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

prepared for

Ukraine Coal Ltd

by

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for

IMC Group Consulting Ltd

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Appendix A Glossary of Terms

3 SUMMARY

3.1 General

Verticalnaya Mine is in the Donbass 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 the current owners Skhidna Vugilna Kompania ("East Coal Company", "the Company" or "ECC") has been granted the license to operate the mine as a private enterprise and activate 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.

The location of the mine is shown in Figure 3-1

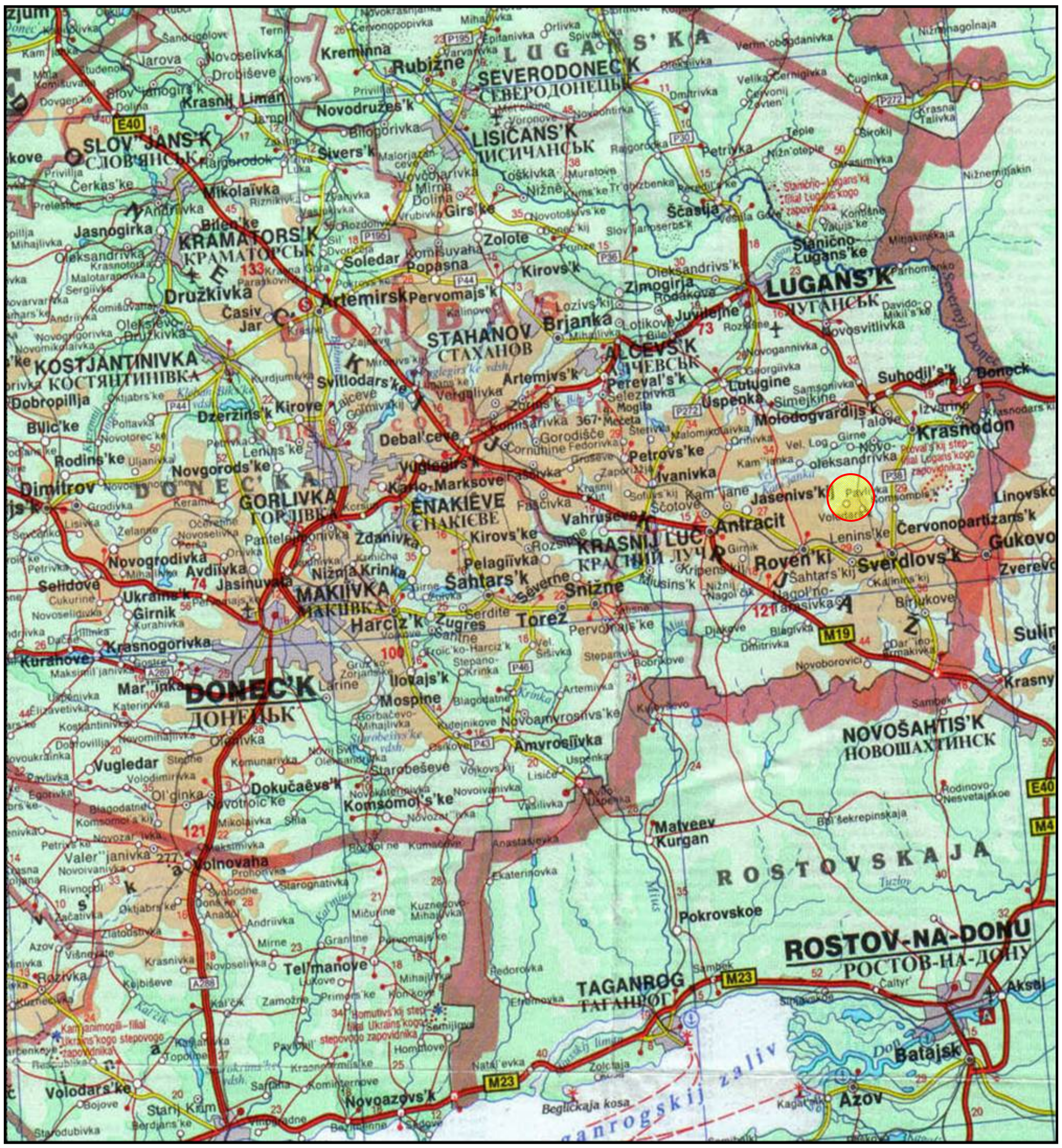

Figure 3-1 Location Plan, Verticalnaya Mine

3.2 Description of Assets

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

Table 3-1 List of Assets

Asset	Status	Type	Product/Output	Date of Commencement of Operation	Ownership
Project					
Verticalnaya Mine	Care and Maintenance	Underground mine	Anthracite	Planned project year 3	100%

3.3 Summary of Geology

The geology of the Verticalnaya mine 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 East Coal 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 16.2 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 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 to estimate the resources and reserve to the JORC (2004) standards.

3.4.3 Reserves and Resources Statement

It is considered that when the legal authority to mine has been obtained from the Ukraine State that the Verticalnaya Mine will have access to 16.2 Mt of Proved and 11 Mt of Probable Reserves with the Resources as shown in Table 3-2 below which are inclusive of these Reserves.

Table 3-2 Reserves and Resources Statement

	As at June 1st 2008 ('000 tonnes)				
	Reserves		Resources		
	Proven	Probable	Measured	Indicated	Total
H_{11}	5,800		9,600	3,000	12,600
H_{11}^{B}	10,400		32,000	-	32,000
H_8	-	11,000	15,700	15,900	31,600
Total	16,200	11,000	57,300	18,900	76,200

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.

3.5 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. 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 initially prepared by Luganskgiproshakht and refined by the Company. There are no coal preparation facilities at the mine but are planned to be constructed as part of the rehabilitation plans.

3.5.1 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.

3.5.2 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 will be enhanced as the mine is redeveloped.

3.5.3 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. 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.

3.5.4 Infrastructure

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.

The 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 million cubic metres. This together with the measured inflows into the mine can be pumped out within 6 months using pumps that are readily available.

The 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 $170m^3$/sec.

3.5.5 Mine Development Project

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

3.5.5.1 H_{11} Coal Seam

Three inclined drifts (Ventilation, Conveyor and Materials) each 870 m in length will be driven north to intersect H_{11}, $H_{11}B$ coal seams and provide access for two in-seam drivages. Whilst the conveyor drift will continue for a further 750 m to intersect H_8 coal seam at the -137 m horizon.

All longwalls will be fully mechanised using a shearer cutting and loading machine. The current generation of Ukraine manufactured equipment is quite capable of achieving the planned tonnage of 3,450 t/day.

The plan shows the first longwall coming into production during month 33 and the second during month 45. After which time access into the seam will have been established to maintain two longwalls continuously producing between them 1.3 Mt/y

3.5.5.2 H_8 Coal Seam

H_8 coal seam will be accessed and operated from the existing 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 of 1,245 m. Coal will be taken out of the mine via conveyor belt.

The first operation will be to pump out the water and examine the access roadways of the already developed section of the coal seam. It has been calculated that this activity will take six months in total using the pumps that are readily available.

The already developed section of the mine has 1.61 Mt of coal reserves already accessed, but until the access roadways can be examined these reserves are classed as a measured resource.

The new reserves below the -1,000 m horizon will be accessed by extending the main access roadways which will be driven in a southerly direction to provide access for the development of longwall's in both the East and West sections of these coal reserves.

Two longwalls one in each section will then be operated simultaneously to provide a continuous ROM output of 1.7 Mt/y.

3.5.6 Coal Preparation

The Company's Business Plan envisages a plant capacity of nominally 520 tph. The proposal to utilise 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.

3.6 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.

3.6.1 Provision for Rehabilitation

At this stage, ECC has not developed 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.

There is no requirement under Ukrainian Environmental Law to plan or make financial provision for mine closure.

3.7 Statutory Authorisations

3.7.1 Mining Licences and Leases

ECC has recently 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.

Currently the position is that ECC has the Mining Licence, has a preliminary agreement regarding rental of land areas and has submitted the project plans and drawings to the Ministry of Coal for approval. This is expected shortly.

3.7.2 Environmental Permits

Before mining and processing can commence, ECC must obtain permits from the MENR for emissions to air, use and discharge of water and generation and storage of solid waste materials. In the opinion of the Senior Inspector, the Chief of Ecological Inspection in Sverdlovsk, there are no issues likely to prevent issue of permits.

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 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. A revised mining plan and project feasibility study, to be prepared by Luganskgiproshakht, must also be reviewed and approved by the State Expertise.

3.8 Financial Results

A financial analysis has been provided by the Company and evaluated by IMC over a 14 year period.

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$446.1 million. This total includes any operating expenses prior to the commencement of commercial coal production which has been capitalised in the Company business plan.

Commercial coal production is projected to commence from the H_{11} seam towards the end of the third year of the project. Commercial coal production is projected to commence from the H_8 seam early in year 5. Full commercial production will be achieved during year 7.

Cash operating costs over the full 14 years of the business plan are projected to average US$31.19 per saleable tonne of production (excluding development costs capitalised during the first 3 years of the project).

A discounted cash flow appraisal has been carried out over the 14 years of the business plan and shows a net present value, when discounted at 12%, of US$352.1 million. A sensitivity analysis has been carried out and the results are shown in Section 25.11 (Page 65).

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.

Table 3-3 Key Project Indicators

Key Indicators	Value
Initial Capital Expenditure (2009-12)	US$237.8 million
Net Present Value @ 12%	US$352.1 million
Internal rate of Return	35.2%
Average Operating Cost per Saleable Tonne	US$31.19
Pay Back Period	7 years

4 INTRODUCTION

4.1 Report Preparation

At the request of the Ukraine Coal Ltd. ("UCL") this report has been prepared to fulfil the obligation to file an independent technical report as described in NI 43-101. The obligation to file an independent technical report arises from an agreement between UCL and Lysander Minerals Corporation, a British Columbia company listed on the Toronto Stock Exchange Venture Exchange (TSX-V). Lysander has an option to acquire the interests of the Company in the mine.

UCL have a 100% holding in Ukraine Energy, who themselves have a 51% holding in East Coal Company ("ECC") with an option to purchase the remainder. ECC are the current holders of the licence.

IMC Group Consulting Limited ("IMCGCL") 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 of IMCGCL. IMCGCL has received fees for the preparation of this report. There is no other corporate or commercial relationship between IMCGCL and ECC, Ukraine Coal Ltd or Lysander Minerals Corporation 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, prepared on behalf of the Company, covers the Verticalnaya mine in which ECC holds a significant interest 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 Technical 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 and Dargo Associates, a UK based mining consultancy.
- Feasibility Report on the Opening and Operation of Volodarskiy Mine 1250 m level prepared by Luganskgiproshakht

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 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 ROM from seam H_{11} at the adjacent Mine No3 Davievskaya in 1959.
- 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.

4.3.3 Environmental

- Feasibility Report on the Opening and Operation of Volodarskiy Mine 1250 m level prepared by Luganskgiproshakht

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 a Company Senior Mining Engineer on three separate occasions in conjunction with the preparation of this report.

- 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.

5 RELIANCE ON OTHER EXPERTS

For the preparation of this Technical Report, the Qualified Persons have relied upon the work of other experts in respect of the following contributions and disciplines:

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 six 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 25.5 Environmental Considerations in this Technical Report.

The compilation and analysis of operating and capital cost schedules, and economic analysis of the Verticalnaya project have been undertaken by Mr Peter Robinson, a member of IMCGCL staff who specialises in economic analysis of mineral industry projects. Peter Robinson is an Associate Member of the Chartered Institute of Management Accountants with over 15 years good standing with this Institute and over 30 years experience of mineral sector financial management and accounting. In this Technical Report he is responsible for sections 25.9 Taxes and Royalties, 25.10 Capital and Operating Cost Estimates and 25.11 Economic Analysis.

The work of the above experts can be relied upon.

6 PROPERTY DESCRIPTION AND LOCATION

The Verticalnaya mine licence area is in the Dolzhano-Rovenetskiy region of Donbass. 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. ECC have 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. The Ministry retains the ownership rights of the surface property but permission for their use is granted to the East Coal Company for a reasonable rental still being negotiated.

ECC has recently 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.

6.1.1 Mining licence

ECC has acquired the mining licence for seams 8, 10 and 11 under an open tender by the MENR. Typically, mining licences are valid for 20 years. 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

ECC requires land area totalling 23.7315 Ha for the mine and process facilities, rail and road infrastructure and waste storage areas. In order to conclude an agreement for rental of this land from the Sverdlovsk district authority, ECC must:

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

In a preliminary agreement the total rental cost is Ukr 17,000 per month.

The residual value of the assets is currently estimated at Ukr 23.8 million. However, following agreement that the assets can be privatised the State Property Fund will appoint an estimator to re-assess this value. In practice ECC considers that rental of the assets may be the preferred option initially in order to speed up the process.

6.1.3 Mine Lease

Following acquisition of the Mining Licence, ECC has 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, ECC must obtain 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 will require similar approval and then a total conclusion from the State Expertise before site construction work can commence. Detailed engineering design work can also commence at this stage.

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

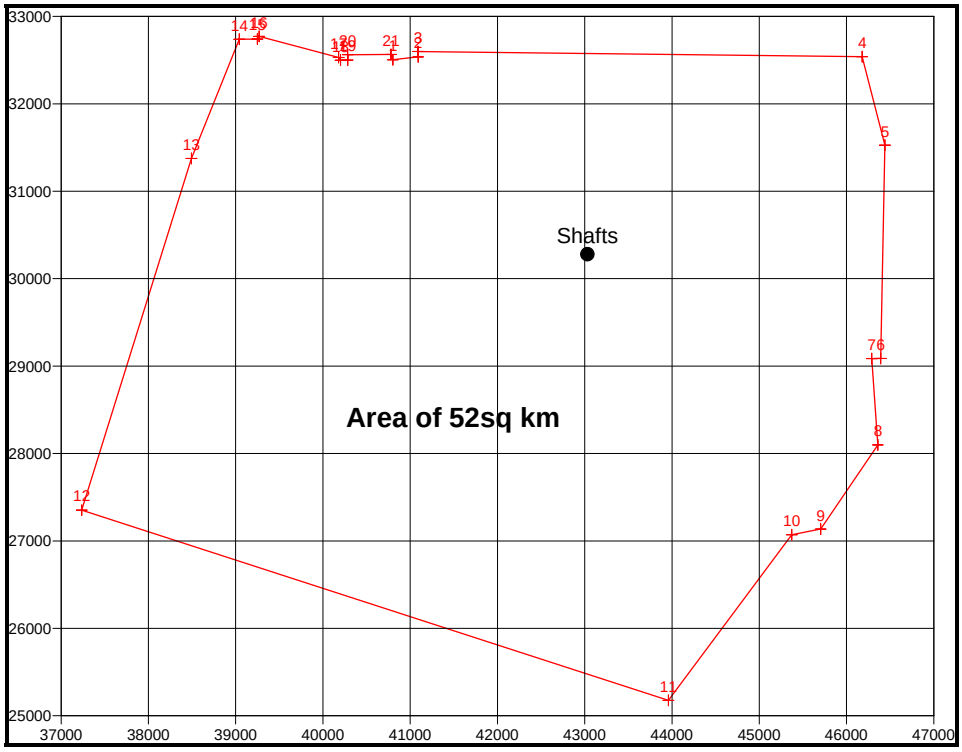

Figure 6-1 Licence Area, Verticalnaya Mine

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 required for the operation of the mine will be paid as a royalty per tonne of coal produced. The amount to be paid will be agreed after a re-assessment of the assets has been carried out.

6.5 All Environmental Liabilities to which the Property is Subject;

An ongoing liability of Lugansk UDKR is associated with pumping 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.

This liability for pumping will transfer to ECC when they take over the control and operation of the mine from the current owner UDKR.

Within 6 months of the date of permit, ECC shall carry out a baseline environmental study according to an agreed programme with the State Administration of Ecological Resources, with the purpose of measuring its physical parameters as of the date of the permit.

Within 18 months of registration of permit, ECC shall:

- 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.

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 includes procedures for public notification and consultation.

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 1250m level of the Volodarskiy mine, East Coal Company, Ltd., are estimated as positive and are approved.
- The working project, "The development and preparation of 1250m level of the Volodarskiy mine, East Coal Company, Ltd., is subjected for submission for the state ecological expertise for the positive conclusion as a basis for opening and financing of all the programmes, projects and decisions. The realisation of the above mentioned programme is prohibited without positive conclusion of the state ecological expertise under the Law of Ukraine the Protection of the Natural Environment".

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.

Before mining and processing can commence, ECC must obtain permits from the MENR for emissions to air, use and discharge of water and generation and storage of solid waste materials. These define the permissible quantities for release of hazardous substances based on the results of the EIA (Environmental Social Impact Assessment) already prepared as part of the overall feasibility study. Generally permits for water discharge are valid for 5 years whilst air emission permits and waste permits must be renewed annually. Furthermore the air emissions inventory must be re-evaluated every 5 years.

In parallel, ECC must obtain permits for mining and use of explosives by demonstrating that the relevant managers and explosive specialists have the necessary experience and qualifications.

On the basis of discussions between IMC and the Senior Inspector, the Chief of Ecological Inspection in Sverdlovsk, there are no issues likely to prevent issue of permits.

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.

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.

Mining in the region has been ongoing for almost 100 years resulting in a landscape dominated with numerous waste heaps, mine head gear and settling ponds. Within the bounds of the Verticalnaya lease area are the 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

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 Donbass are used to working with such extremes so, with adequate precautions, the operating season is 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

ECC requires land area covering 23.7315 ha for the mine and process facilities, rail and road infrastructure and waste storage areas. In order to conclude an agreement for rental of this land from the Sverdlovsk district authority, ECC must:

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

The residual value of the assets is currently estimated at Ukr23.8 million. However, following agreement that the assets can be privatised the State Property Fund will appoint an estimator to re-assess this value.

In practice, a rental agreement has been agreed with the State Property Fund and discussions on the amount are still ongoing with ECC and the State Property Fund.

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.

8 HISTORY

The Verticalnaya Mine is owned by the State Authorities and is now legally licensed by ECC from July 2007 for 20 years. The mine was previously owned and operated by the authorities that have kept the mine under care and maintenance. The historic run-of-mine production from 1990 is given in Table 25-1.

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 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. ECC do have copies of 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. ECC have copies of the documents from this review and have based their proposals on this 1986 review and evaluation of resources.

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 ECC.

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

9 GEOLOGICAL SETTING

The coal bearing strata of the Dolzhano-Rovenetskiy Region of Donbass 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.

10 DEPOSIT TYPES

The deposit type is determined as being an underground mineable deposits 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 ECC 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 0.70 m or greater in thickness, ECC propose to mine this split. The H_{11}^B seam occurs at levels from +200 m to below the -1000 m level.

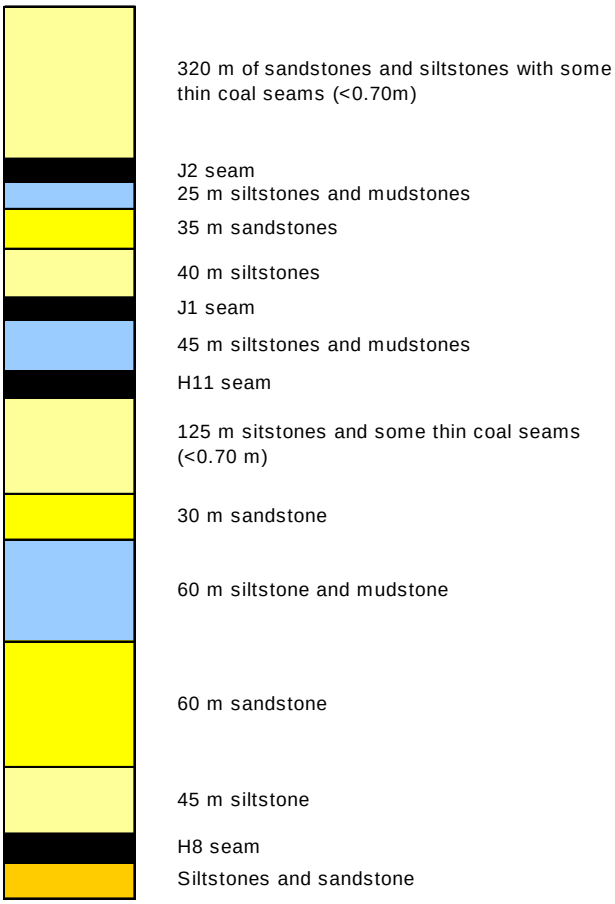

Figure 11-1 Generalised Vertical Section

The generalised vertical section of the coal bearing strata in the area of the mine shaft is given below (not to scale):-

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 to the deep of the -1000 m level in H_8 seam but can only be exploited after the water level has been pumped down to below the -1250 m level. 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 1400m^3/hour will be needed to clear water from the H_8 workings within a period of six months. 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 below:-

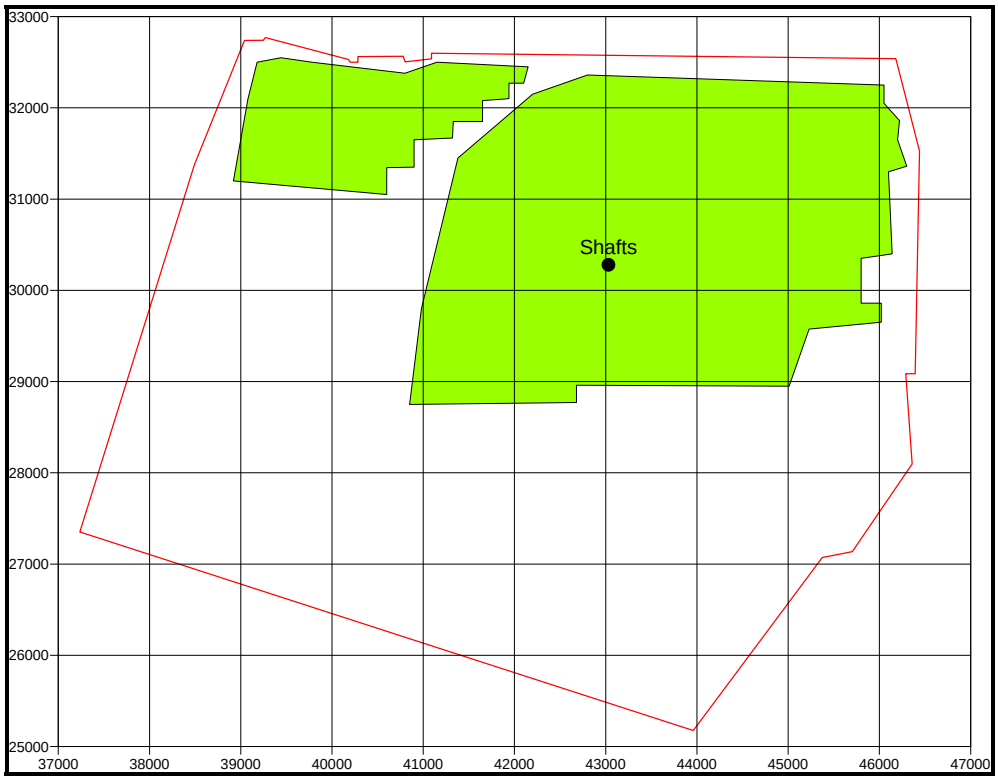

Figure 11-2 Previous Workings, H_8 Seam, Verticalnaya Mine

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. ECC 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.

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

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 to 1,000 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 addition 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:-

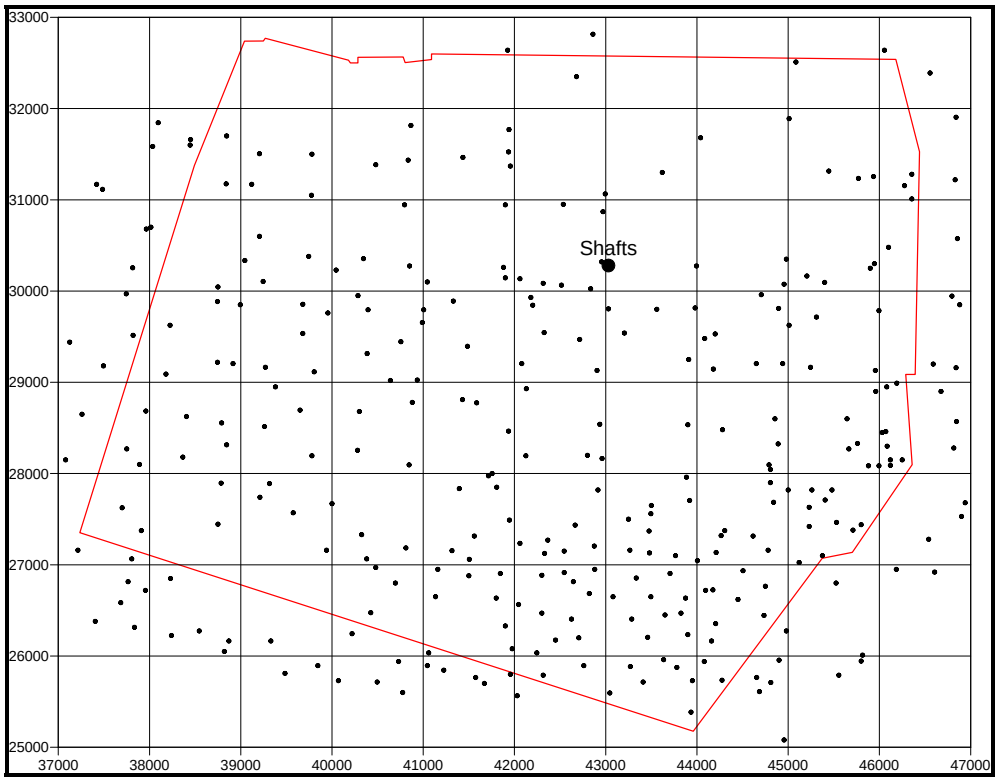

Figure 13-1 Distribution of Boreholes

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 ECC plan to extract are summarised below.

15.1 Seam H_{11}

The quality data and distribution of boreholes reporting quality data in the H_{11} seam in the area planned to be extracted by ECC 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	

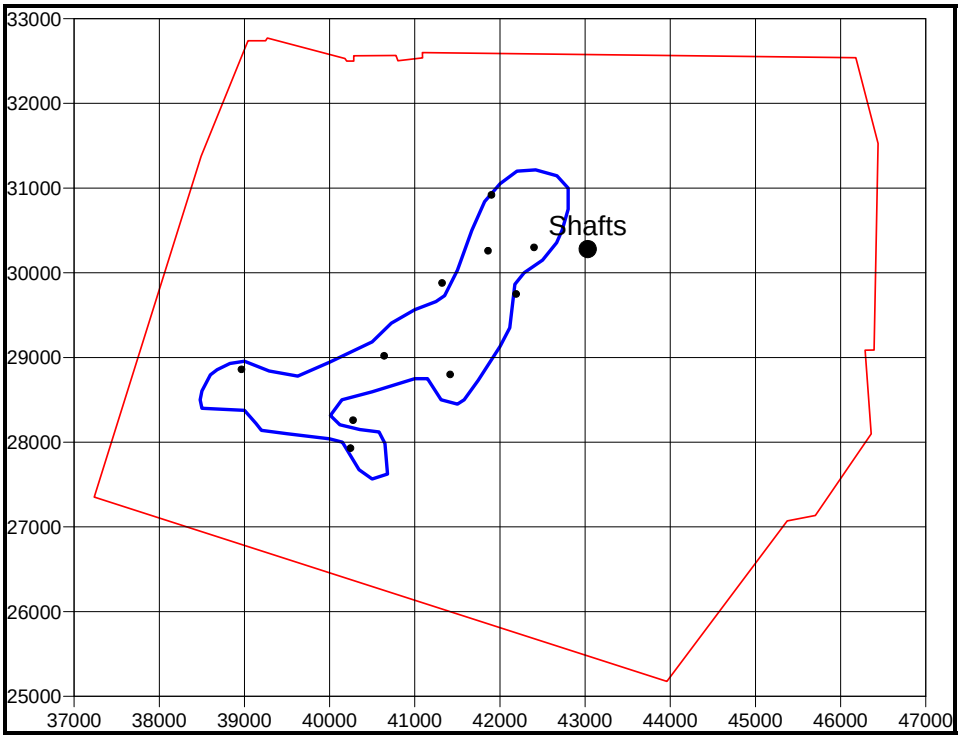

Figure 15-1 Distribution of Coal Quality Data for the H_{11} seam area

15.2 Seam H_{11}^{B}

The quality data and distribution of boreholes reporting quality data in the H_{11}^{B} seam in the area planned to be extracted by ECC 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
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

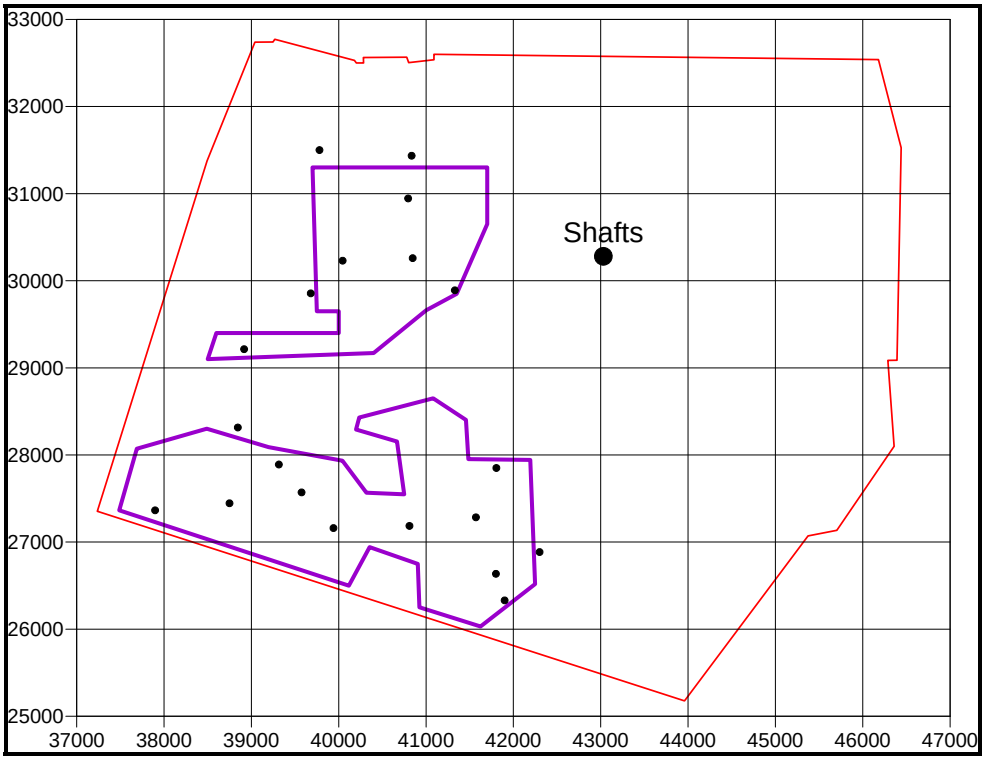

Figure 15-2 Distribution of coal quality data for H_{11}^{B} seam area

15.3 Seam H_8

The quality data and distribution of boreholes reporting quality data in the H_8 seam in the area planned to be extracted by ECC 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

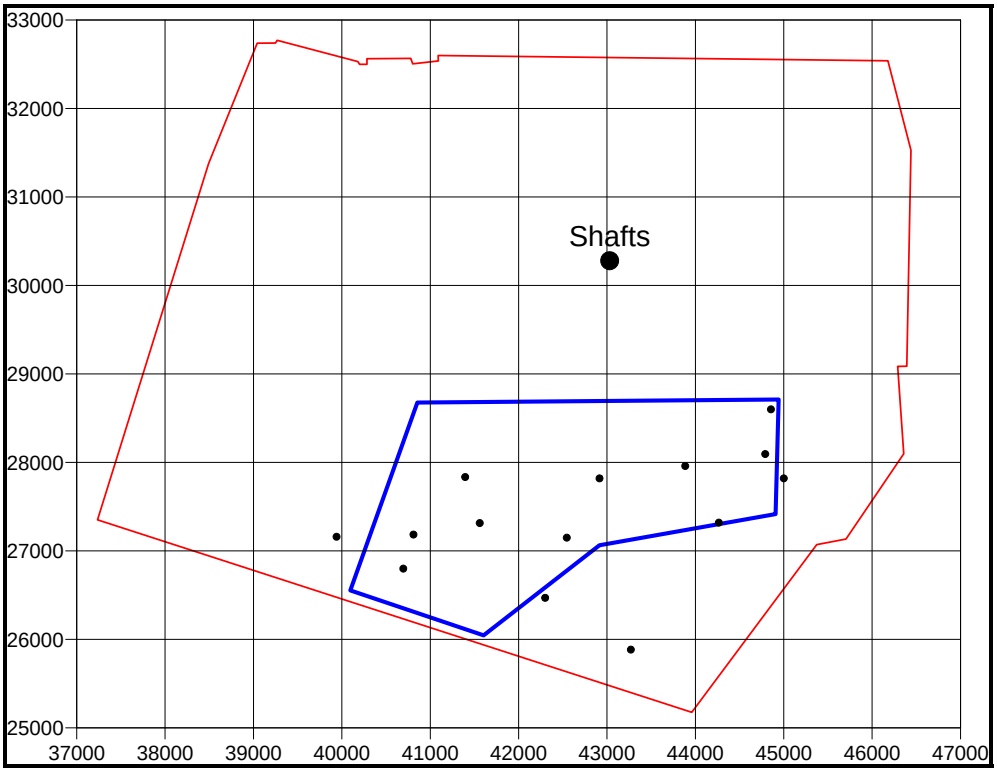

Figure 15-3 Distribution of Coal Quality Data for H_8 Seam Area

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, 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 ECC and have been used in the verification of the coal resources.

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 this check, the resources of the central area of the H_{11} 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 COAL 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:

- Run of Mine(ROM) and washed coal quality predictions (including washability) based on tests carried out on borehole samples from seam H_{11} and from bulk samples of ROM from seam H_{11} worked at adjacent mine No 3 during 1959.
- 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.
- Actual results from tests carried out on H_8 coal at the Sverdlevskaya washery plant in 1992.

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

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.

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.

18.2 Coal Classification

Section 15 includes a table which summarizes 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 characterized 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.

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 18-1 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.

Table 18-2 Results of Washability Test H_{11} Coal 1959

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	0.0	0.0	0.0	91.7	4.0	1.2	2.5	32.9	2.7	5.8	76.2	1.9
50 -25	0.0	0.0	0.0	88.0	3.3	1.3	3.0	26.5	6.0	9.0	73.8	2.6
25-13	0.0	0.0	0.0	86.2	3.8	1.3	4.0	30.0	4.6	9.8	74.8	3.2
13-6	0.2	7.9	0.9	83.0	4.7	1.4	4.0	27.7	4.6	12.8	71.8	4.2
6-3	5.2	8.8	1.3	74.5	3.0	1.3	5.3	28.7	3.3	15.0	69.2	3.8
3-1	0.0	0.0	0.0	89.1	6.6	1.6	2.0	28.4	2.8	8.9	69.9	3.9
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	0.0	0.0	0.0	91.7	4.0	1.2	94.2	4.8	1.2	100.0	8.9	1.2
50 -25	0.0	0.0	0.0	88.0	3.3	1.3	91.0	4.1	1.5	100.0	10.3	1.6
25-13	0.0	0.0	0.0	86.2	3.8	1.3	90.2	5.0	1.4	100.0	11.8	1.6
13-6	0.2	7.9	0.9	83.2	4.7	1.4	87.2	5.8	1.4	100.0	14.2	1.8
6-3	5.2	8.8	1.3	79.7	3.4	1.3	85.0	5.0	1.4	100.0	14.6	1.8
3-1	0.0	0.0	0.0	89.1	6.6	1.6	91.1	7.1	1.6	100.0	12.7	1.8

These tests were carried out on coals from the H_{11} seam at the neighbouring Mine No3 Davievskaya in 1959 and again, whilst the working area of the H_{11} seam from which the samples were taken is outside of the current lease area, it is reasonable, given all the supporting data, to assume that the washability characteristics will closely represent those expected from the H_{11} 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 18-3 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 18-4 H_8 Washability Test Results Isentralnaya Central Washery 1984

Fractional												
Size	- 1.6 RD			1.6 – 1.8 RD			1.8 – 2.0 RD			+ 2.0 RD		
mm	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.

18.3.1 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 18-5 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 and are reproduced below.

Table 18-6 Seam H_8 Washability Data 1998 sample No 35

Sample Weight kg	Analytical Moisture %	Total Moisture %	Dry basis Ash %	Total Sulphur %d	Volatiles %
54.4	4.7	7.18	6.4	3.0	2.8
Fractional analysis excluding material < 1.0mm					
RD	**Yield %**	**Ash %**	**Sulphur %**	**Volatiles %**	
1.7	1.17	2.32	1.55	2.2	
1.8	83.20	3.38	2.28	2.4	
2.0	2.73	9.17	4.41	2.6	
> 2.0	12.90	23.60	8.82	4.4	
Total	**100.00**	**6.13**	**3.17**	**2.66**	

Table 18-7 Seam H_8 Washability Data 1998 sample No 36

Sample Weight kg	Analytical Moisture %	Total Moisture %	Dry basis Ash %	Total Sulphur %d	Volatiles %
56.84	4.38	6.85	6.1	2.81	2.6
Fractional analysis excluding material < 1.0mm					
RD	**Yield %**	**Ash %**	**Sulphur %**	**Volatiles %**	
1.7	1.50	1.80	0.77	2.6	
1.8	82.78	2.77	1.58	1.7	
2.0	1.85	8.83	3.96	2.1	
> 2.0	13.87	24.22	4.77	5.3	
Total	**100.00**	**5.84**	**2.05**	**2.22**	

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

Table 18-8 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.

18.3.2 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 18-9 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 based 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. 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. Categories A, B and C1, define resources with sufficient data to enable mine planning and coal extraction to be evaluated i.e. measured to indicated resource categories.

The 1986 evaluation of resources included coal greater than 0.60 m thick and with less than 40% ash. The remaining resources in the seams of interest to ECC, from this 1986 estimate, are as follows:-

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

Seam	Classification			Total (Mt)
	A (Mt)	B (Mt)	C1 (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, 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 legal, technical, economic and social factors addressed by the Mine Plan. Therefore from the above classification, it is estimated that some 57.3 Mt are of Measured Resource status under the JORC Standard and are 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**

Areas of seams H_8, H_{11} and H_{11}^{B} resources are shown below:-

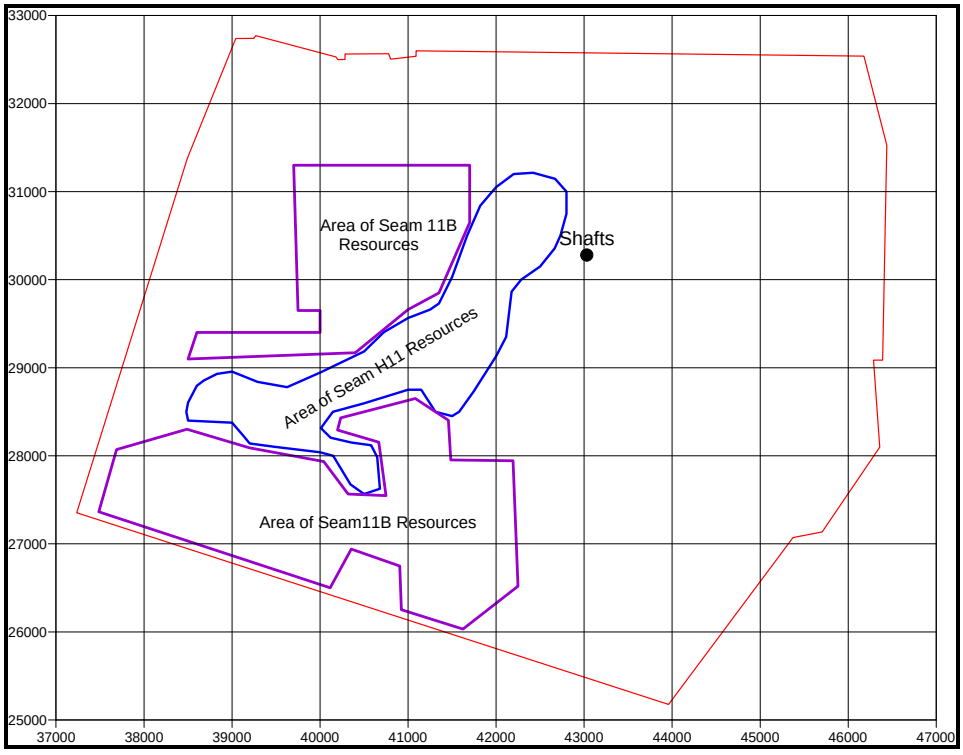

Figure 19-1 Resource Areas, Seams H_{11} and H_{11}^{B}, Verticalnaya Mine

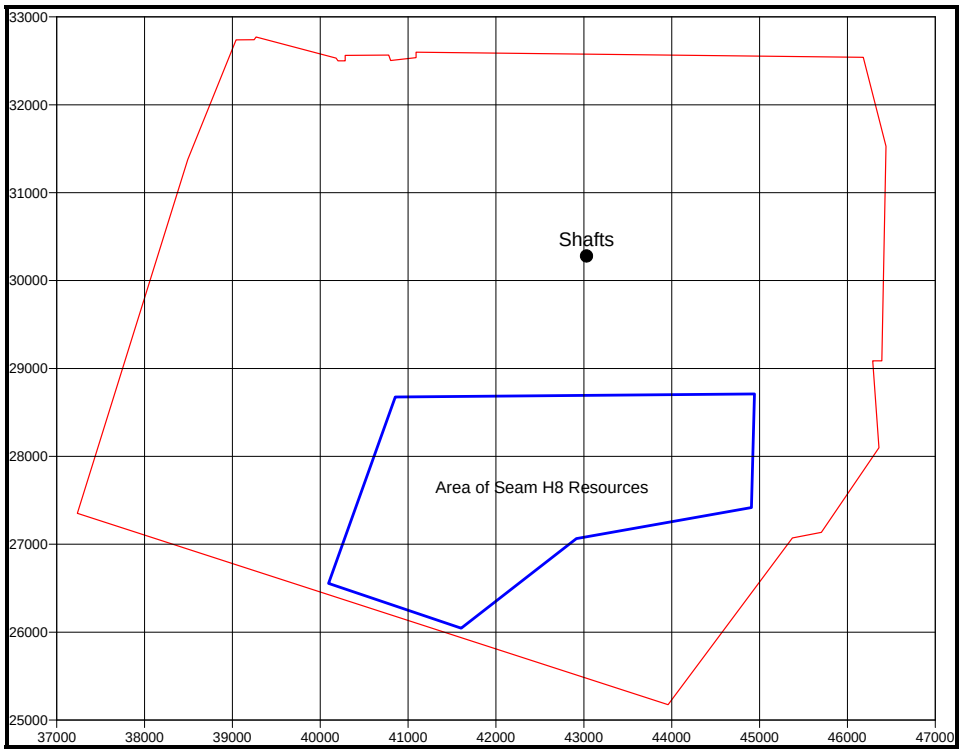

Figure 19-2 Resource Areas, Seams H_8, Verticalnaya Mine

From these Measured Resources, the coal included in the ECC Mine Plan is defined as Proved or Probable Reserves. Mining and geological losses have been estimated and applied. 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.

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

ECC currently have two uncertainties that need to be addressed as soon as is practically possible in the developing mine programme:

1. A revised Mining Plan is currently being prepared by the GOAO Luganskgiproshakht Institute based on the ECC design proposals. Once finalised this should be submitted to the Ukrainian State Authorities for approval allowing the mine development to proceed.
2. 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. ECC estimate that this should take 6 months using the existing pit bottom pumps and a new larger pump to be installed on the inclined drift from the 845 m to the 1245 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. Washability Test report on ROM from the H_8 seam at the Verticalnaya mine sampled at the Isentralnaya Central Washery Plant in 1984.
3. ROM and washed coal quality predictions (including a 1960 washability test) from bulk samples taken from seam H_8 at the Verticalnaya mine.
4. Washability test report on ROM from seam H_{11} at the adjacent Mine No3 Davievskaya in 1959.

5. Washability test report on H_8 produced by CCI Ukraine Ltd in 1998.
6. Washability test report on H_8 coal at the Sverdlevskaya washery plant in 1992.
7. 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, I, J S Warwick, B Sc (Hons) FIMMM, C Eng, Eur Ing do hereby certify that:

1. I am employed by and carried out this assignment for:

   IMC Group Consulting Limited
   Innovate 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 12 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 technical report titled "NI 43-101 Technical Report on the Verticalnaya Mine, Ukraine" dated 01st January 2008 and have specifically undertaken preparation of Section 3.5, Sections 25.1.1 – 25.1.3, Section 25.6, Section 25.7 and Section 25.8 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 read NI 43-101 and the portions of this report for which I am responsible have been prepared in compliance with the instrument.

10. 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 10th October 2008.

J S Warwick

CERTIFICATE of AUTHOR

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

1. I am employed by and carried out this assignment for:

   IMC Group Consulting Limited
   Innovate 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 technical report titled "NI 43-101 Technical Report on the Verticalnaya Mine, Ukraine" dated September 2008 and have specifically undertaken preparation of Section 19 "Mineral Resource and Mineral Reserves Estimation" 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 read NI 43-101 and the portions of this report for which I am responsible have been prepared in compliance with the instrument.
10. 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 19th September 2008.

M Coultas

CERTIFICATE of AUTHOR

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

1. I am employed by and carried out this assignment for:

   IMC Group Consulting Limited
   Innovate 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 an 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 have participated in the compilation of the technical report titled "NI 43-101 Technical Report on the Verticalnaya Mine, Ukraine" dated September 2008 and have specifically undertaken preparation of Section 18 (Coal Processing), Section 25.1.4 (Proposed Beneficiation Process) and Section 25.2 (Recoverability). I have contributed jointly to Section 14 (Sampling Method and Approach), Section 15 (Sample Preparation, Analyses and Security) and Section 21 (Interpretation and Conclusions).

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

10. 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 18th September 2008.

B Everitt

24.2 Consent of Qualified Persons

CONSENT (Qualified Person – J S Warwick)

TO: Ukraine Coal Ltd

AND TO: The Toronto Stock Exchange (the "TSX")
The TSX Venture Exchange (TSX-V)
Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission
Yukon Registrar of Securities
Lysander Minerals Corporation
East Coal Company

RE: Technical Report

Reference is made to the technical report (the "Technical Report") dated 29th September 2008, entitled "NI 43-101 Technical Report on the Verticalnaya mine" prepared for Ukraine Coal Ltd and to which the undersigned has contributed. The undersigned hereby consents to the public filing of the Technical Report with the regulatory authorities referred to above.

Dated this day 10th October 2008.

J S Warwick

CONSENT (Qualified Person – M C Coultas)

TO: Ukraine Coal Ltd

AND TO: The Toronto Stock Exchange (the "TSX")
The TSX Venture Exchange (TSX-V)
Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission
Yukon Registrar of Securities
Lysander Minerals Corporation
East Coal Company

RE: Technical Report

Reference is made to the technical report (the "Technical Report") dated 29th September 2008, entitled "NI 43-101 Technical Report on the Verticalnaya mine" prepared for Ukraine Coal Ltd and to which the undersigned has contributed. The undersigned hereby consents to the public filing of the Technical Report with the regulatory authorities referred to above.

Dated this day 29th September 2008.

M Coultas

CONSENT (Qualified Person – B Everitt)

TO: Ukraine Coal Ltd

AND TO: The Toronto Stock Exchange (the "TSX")
The TSX Venture Exchange (TSX-V)
Alberta Securities Commission
British Columbia Securities Commission
Ontario Securities Commission
Yukon Registrar of Securities
Lysander Minerals Corporation
East Coal Company

RE: Technical Report

Reference is made to the technical report (the "Technical Report") dated 29th September 2008, entitled "NI 43-101 Technical Report on the Verticalnaya mine" prepared for Ukraine Coal Ltd and to which the undersigned has contributed. The undersigned hereby consents to the public filing of the Technical Report with the regulatory authorities referred to above.

Dated this day 18th September 2008.

B Everitt

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

	Signature	Name / Designation
Production:		David Foster Geologist
Verification:		Peter Robinson Project Manager / Financial Analyst
Approval:		John Warwick IMC Mining Director

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

25.1 Mining Operations

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. 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 utilized 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 High Technology (HT) 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 develop seams H_{11} and H_{11}^{B}, the Company plan to use the inclined drifts for access to the production areas. The materials shaft will also continue in operation but when development of the H_8 seam commences, the skip shaft will also be equipped for men and materials operation thus access will be via either of the two shafts.

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

Three inclined drifts (Ventilation, Conveyor and Materials) each 870 m in length will be driven north to intersect H_{11}, H_{11}^{B} coal seams and provide access for two in-seam drivages. Whilst the conveyor drift will continue for a further 750 m to intersect H_8 coal seam at the -137 m horizon.

The first longwall will be developed in the thicker section of the seam (plus 1.2 m section) as a retreat longwall. All longwalls will be fully mechanised using a shearer cutting and loading machine. The current generation of Ukraine manufactured equipment is quite capable of achieving the planned tonnage of 3,450 t/day.

To the west of this longwall lies an area of thinner seam section of 0.75 m. In this area the second longwall will be developed as a conventional retreat. Experiences at other mines in Ukraine have shown that the plough method of coal extraction has been very successful in coal seams of a similar section, hence it is planned to use such a system here. The output for this method of operation is planned at 2,000 t/day. The seam layout plan is shown in illustrations, Section 26, Figure 26-1.

The plan shows the first longwall coming into production during month 33 and the second during month 45. After which time access into the seam will have been established to maintain two longwalls continuously producing between them 1.3 Mt/y. During year six longwall operations will increase to two plough and one shearer longwall operating simultaneously, increasing the potential saleable tonnage to 1.8 Mt/year. The development and production schedule is shown below Figure 25-1.

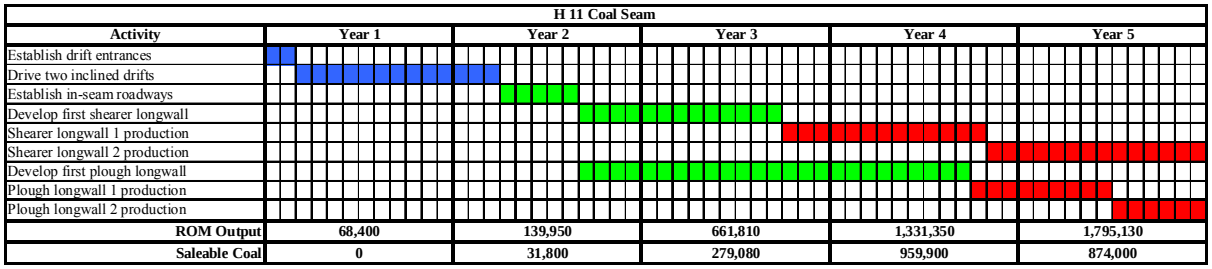

Figure 25-1 H_{11} and H_{11}^{B} Development and Production Schedule

25.1.3.2 H_8 Coal Seam

H_8 coal seam will be accessed and operated from the existing 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 of 1,245 m. Coal will be taken out of the mine via conveyor belt as follows.

When the three inclined drifts have reached H_{11} seam horizon, one of the drifts will be extended a further 750 m down to the existing conveyor drift on horizon -137. Clean up and re-claim the existing conveyor

drift from the 845 horizon to the -137 horizon, a total distance of 1,850 m. The conveyor line from the 845 to 1,245 m horizons will be re-installed as the drift is recovered. Then all mineral produced from H_8 coal seam will be carried out of the mine by conveyor belt. This provides for: -

- Increased production capacity, (not restricted by the maximum skip capacity);
- Longer periods of time for coal production, (Skip maintenance 6 hours per day)
- Coal from the two production seams can be kept separate if required for marketing purposes;
- The provision of a walkable outlet as a second means of egress for management and workers should it be required during an emergency (Such as loss of electrical power for a long period of time)

By developing the mine in this way some of the investment costs for the equipping of the skip shaft will be scheduled into year 3 which reduces the initial investment requirement; also revenue from coal sales would be available during year three.

The first operation will be to pump out the water and examine the access roadways of the already developed section of the coal seam. It has been calculated that this activity will take six months in total using the pumps that are readily available.

It is then anticipated that the condition of the roadways will not have deteriorated significantly and their recovery time for longwall production operations will not be significant.

The already developed section of the mine has 1.61 Mt of coal reserves already accessed, but until the access roadways can be examined these reserves are classed as a measured resource. IMC understands that the mining plan is to access the new reserves below the -1000 m horizon. The seam layout and mining plans are shown in illustrations, Section 26, Figure 26-2.

The new reserves below the -1,000 m horizon will be accessed by extending the main access roadways which will be driven in a southerly direction to provide access for the development of longwalls in both the East and West sections of these coal reserves.

Two longwalls one in each section will then be operated simultaneously to provide a continuous ROM output of 1.7 Mt/y.

H_8 coal seam has a uniform seam section of 1.2 m and below the -1,000 m horizon the seam gradient "being nearer to the base of the coal basin" is approximately 8 degrees and suitable for the planning and operation of high output longwalls. It is expected that longwalls in this section of the seam will consistently be able to produce tonnages of 3,500 t/day using local manufactured equipment. The development and production schedule is shown below in Figure 25-2.

H 8 Coal Seam					
Activity	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Pump out water					
Repair main roadways 845 to 1254m horizon					
Install skip shaft winder					
Install skip shaft equipment					
Drive new drift zero to -137m horizon					
Clean up the conveyor drift					
Drive new main roadways below 1245m horizon					
Drive west 1 longwall					
Coal production from west 1 longwall					
Drive west 2 longwall					
ROM Output	**0**	**42,550**	**70,725**	**98,220**	**179,400**
Saleable Coal	**0**	**18,500**	**30,750**	**44,970**	**874,000**

Figure 25-2 H_8 Development and Production Schedule

25.1.3.3 Combined Production

The development and operation of seams H_{11} and H_8 will be carried out simultaneously having the combined saleable tonnage shown below in Table 25-2.

The mining projection shows the build up of yearly tonnages over the first five years of the mining operations. The overall objective being to build the mine output to one that can be sustainable. Obviously over the years mining plans will change but the focus always has to be on the production targets. After year five all the reserves at the mine will be accessed and the target tonnage of 3 Mt per year will be the focus of all mining activities.

Table 25-2 Forecast Combined Production

	Year 1	Year 2	Year 3	Year 4	Year 5
Seam H_{11}					
Waste (t)	68,400	108,450	382,730	374,450	398,300
Coal (t)	0	31,500	279,080	956,900	1,397,830
Run of Mine (t)	68,400	139,950	661,810	1,331,350	1,796,130
Seam H_8					
Waste (t)	0	42,550	70,725	98,220	179,400
Coal (t)	0	18,500	30,750	44,970	874,000
Run of Mine (t)	0	61,050	101,475	143,190	1,053,400
H_{11} and H_8 Total					
Waste (t)	68,400	151,000	453,455	472,670	577,700
Coal (t)	0	50,000	309,830	1,001,870	2,271,830
Run of Mine (t)	68,400	201,000	763,285	1,474,540	2,849,530

IMC has reviewed the Company development and production plans for the 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 Proposed Beneficiation Process

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.

25.1.4.1 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 shaft and the drift 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 H_8 seam will be blended with washed coal from the large coal dense medium section of the plant at a controlled rate utilizing a computer based blending system to produce a consistent quality product whilst minimizing the amount of coal to be washed.

The -16 mm raw coal from the H_{11} 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.

25.1.4.2 Dense Medium Processes

The proposal to utilize a dense medium bath for the coarse coal and cyclones for the small coal is considered conventional, and by incorporating proven technology should be suitable for the application.

All of the washability data reviewed would indicate a single separation at a density of around 1.9 to 2.0 RD. The proposal is to operate at this density with a medium based on a combination of magnetite and ferro-silicon and utilizing appropriate medium preparation, control and recovery systems in order to maintain stable operations and to maximize yields at the target ash contents.

25.1.4.3 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.

25.1.4.4 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.

25.1.4.4.1 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 the Company to fully exploit the potential of this coal in a wider range of markets. The Company should 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 proposal in the initial stages of the mine development is that all development coals would be sold into the local power station market as an untreated quality under appropriate commercial arrangements.

Projected yields in year 3 are indicated as 70% with succeeding years projected as 85% for H_{11} and 90% for H_8 coal. 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.

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 Company's projections. All coal sales will likely be to the Ukraine industrial and commercial markets for the first five years. Export markets will be sought with the intention of exporting at least 33% of total production.

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 ton, 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 ECC 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. It has been reported that the government intends to increase prices further in 2008.

25.3.4 Projected Prices

Prices used for domestic sales in the Company's projections are the prices posted in Ukraine in early August 2008. Export prices are assumed to earn a small premium over the domestic prices. Prices are shown in Table 25-5. The coal prices in the financial section as of August 2008 include the 28% increase in coal prices announced in the first half of 2008.

A further coal price increase for thermal coals of 20% to 25% was announced by the Ukrainian Government in August 2008 and during September some of the coals in the thermal coal category were increased by a further 10%. Prices in other coal categories have also increased above the levels used in the financial section.

Table 25-5 Summary Coal Prices after Rises Recommended by Ukrainian Government 2008

Type of Coal	Price after Recommended Price Increase US$/tonne
Domestic	
AKO	139
AM	119
AC	119
Fines PSF	73
Fines PCI	100
Export	
AKO	160
AM	130
AC	125
Fines PSF	70
Fines PCI	100

25.4 Contracts

Contracts will be established with local coal traders, who are mainly centralised coal washing plant operators.

25.5 Environmental Considerations

25.5.1 Status

The Verticalnaya mine, which covers a surface area of 23.73 ha, is currently under the authority of the State Regional Administration "Lugansk UDKR" which has 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. The mine water settling ponds are overgrown with vegetation.

Lugansk UDKR 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.

25.5.2 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.

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:

25.5.2.1 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 and 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

25.5.2.2 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		
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

25.5.2.3 Waste materials

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.

25.5.2.4 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.

25.5.2.5 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.

25.5.2.6 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.

25.5.3 Environmental Management and Monitoring Programmes

Within 6 months of the date of Permit, ECC shale carry out a baseline environmental study according to an agreed programme with the State Administration of Ecological Resources, with the purpose of measuring its physical parameters as of the date of the permit. Within 18 months of registration of permit, monitor 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

The EIA includes a provisional monitoring programme; air emission monitoring will be carried out using certified laboratories according to Ukrainian regulation at specified interval as shown in Table 25-8.

Table 25-8 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.

25.5.4 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 Donbass 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 ECC there is no possibility that the site has been used for depositing other types of more hazardous waste. However IMC recommends that ECC 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 ECC 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.

25.5.5 Provision for Rehabilitation

25.5.5.1 Ongoing Rehabilitation

At this stage, ECC has not developed 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.

25.5.5.2 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.

IMC also recommends that ECC's business plan include a mechanism for provision of funds to cover the cost of closure restoration in line with international good practice.

25.6 Management

Currently there are 106 management and workers employed at the mine for care and maintenance. Some of them will be retained to continue with their duties others whose are skills are not required and those who wish to leave of their own accord will be offered a redundancy package based on current Ukrainian system.

Initially the work programme to re-develop the mine will be of a specialist nature and contractors will be used to do out this work. 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, which will IMC understands will be enhanced as the mine is redeveloped.

25.7 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. 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.

25.8 Infrastructure

25.8.1 Surface

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 second boiler alongside it 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.

25.8.2 Shafts/Mine Access

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

Coal and 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 is designed to operate with a twin winding system; each will consist of two 25 tonne skips. To complete the installation the winding houses have to be built, head gear erected and the skips installed. The steel guides have been installed in the shaft but further work is needed before the skips can be installed. In addition the shaft collar has to be strengthened and the ventilation access into the shaft constructed

25.8.3 Underground

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.

Therefore when the water is pumped out of these workings there should be very little deterioration of the roadways. Hence mining works to develop and operate new longwalls should be achieved without any major roadway recovery programmes.

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.

25.8.4 Mine Water

Mine water pumping scheme currently installed and operating is to maintain the water level at its current horizon at -900 m.

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/Hour.

The measured water content of the flooded section of mine workings to be pumped out is calculated to be 2.6 million cubic metres, this together with the current measured inflows the mine can be pumped clear of water within 6 months 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 which has 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.

25.8.5 Ventilation

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

25.8.6 Methane Gas

The measured amount of methane gas contained within the coal seam does not exceed 0.8 m3/tonne of coal with the average of 0.1 m3/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.

25.8.7 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 shaft inset at -821 m 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 skips to be installed in the new skip shaft.

25.8.8 Men and Materials

Men and materials were wound into the mine via the materials shaft to the -820 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 and consider adequate time and capital has been included in the rehabilitation schedule and business plan.

25.9 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.

25.9.1 Charges and Taxes

25.9.1.1 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.

According to the Enterprises' profits taxation Law of Ukraine № 334/94-BP from 28.12.1994 the general rate of profits tax in Ukraine amounts to 25 % from the object of taxation. 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.

25.9.1.2 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.

25.9.1.3 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 authorized capital (in the case of Ukraine).

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

25.9.2 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.

25.9.3 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.

25.9.4 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.

25.9.5 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%

25.9.6 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. ESS Company 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 a coal mining the enterprise should pay 2 Hrivnas for each ton 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 ton 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.

25.10 Capital and Operating Cost Estimates

25.10.1 Capital Estimate

Estimates of capital expenditure have been made using prices as at the end of June 2008 and the project is deemed to start at the beginning of 2009. Capital expenditure for developing the mine project for the initial years plus additional expenditure over the remaining life to maintain production is estimated at $US446.1 million. Phasing of this expenditure, by seam, over the term of the project is shown in Table 25-9 below.

Table 25-9 Capital Expenditure by Seam

Year		H_{11}	H_8	Initial Development Costs Capitalised	Total
		US$ mill	US$ mill	US$ mill	US$ mill
1	2009	14.8	7.5	14.5	36.8
2	2010	33.4	9.4	33.7	76.5
3	2011	20.6	3.0	33.6	57.2
4	2012	25.0	26.0	16.2	67.2
5	2013	18.3	6.0	0.0	24.3
6	2014	6.3	19.8		26.1
7	2015	13.3	18.9		32.3
8	2016	19.3	16.2		35.4
9	2017	5.9	18.0		23.9
10	2018	5.9	15.2		21.1
11	2019	8.9	7.2		16.1
12	2020	5.9	4.4		10.3
13	2021	5.9	7.2		13.1
14	2022	3.0	2.8		5.7
	Total	186.7	161.4	98.0	446.1

In the initial years of development (2009-12), the capital investment totals US$237.8 million. This relates to developments in both seams and the related infrastructure. In Table 25-10, Table 25-11 and Table 25-12 below this initial capital expenditure is broken down into major components for each seam development by year.

Table 25-10 Seam H_{11}- Capital Expenditure by Major Item

Item	2009	2010	2011	2012	Total
	US$ mill	US$ mill	US$ mill	US$ mill	US$ mill
Initial Capital Investment					
Establish Drift Entrances	1.35	0.00	0.00	0.00	1.35
Main ventilation fan	0.00	2.03	0.00	0.00	2.03
Main Electrical Sub Station, distribution and control centre	6.75	0.00	0.00	0.00	6.75
Surface buildings	1.15	0.00	0.00	0.00	1.15
Coal Preparation Plant	0.00	9.45	0.00	0.00	9.45
Rail connection	0.00	3.38	0.00	0.00	3.38
Water treatment	0.00	0.00	0.00	0.00	0.00
Fire Fighting	0.00	0.00	0.00	0.00	0.00
Boilers	0.00	4.05	0.00	0.00	4.05
Underground					
Contractors	3.08	1.62	0.00	0.00	4.70
Conveyors	0.95	1.89	0.73	0.00	3.56
Cross gate conveyors	0.00	0.70	0.00	0.36	1.07
Haulages	0.89	2.23	0.45	0.45	4.01
Loading Buckets	0.68	0.00	0.00	0.00	0.68
Roadheaders	0.00	8.10	5.40	0.00	13.50
Longwall Complex	0.00	0.00	13.50	20.25	33.75
Plough Complex	0.00	0.00	0.00	2.70	2.70
Electrical switchgear	0.00	0.00	0.34	0.68	1.01
Hydrualic pipes and pumps	0.00	0.00	0.22	0.54	0.76
General Expenditure	0.00	0.00	0.00	0.00	0.00
Total	14.84	33.44	20.63	24.98	93.88

Table 25-11 Seam H_8- Capital expenditure by Major Item

Item	2009	2010	2011	2012	Total
	US$ mill	US$ mill	US$ mill	US$ mill	US$ mill
Initial Capital Investment					
Shaft Collar and ventilation access	0.68	0.00	0.00	0.00	0.68
Main Ventilation Fan	4.32	0.00	0.00	0.00	4.32
Install winder to 1250 level	0.00	4.32	0.00	0.00	4.32
Install manriding and materials facilities to Horizon 1250	0.00	0.68	0.00	0.00	0.68
Main Electrical Sub Station, distribution and control centre	0.00	0.00	0.00	5.94	5.94
Coal Preparation Plant	0.00	0.00	0.00	0.00	0.00
Underground					
New pumps	0.27	0.00	0.00	0.00	0.27
Contractors	0.00	0.97	1.13	0.00	2.11
Conveyors	0.95	1.42	0.95	1.89	5.20
Haulages	0.89	1.34	0.89	1.78	4.90
Roadheaders	0.00	0.54	0.00	2.70	3.24
Longwall Complex	0.00	0.00	0.00	13.50	13.50
Electrical switchgear	0.00	0.14	0.00	0.20	0.34
Pipes and pumps	0.41	0.00	0.00	0.00	0.41
General Expenditure	0.00	0.00	0.00	0.00	0.00
Total	7.51	9.40	2.97	26.01	45.89

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

Table 25-12 Initial Development Costs Capitalised Prior to Commencement of Commercial Production

Item	2009	2010	2011	2012	Total
	US$ mill	US$ mill	US$ mill	US$ mill	US$ mill
Initial Development Costs Capitalised	14.48	33.70	33.61	16.21	98.00

25.10.2 Operating Costs Estimate

Operating costs are based on the cashflow model provided by the company in a 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 plan to reflect prices as at the end of June 2008. 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	$US'000 $US/t	421,014 13.38
Mining Contractors	$US'000 $US/t	0 0.00
Total Materials	$US'000 $US/t	191,062 6.07
Fuels	$US'000 $US/t	5,285 0.17
Electric Power	$US'000 $US/t	128,876 4.10
Maintenance	$US'000 $US/t	153,452 4.88
Other Mining Costs	$US'000 $US/t	33,851 1.08
Mine Overheads	$US'000 $US/t	33,600 1.07
Company Overheads	$US'000 $US/t	6,000 0.19
Royalty	$US'000 $US/t	7,888 0.25
Total Cash Operating Costs	**$US'000 $US/t**	**981,029 31.19**
Total Capital Expenditure	$US'000	446,083
Total Run of Mine Coal Production	'000 tonnes	34,248

25.11 Economic Analysis

The results detailed below of the economic analysis and the accompanying sensitivity analyses are based on the "Most Realistic" production scenario for Verticalnaya.

25.11.1 Economic Analysis of the Verticalnaya Mine

IMC have prepared an economic analysis of the Verticalnaya Project, presented as Table 25-15, 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 both domestic and export markets. The model assumes that a recovery of saleable coal from ROM of 65% is achieved through third

party coal washing until the mines own coal preparation plant is operational, projected as quarter 4 in year 3 in the model.

It is further projected that all sales will be into the domestic market until year 5 of the model. From year 5 onwards 33% of saleable production is deemed to be sold into the export market. The average sales prices per tonne have been based on the coal prices recommended by the Ukrainian Government for 2008. An exchange rate of 5.05 UAH:1 USD has been assumed.

During the first 4 years of the financial projection the mine is in the construction phase and latterly the production ramp-up phase. Not unexpectedly the mines show significant losses during this time. Losses during construction until commercial coal production is established have been capitalised (This covers the first 32 months in seam H_{11} and first 48 months in seam H_8).

The mine first registers an annual profit in year 4 of the projection. Annual profits then generally increase throughout the projection period as firstly production increases, effectively reaching full production in year 8 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 12% and a fourteen year life of mine, including the initial development period, as described in Section 25.13. This analysis has been prepared on an all-equity, post-tax basis. This evaluation and results at differing discounting rates are given in the table below.

Table 25-14 Evaluation of the Project at a Range of Discounting Rates

Discount Rate	NPV (US$ million)
+2%	282.2
+1%	315.4
12% (base rate)	352.1
-1%	393.0
-2%	438.4

The internal rate of return of the project, as described above, is 35.2%

Table 25-15 Summary of Profit and Loss

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Production	'000t	'000t	'000t	'000t	'000t	'000t	'000t	'000t	'000t	'000t	'000t	'000t	'000t	'000t
Run of Mine (ROM)	0	50	310	1,002	2,272	2,736	2,916	3,615	3,382	3,638	3,565	3,641	3,634	3,489
Saleable	0	31	248	921	2,088	2,517	2,682	3,327	3,111	3,347	3,279	3,349	3,343	3,209
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Revenues														
Coal Sales	0	3,110	25,311	93,981	209,042	251,983	268,447	333,061	311,411	335,023	328,236	335,281	334,610	321,221
Capital coal sales	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenue	**0**	**3,110**	**25,311**	**93,981**	**209,042**	**251,983**	**268,447**	**333,061**	**311,411**	**335,023**	**328,236**	**335,281**	**334,610**	**321,221**
Operating Costs														
Total Company Employment Cost	4,007	14,734	29,327	32,564	37,064	38,639	37,467	33,458	35,026	39,333	31,791	34,654	29,950	21,784
Mining Contractors	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Materials	1,155	4,965	10,853	13,074	17,233	17,312	16,723	16,495	16,890	19,258	15,143	16,779	14,925	10,257
Fuels	378	378	378	378	378	378	378	378	378	378	378	378	378	378
Electric Power	1,994	2,433	3,260	5,197	8,753	10,052	10,555	12,514	11,859	12,576	12,372	12,585	12,566	12,160
Maintenance	1,044	1,686	2,831	5,482	10,346	12,125	12,813	15,492	14,597	15,577	15,298	15,589	15,564	15,009
Royalty	80	91	153	318	562	669	698	815	758	775	739	756	751	725
Other Mining Costs	1,066	1,747	1,825	2,032	2,413	2,552	2,606	2,816	2,746	2,823	2,801	2,824	2,822	2,778
Mine Overheads	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Company Overheads	100	200	300	400	500	500	500	500	500	500	500	500	500	500
Depreciation H11	1,705	6,863	12,507	18,900	23,677	23,898	22,652	23,332	19,363	14,751	16,283	15,142	12,459	12,229
Depreciation H8	548	1,315	1,602	5,722	6,267	9,956	13,430	16,464	16,404	18,954	16,783	13,810	11,999	8,859
Total Operating Costs	14,476	36,811	65,434	86,466	109,592	118,481	120,221	124,665	120,920	127,324	114,486	115,416	104,313	87,079
Operating Profit	**-14,476**	**-33,701**	**-40,123**	**7,515**	**99,450**	**133,502**	**148,226**	**208,397**	**190,491**	**207,699**	**213,750**	**219,865**	**230,296**	**234,142**
Capitalisation of Initial Development Cost	-14,476	-33,701	-33,608	-16,213	0	0	0	0	0	0	0	0	0	0
Interest	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Profit after Interest and capitalisation of development costs	0	0	-6,515	23,728	99,450	133,502	148,226	208,397	190,491	207,699	213,750	219,865	230,296	234,142
Profit Tax	0	0	0	4,303	24,862	33,376	37,056	52,099	47,623	51,925	53,437	54,966	57,574	58,536
Net Profit/(Loss)	**0**	**0**	**-6,515**	**19,425**	**74,587**	**100,127**	**111,169**	**156,298**	**142,868**	**155,774**	**160,312**	**164,899**	**172,722**	**175,607**

25.11.2 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.

25.11.2.1 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.

25.11.2.2 Production

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

25.11.2.3 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.

25.11.2.4 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 25-16 below.

Table 25-16 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	352.1	320.0	277.6	336.4	266.1

25.12 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.

25.13 Mine Life

Based on the reserves and resources available to the mine within the existing mining licence area the mine has a life of 14 years including the initial development period.

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 14 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 Plan.

Figure 26-2 H_8 Proposed Seam Layout Plan.

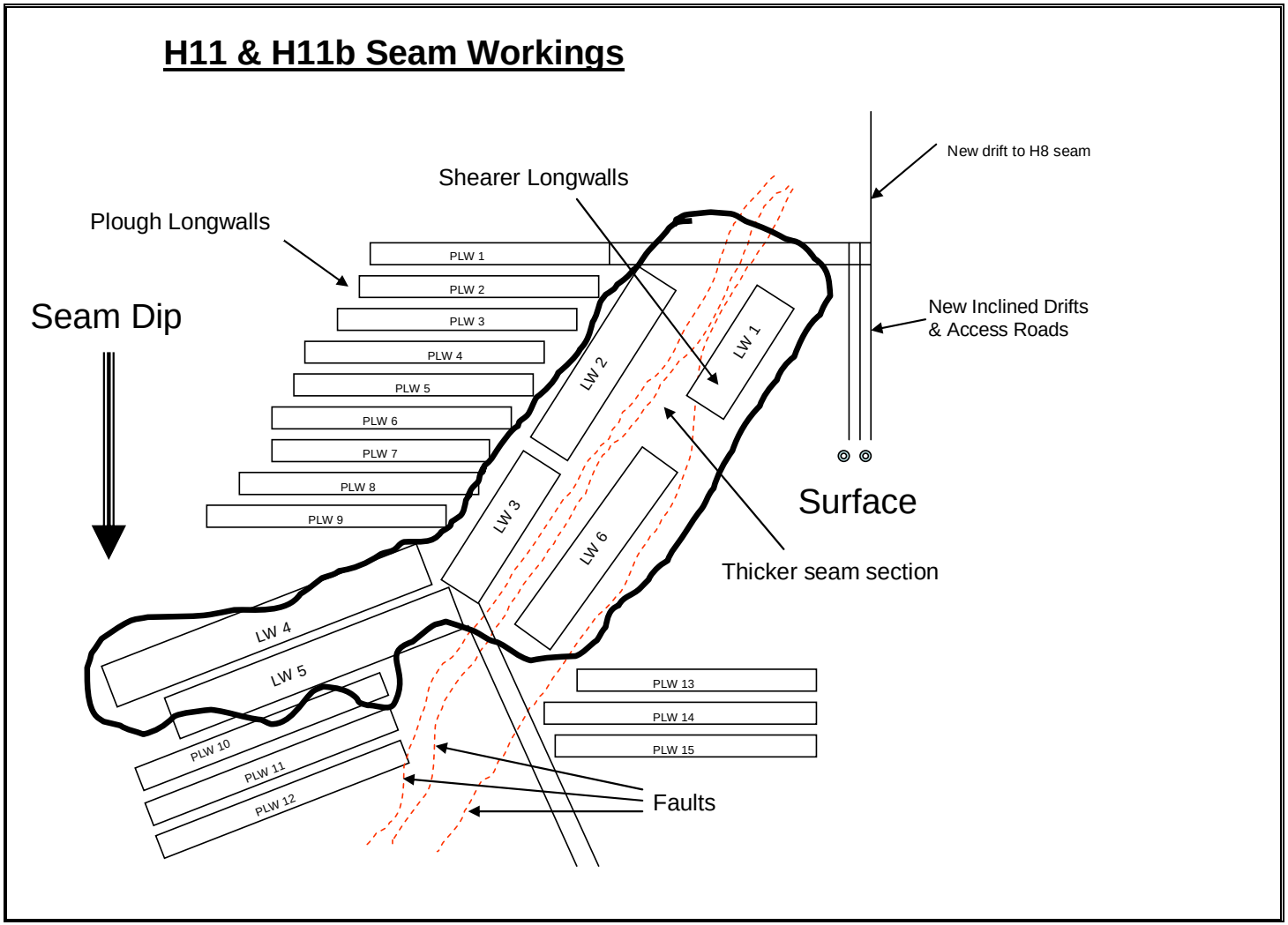

Figure 26-1 H_{11} and H_{11}^{B} Proposed Seam Layout

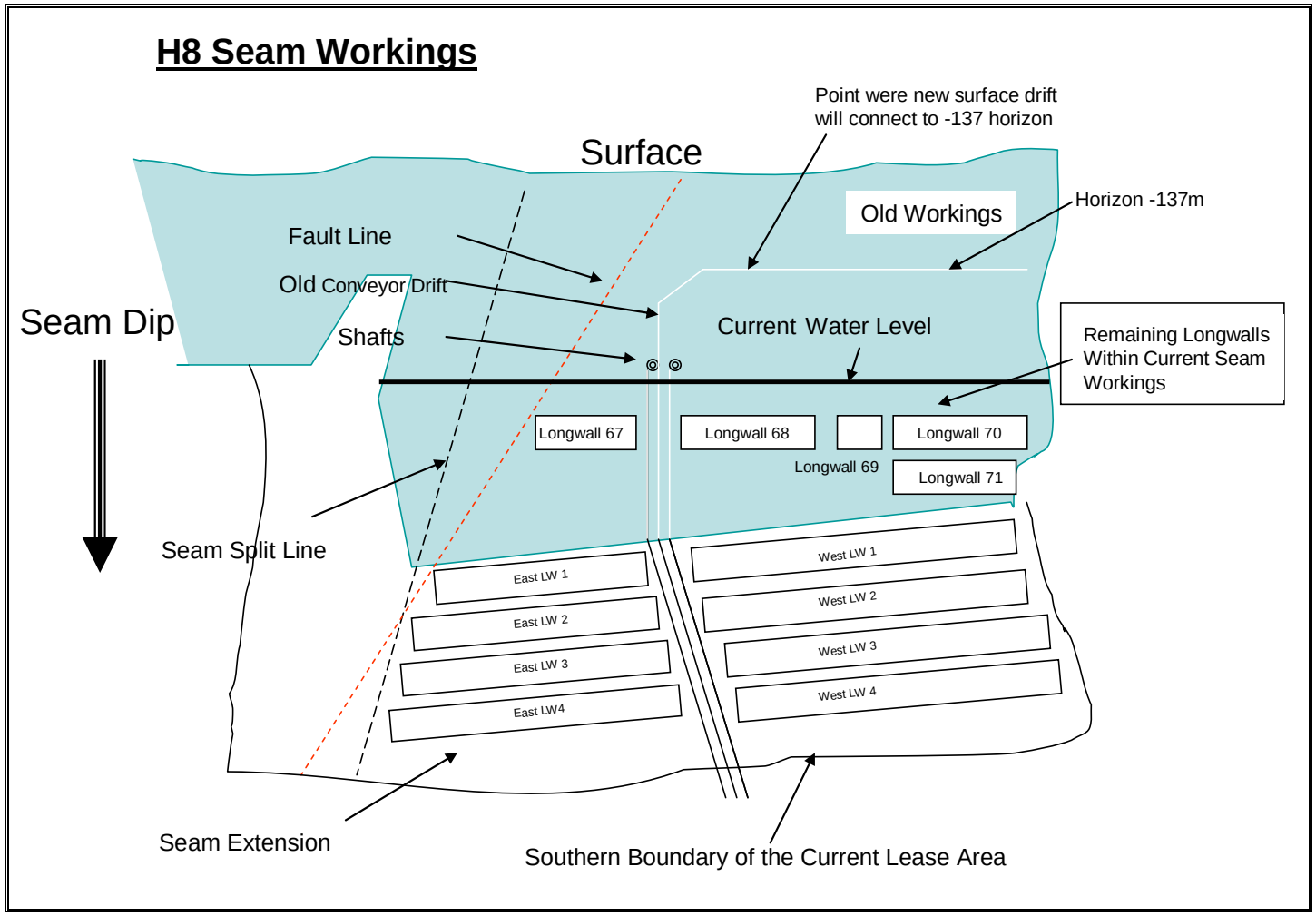

Figure 26-2 H_8 Proposed Seam Layout

Appendix A 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 hydrocyclone 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 tunneling 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 makes 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 minimize 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.