram, (kCal/kg).
Capex	Capital expenditure
Caved	A longwall area behind the supports that has collapsed as planned.
CH_4	Methane
Cif – Cost Insurance Freight	A term of sale that includes the FOB (qv) price plus the cost of freight and the cost of cargo insurance.
Coal	A readily combustible rock containing more than 50% by weight and 70% by volume of carbonaceous material, including inherent moisture. It is formed from plant remains that have been compacted, indurated, chemically altered and metamorphosed by heat and pressure during geological time.
Coal Washing	The process of removing mineral matter from coal usually through density separation, for coarser coal and using surface chemistry for finer particles.
Coalfield	A discrete area underlain by strata containing one or more coal beds.

Coking coal	Coal that becomes plastic when heated at 3ºC per minute through the temperature range 300 – 550 ºC. Can be used to create coke which is used in the steel reduction process.
Conveyor	A rubberised belt running on rollers transporting the coal or other material from the faces to the endpoints. They can be reversed and used for manriding (carrying personnel to their working places).
Core	A cylindrical sample taken using a diamond drill.
Cross Section	A diagram or drawing that shows features transected by a vertical plane drawn at right angles to the longer axis of a geologic feature.
Crush, Crushing, Crushed	A mechanical method of reducing the size of rock.
CV	See Calorific value.
Cyclone	Equipment used to separate material by size and weight using rotating high speed fluids.
Cycloning	Separation of material by size or weight using a cyclone.
DAF	Dry Ash-Free basis – conversion of analyses to present data that has all ash and moisture removed, i.e. represents the analysis of the organic matter only.
DB	Dry Basis, analysis of coal whereby the coal is dried at 105 ºC before proximate analyses are undertaken.
DCF	Discounted Cash Flow
Dense Medium	A liquid composed of a suspension of magnetite in water that gives a very accurate separation.
Dense medium cyclones	A device that uses a dense medium in a hydro-cyclone to effect a separation between coal and waste.
Deposit, Deposits	An area of coal resources or reserves identified by surface mapping, drilling or development.
Development	(i) The initial stages of opening up a new mine, and/or (ii) The tunnelling to access, prove the location and value, and allow the extraction of ore.
Development	Excavations or tunnels required to access the coal or ore.
Dilution	The contamination during the mining process of excavated coal by non-coal material from the roof, floor or in-seam partings.
Dilution	Waste which is intermingled with coal in the mining process.
Dip	The angle that a structural surface, i.e. a bedding or fault plane makes with the horizontal measured perpendicular to the strike of the structure.
Discounted Cash Flows (DCF)	The present value of future cash flows after applying cumulative discounts.
Disposal	Final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials from removal actions or accidental releases.
Dissolved	Organic and inorganic material taken into solution. Excessive amounts in water usually make water unfit for drinking or for use in industrial processes.
Drivages	Any development excavation.
Dump	A site used to dispose of solid wastes without environmental controls.
EIA	Environmental Impact Assessment
Environment	The sum of all external conditions affecting the life, development, and survival of an organism.
Exploit	Make use of and derive benefit from a resource.
Exploitation	Method of deriving benefit from a resource.
Exploration	Prospecting, sampling, mapping, diamond drilling and other work involved in the search for mineralisation.
Fault	A structural discontinuity in the earth's crust formed by movement between adjacent blocks resulting from tectonic forces.
Fault Throw	The amount of vertical displacement in an upward or downward direction produced by a fault.
Feasibility Study	A comprehensive engineering estimate of all costs, revenues, equipment requirements and production levels likely to be achieved if a mine is developed. The study is used to define the technical and economic viability of a project and to support the search for project financing.
Floor (seam)	The bottom of the seam.

Fold	Any bending or wrinkling of rock strata.
Fractured - relating to geology	Breaks in rock formations due to intense faulting or folding.
FSU	Former Soviet Union.
Gate	One of two roadways usually driven parallel and then connected at the extremities. The longwall face is installed in the connection (the face) and retreats down the gates. The gates provide ventilation, power and other services and also a route for the conveyor removing the coal cut at the face.
Geotechnical Conditions	The engineering behaviour of rocks as a result of an excavation.
Grade	The classification or value of coal. The relative quality.
Groundwater	The supply of fresh water found beneath the Earth's surface (usually in aquifers), which is often used for supplying wells and springs. Because groundwater is a major source of drinking water, there is growing concern about areas where leaching agricultural or industrial pollutants or substances from leaking underground storage tanks are contaminating it.
Ha	Hectare
High-ash coal	Coal containing more than 15% total ash on an as-received basis.
Inclined drifts	Sloping underground roadways, usually driven from the surface but can also be between two levels underground
In Situ	In place, i.e. within unbroken rock.
Intake (Ventilation)	Fresh air going into the mine workings.
Interburden	Sterile soil and rock material lying between coal seams.
Jig	A separator that uses pulsating water to separate coal from waste; less accurate that dense medium.
Joints - relating to geology	A fracture or parting that cuts through and abruptly interrupts the physical continuity of a rock mass.
JORC	The "Australasian Code for Reporting Mineral Resources and Ore Reserves" (2004 Edition) published by the Joint Ore Reserves Committee ("JORC") of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and the Minerals Council of Australia (the "JORC Code").
kCal/kg	Kilocalories per kilogram of coal, the energy content of coal used in the countries that do not conform to SI units. In countries where SI units are adhered to, the measure of energy is in mega joules per kilogram or MJ/kg.
km	Kilometre.
kV	Kilovolt.
Lease	Contract between two parties enabling one to search for and/or produce minerals from the other's property.
Limb (Geology)	A sloping section of an anticline or syncline
LOM	Life Of Mine.
Longwall	A coal production face where a shearer traverses and cuts a long wall of coal accesses by two gate roads.
Longwall face	A set of up to 200 hydraulic supports with an AFC and a shearer.
Longwall face retreat	A face starting at the furthest extremity of the gate roadways and retreating back to the connection of the gate roadways with the main or strategic roadways.
Losses - Geological	Ore lost due to unpredictable geological phenomena.
Losses - Mining	Ore lost due to less than perfect mining operations.
Luganskgiproshakht	Lugansk Mining Institute
M	Million.
Magnetite	A ferromagnetic mineral with chemical formula Fe_3O_4.
Metallurgy	The practice of extracting metals or minerals from ores and preparing them for sale.
Mine	Any operation where mineral is extracted from the ground. This may be by opencast or underground mining methods.
Mineable	Capable of being mined under current mining technology and environmental and legal restrictions, rules and regulations.

Mineable	That portion of a resource for which extraction is technically and economically feasible.
Mineral Deposit	A mineral occurrence of sufficient size and grade to have potential or existing commercial value; sometimes referred to as mineralisation.
Mining Licence	Permission to mine minerals from a Mineral Rights area.
Mitigation	Measures taken to reduce adverse impacts on the environment.
Monitoring	Periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements or pollutant levels in various media or in humans, animals, and other living things.
Mt	Million metric tonnes.
Mt/y	Million tons per year.
MV	Megavolt.
MVA	Megavolt-ampere.
MW	Megawatt.
No.	Number.
Nos.	Numbers.
Outcrop / Incrop	The expression of a rock type at surface; the expression of a rock type or seam beneath rocks of younger age
Parting	A layer or stratum of non-coal material in a coal bed which does not exceed the thickness of coal in either the directly underlying or overlying leaves.
PCI	Pulverised Coal Injection
Permit	An authorisation, license, or equivalent control document issued by an approved agency to implement the requirements of an environmental regulation; e.g., a permit to operate a wastewater treatment plant or to operate a facility that may generate harmful emissions.
Pillar(s)	An area of ore left during mining to support the overlying strata.
Pillars	Blocks of ore left intact to act as support for shafts or other underground workings. Post pillars are equi-dimensional in plan.
Pit	A hole in the ground – an excavation below original ground level – a surface mine may comprise one or more pits.
Pit (mining)	Abbreviation of Open Pit Mine.
Plant	Fixed or moveable equipment required in the process of winning or processing the ore.
Pollutant	Generally, the presence of matter or energy whose nature, location, or quantity that contaminates air, soil, or water.
Pre-treatment	Processes used to reduce, eliminate, or alter the nature of wastewater pollutants from non-domestic sources before they are discharged into publicly-owned treatment works.
Prevention	Measures taken to minimise the release of wastes to the environment.
PSF	Power Station Fuel
Rehabilitation	Land restored to its former condition.
Reserve	A ‘Reserve’ is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.
Resource	A ‘Resource’ is a concentration or occurrence of material of intrinsic economic interest in or on the Earth’s crust in such form, quality and quantity that there are reasonable prospects for eventual 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.
Rights - Surface Rights	The ownership of the surface land under which minerals occur.
Roadways	An excavation to access a working area which subsequently may supply services or a conveyor.
ROM	Run of mine.
Roof	The top of the seam.
RR	Russian Rouble
Run-of-Mine (ROM)	The Grade and tonnage of material produced at the pit rim or shaft collar, stated on a dry basis.

S	Sulphur.
Sample	A representative fraction of a coal seam collected by approved methods, guarded against contamination, and analysed to determine the nature, chemical, mineralogical or petrographic composition, percentage content of specified constituents, and heat value.
Sampling	Taking small pieces of rock at intervals along exposed mineralisation for assay (to determine the mineral content).
Screen	A device for separating by size.
Seam	A layer or bed of coal. Correlated seams of coal are normally assigned a name, letter or number. A single seam can contain one or more non-coal partings resulting in a sub-division into leaves.
Seam outcrop	A manifestation of a coal seam at the Earth's surface.
Seam splitting	When a coal seam splits into two or more leaves or subsidiary seams.
Sedimentary	Formed by the deposition of solid fragmental material that originates from weathering of rocks and is transported from a source to a site of deposition.
Sedimentation	Letting solids settle out of wastewater by gravity during wastewater treatment.
Sediments	Soil, sand, and minerals washed from land into water, usually after rain. Sediments pile up in reservoirs, rivers, and harbours, destroying fish-nesting areas and holes of water animals and clouding the water so that needed sunlight may not reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to be washed off the land after rainfalls.
Settling tank/ponds/lagoons	A holding area for wastewater in which heavier particles sink to the bottom for removal and disposal.
Sewage	The waste and wastewater produced by residential and commercial establishments and discharged into sewers.
Shaft	A mine-working (usually vertical) used to transport miners, supplies, ore, or waste.
Shaft pillar	A prescribed area of ground around the shaft in which mining is not permitted. The pillar affords stability to the shaft ensuring this essential access is preserved.
Shearer	A machine used for cutting coal on a longwall face. (Usually in Russian called a combine)
Skip	The conveyance/vessel into which coal/ore is tipped at the bottom of the shaft and then hoists to the top where the ore is tipped into a receiving bin and then the cycle is repeated.
Slurry	A suspension of coal or waste in water.
Smoke	Particles suspended in air after incomplete combustion of materials.
Split	An in-seam parting which attains a thickness such that the resultant leaves of coal are considered as separate seams from a mining point of view.
Spontaneous combustion	The propensity of some types of coal to oxidise rapidly on contact with air. The oxidation reactions produce heat that increases the rate of oxidation to the point that the coal ignites. Low-rank coals are the most prone to spontaneous combustion.
Steam coal	Coal which will be used for steam generation principally in thermal power plants.
Steel arches	Arches made in sections of steel which can be bolted together to form a roof supporting a deforming roof.
Stockpile	An accumulation of ore or mineral.
Strata	Layers of sedimentary rock.
Surface water	All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.); also refers to springs, wells, or other collectors that are directly influenced by surface water.
Sustaining Capital	Periodic capital expenditures required to replace or overhaul equipment. Also known as replacement capital.
Syncline	A fold in bedded or stratified rocks which opens upward like the trough of a wave.
Syncline / synclinal	A downward-curving fold, with layers that dip toward the centre of the structure.
t	Metric tonne = 1000 kg.
Tailing(s)	The fluid slurry after treatment and extraction of the economically-extracted mineral.
Tailings	The fine material rejected from a mineral process.
Tectonic influence	The influence of primary and secondary geological activity on an area.
Thermal Coal	A coal used to provide heat from combustion, largely by power producers and industrial users.

tph	Tonnes per hour
Underground Mining	Extraction of mineral whereby the overburden is not removed in order to extract the mineral.
UDKR	The State Enterprise "Ukruglerestructurizatsiya" whose responsibility is the liquidation of closed mines
Ultimate analysis	Analysis of the elemental components of coal – carbon, hydrogen, nitrogen, oxygen and sulphur. Normally reported on a dry or dry ash-free basis.
V	Volts.
Ventilation	Air coursed around a mine to provide a working environment to both men and machines.
Volatile Matter Content; VM	That portion of the coal comprising both gases and liquids that is released following heating it from 105°C to 800°C. The amount of volatile matter in a coal is a function of the rank of the coal (thermal maturity) and of the coal type. High rank coals have a low volatile matter content (<20%) medium rank coals have a higher volatile matter content (20 – 30%) and low rank coals have a high percentage of volatile matter. The type of coal also effects volatile matter, coal with a high inertinite content will produce less volatile matter than a coal with high vitrinite content that will produce less volatile matter than a coal with high liptinite content.
W	Watts.
Washability	Result of a laboratory test that separates a sample of coal into different density fraction. Is used to predict plant performance.
Washing Plant	A plant designed to size and clean material to produce pre-determined sizes of product.
Waste	Rock or material of no commercial value residing within the seam, above the seam or below the seam.
Waste - related to mining	Rock or material of no commercial value.
Waste Parting	Rock or material of no commercial value residing within the ore horizon/reef.
Wastes	1. Unwanted materials left over from a manufacturing process. 2. Refuse from places of human or animal habitation.
Waste water	Spent or used water from individual homes, communities, farms, or industries that contains dissolved or suspended matter.
Workable	See mineable.