

**PRELIMINARY ASSESSMENT  
DONKIN COAL PROJECT  
NOVA SCOTIA**

Submitted to:  
**XSTRATA COAL DONKIN MANAGEMENT LIMITED  
AND ERDENE GOLD INC.**

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## EXECUTIVE SUMMARY

In 2007, Xstrata Coal Donkin Management Limited (XCDM) commissioned Norwest Corporation to prepare an Independent Preliminary Assessment of the Donkin coal project located in Cape Breton, Nova Scotia. The report was to be prepared for XCDM and its partner, Erdene Gold Inc. Norwest's report is prepared in compliance with the requirements of National Instrument 43-101 that apply to Preliminary Assessments.

A Technical Report and geological model concerning the property were prepared by McElroy Bryan Geological Services (MBGS) for XCDM and Erdene Gold Inc. in April 2007. In addition XCDM has also prepared an internal report titled Pre-Feasibility Scoping Study dated May 2007. Material in both of those reports has been used in the preparation of this Preliminary Assessment report. The MBGS Technical Report, filed on May 14, 2007, is available for public viewing on SEDAR under the various documents that have been filed by Erdene Gold Inc. The report is entitled "Technical Report Donkin Coal Project" (April 2007).

The MBGS report describes the property as being "located in the northeast of Cape Breton Island and is located almost completely offshore (46° 11' N, 59° 49' W) about 20 km east of Sydney, Nova Scotia". Access to the property is by highway from Sydney, which is Cape Breton's largest community. The Donkin property has been awarded a Special Licence, number 2/06, by the Provincial government. The licence tract totals a little more than 200 km<sup>2</sup>.

The property currently has two slopes that provide access to the Harbour Seam. After receiving the necessary regulatory approvals, XCDM breached the tunnel seals and commenced pumping water from the tunnel in late 2006 in order to reclaim access to the Harbour Seam coal face. This work is now complete and unimpeded access to the Harbour Seam is possible. The Harbour Seam in the Donkin Coal Resource Block, as described in the MBGS report, contains an Indicated Resource of 101 million tonnes and an Inferred Resource of 115 million tonnes. It is further described to have on average 4.5% sulphur and 12% ash and is classified as high volatile A bituminous, high sulphur, medium ash coal. It should be noted that this preliminary assessment is preliminary in nature; it includes mineral resources that are considered to be too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves. There is no certainty that the preliminary assessment summarized below will be realized.

The coal resource lends itself to mining by the longwall mining method. The proposed mine plan will utilize one longwall system and three continuous miner (CM) sections for mine development. After a three-year surface facilities construction period, mine development by CM occurs in Years 1- 5 and longwall production starts in Year 5. The mine has a production life of 33 years and produces 109 million tonnes of run of mine (ROM) coal. Table ES.1 shows the ROM production.

In this report SI abbreviations have been used; in particular the letter ‘M’ refers to a million units of the quantity described.

**TABLE ES.1**  
**PRODUCTION – MT (ROM)**

<b>Period</b>	<b>Mt</b>
Year 1	0.2
Year 2	0.6
Year 3	0.6
Year 4	0.6
Year 5	1.6
Year 6	4.3
Years 7- 32	98.9
Year 33	1.9
<b>Total</b>	<b>109</b>

Coal is transported to the surface by a slope belt to the coal handling facilities. The coal is then transported to the International Pier at Sydney by rail by mine personnel. Other mine surface support facilities include an administrative building, change house, warehouse, shops and other miscellaneous facilities.

Norwest has developed capital cost estimates for the mining operation, surface facilities, and rail transportation. These costs are based upon a conceptual mine plan, mining equipment selection, conceptual surface facilities, and projected productivities. Table ES.2 summarizes the capital expenditures.

**TABLE ES.2**  
**CAPITAL \$M**

<b>Period</b>	<b>\$M</b>
3 Year Construction Period	111
Year 1	53
Year 2	34
Year 3	12
Year 4	15
Year 5	89
Year 6	6
Years 7 - 33	269
<b>Total (rounded)</b>	<b>588</b>

Cash operating costs were estimated based on the mine plan, equipment selection, workforce estimates and other pertinent factors over the life of the conceptual mine plan. Transportation costs including rail to the Sydney port and vessel-loading fees have also been estimated. Table ES.3 summarizes the total per tonne cash costs in 2007 dollars over the mine life. The information made available to Norwest has enabled calculations and estimates to be made to an accuracy of  $\pm 30\%$ . Total cash costs for coal production, transportation to the port and loading into the ocean-going vessel, and royalties are estimated to be \$23.13/tonne. Under base case assumptions, the project provides a net present value (NPV) of \$195 million or a 16% internal rate of return (IRR) on an after tax basis, based on the pricing schedule provided by XCDM.

**TABLE ES.3**  
**TOTAL CASH COSTS**  
**\$/TONNE**

Royalty	\$ 1.18
Mine operating	\$ 16.70
Transportation	\$ 5.25
Total cash cost	\$ 23.13

The start date for the longwall has a significant affect on the economic model and to demonstrate that, Norwest has developed a sensitivity case that shows the effects on the NPV and the IRR of accelerating the start date of the longwall operation.

Norwest was provided with a product specification by Xstrata and we have assumed that such a product can be sold within the target market region. The initial target market for this product will be domestic and export thermal coal for power generation.

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

## 1 INTRODUCTION

In 2007, Xstrata Coal Donkin Management Limited (XCDM) commissioned Norwest Corporation to prepare an Independent Preliminary Assessment of the Donkin coal project located in Cape Breton, Nova Scotia. The report was to be prepared for XCDM and its partner, Erdene Gold Inc. Norwest's report is prepared in compliance with the requirements of National Instrument 43-101 that apply to Preliminary Assessments.

A Technical Report and geological model concerning the property were prepared by McElroy Bryan Geological Services (MBGS) for XCDM and Erdene Gold Inc. in April 2007. In addition XCDM has also prepared an internal report titled Pre-Feasibility Scoping Study dated May 2007. Material in both of those reports has been used in the preparation of this Preliminary Assessment report. The MBGS Technical Report, filed on May 14, 2007, is available for public viewing on SEDAR under the various documents that have been filed by Erdene Gold Inc. The report is entitled "Technical Report Donkin Coal Project" (April 2007).

Norwest's Preliminary Assessment includes verification of the existing geological model. This model was used by us as the basis for the development of a mine layout, mining sequence, capital and operating costs, and a financial analysis. It is important to note, however, that this work is preliminary in nature and does not satisfy the requirements of a feasibility study as defined by Section 1.1 of the Instrument. Unless stated otherwise all economic analyses are presented in US\$.

The Preliminary Assessment assignment to be completed by Norwest was presented in a proposal to Xstrata Coal Donkin Management Limited, dated August 10, 2007. The proposal was subsequently accepted with the plan to address the following topics:

1. Confirm the geological model;
2. Develop a mine model and select a mining layout;
3. Develop production and manpower schedules;
4. Estimate capital and operating costs;
5. Review transportation and marketing options;
6. Generate a financial model; and
7. Prepare and publish a report.

The following sections of this report describe the results of that work.

## 2 DISCLAIMER

National Instrument 43-101 includes certain sections that apply to the preparation of Preliminary Assessments. These conditions are addressed under Part 2, Section 2.3 and Part 1, Section 1.1. The present report includes resources that are presently classified as Inferred. Consequently, and in accordance with the requirements of Section 2.3 (3) it should be noted that the preliminary assessment is preliminary in nature; it includes mineral resources that are considered to be too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves. There is no certainty that the preliminary assessment will be realized.

Much of the material used to prepare this Preliminary Assessment has been extracted from the reports and other supporting documents provided by the client and its other consultants. The most important of these are those referred to in the introduction section of the report. Wherever possible Norwest has conducted checks of the information to confirm its relevance and validity. This has included checking that the reports of the original historical exploration results match values that have been used in preparation of the geological model. There are, however many items that neither Norwest nor the authors of the MBGS report are able to verify with respect to the exploration conducted by a third party many years ago. In such circumstances Norwest has assumed that the information as reported and presented to them to use is accurate. Specifically, Norwest has not conducted field work, other than a site visit, and has not independently drilled or completed geophysical logs on drill holes, inspected drill hole cores, taken samples or performed independent third party analysis of the coal seam quality

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

In this report SI abbreviations have been used; in particular the letter 'M' refers to a million units of the quantity described.

### 3 PROJECT DESCRIPTION

The MBGS report describes the property as being “located in the northeast of Cape Breton Island and is located almost completely offshore (46° 11’ N, 59° 49’ W) about 20 km east of Sydney, Nova Scotia”. Access to the property is by highway from Sydney, which is Cape Breton’s largest community. The Donkin property has been awarded a Special Licence, number 2/06, by the Provincial government.

In December, 2005 the Nova Scotia Department of Natural Resources (DNR) announced that the Donkin Coal Alliance was the successful applicant in the call for proposals for exploration and development of the Donkin Coal Resource Block. The Donkin Coal Alliance includes Xstrata Coal, headquartered in Sydney, Australia with 75% ownership of the project. Xstrata Coal is one of the world’s largest producers of export thermal coal and a significant producer of metallurgical coal. The other participant in the Alliance is Erdene Gold Inc. of Nova Scotia with 25% ownership. Xstrata Coal Donkin Management Limited, a group company of Xstrata Coal, is the project manager for the Donkin Coal Project on behalf of the Donkin Coal Alliance. Special License No. 2/06 was granted to Donkin Tenements Inc. in May 2006, for a period of three years. The licence allows XCDM to determine the business case for coal mining options within the licence area.

Norwest has been provided with documents that show that Xstrata Coal Donkin Management Limited has a valid and current title to the project. This includes about 200 km<sup>2</sup> addressed under Special License 2/06 and certain freehold titles that apply to on-shore lands. The latter total about 3.6 km<sup>2</sup> in the area referred to the “Donkin Exploration Site”. An illustration showing these areas is provided in the Technical Report of MBGS. Norwest has no knowledge of whether all or any part of the property has been legally surveyed.

With the exception of two slopes that access coal seams of interest, there are no areas of previous underground or surface mining within the Donkin Coal Project area. There are no known hazards or environmental liabilities related to abandoned open pit areas or mined out underground areas.

After receiving the necessary regulatory approvals, XCDM breached the tunnel seals and commenced pumping water from the tunnel in late 2006 in order to reclaim access to the Harbour Seam coal face. This work is now complete and unimpeded access to the Harbour Seam is possible. Rehabilitation work continues with the removal of abandoned mining equipment that was discovered as the tunnels were dewatered and water levels receded.

Climate, local resources, infrastructure, physiography and history are described in more detail in the MBGS report.

## 4 GEOLOGY, DRILLING, SAMPLING METHOD AND APPROACH

The Sydney coal basin is located along the north-eastern coastline of Cape Breton Island, mostly off shore, under the Atlantic Ocean and contains eight coal seams ranging from 0.5 m to 3.5 m in thickness in the project area. The basin structure was determined by geophysical methods in 1976 and is described as a relatively simple basin, with the beds dipping towards the deeper and central parts of the basin (20 km north of Donkin licence), steeper along the coastline and becoming flatter offshore. Along the southern boundary of the basin (Cape Breton coastline), a marginal fold belt exists, with north-easterly trending folds and minor faulting affecting the Sydney underground mines. Norwest agrees with this information and further details are available in the MBGS report.

A small number of offshore exploration holes were drilled in the late 1970's. The information gained from this coal basin was used as the definition of "Low Type A" geology in the Geological Survey of Canada Paper 88-21. That document was used for many years in a prescriptive way for the estimation, classification and reporting of resources and reserves in Canada. Today it remains as a guideline for the same kind of work regulated under NI 43-101 and the CIM Guidelines. The coal resources being considered for this particular project are to be underground mined under the ocean. It has been concluded by Norwest that strict adherence to current standards for collection and documentation of geological data from this coal field is not possible based on the existing historic exploration data.

## **5 COAL QUALITY, PROCESSING, AND TESTING**

The MBGS report describes the Donkin Coal Resource Block as containing on average 4.5% sulphur and 12% ash and is classified as high volatile A bituminous, high sulphur, medium ash coal based on the American Society for Testing and Materials (ASTM) coal classification system.

The report states that after processing at the Victoria Junction Coal Preparation Plant during the pilot scale study, the Donkin bulk sample coal achieved 70% to 75% recovery of metallurgical product with ash 3%, and total sulphur (TS) content of 2.1%. The thermal product yield was 5% to 10% with ash and TS of 7% and 4% respectively. Coarse rejects contained the bulk of the pyritic sulphur (TS 16%) with little coal evident in the reject material which had an ash content of 65%. The flotation tailings were also high in ash, at 75% to 80%, with a sulphur content of 2% to 2.5%.

Norwest agrees with the findings of the MBGS report on this topic and is of the opinion that the spacing of available coal quality data for the seams used in the geological model is adequate for characterization of the in-place quality parameters. Additional information can be found in the MBGS report.

## 6 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

To confirm the MBGS geological model, Norwest reviewed reported information about the source data that was used in the McElroy Bryan Geological Services model and the MBGS report. The review noted the following concerns expressed in the above reports:

- the general poor state of the data that was available for review by the authors;
- the insufficient number of drill holes, and points-of-control from the past mining, available for modeling;
- the accuracy of the survey data;
- the quality of the downhole geophysical logs;
- the inadequate reconciliation between driller's logs, geophysical logs and core descriptions; and
- the missing coal quality data from drill holes.

The resource estimate from the MBGS model has used a variety of control parameters that take into account several of the above concerns.

- The data spacing is slightly larger than the 88-21 parameters, but historical experience in this coal basin has shown that the seam stratigraphy, structure and quality are very consistent over large distances.
- The survey accuracy of the model is traditionally not a concern for the long range planning exercise. Additional short range control would be gathered from underground workings and drilling as mining progresses.
- No additional adjustments were recommended for geophysical log reconciliation, given the faith put in the high resolution resistivity logs, and again, the historical knowledge of the basin consistency.
- An additional sterilization buffer was used around the drill holes to account for the lack of confidence in the survey data.
- The "Indicated" resource category was intentionally restricted to the area within the envelope surrounding the drill hole collar locations.
- Additional conservatism was built in where drill-hole data was considered of questionable quality, or none existed.
- Seismic and magnetic data were referred to in the modeling, but still require fine tuning.
- The model used a coal density of 1.3, which is too low if the whole seam is mined; but it becomes somewhat more realistic if the top, high ash, high sulphur portion of the Harbour Seam can be left behind on the hanging wall (roof).
- Resource numbers are based on mining the whole of the Harbour Seam only.

The long history of mining in this area has demonstrated the lateral consistency of most aspects of this coal deposit. Conservatism is built into the modeling of the deposit to allow for the definition of the various categories of resources presented in the MBGS report.

Until recently, the approach to coal reserve and resource estimation and classification in Canada was specified and prescribed under the Geological Survey of Canada Paper No. 88-21. This document is still recommended as a guide for coal resource estimation purposes in the current version of NI 43-101. GSC 88-21 has a specific section dedicated to the off-shore coal deposits of Nova Scotia. In that document, coal tonnage is classified in various categories of resources based on radial distance from drill holes. In the case of the “Low Type A” class to which the Donkin deposit belongs, the maximum radial distance from any data point for the classification of resources in the Indicated category is 1,600 m. A review of the mine plan prepared by Norwest shows that most, perhaps 90%, of the conceptual mining area falls within this maximum distance of any drill hole. A small portion of the conceptual mining area still lies outside that limit and would thus be classified as Inferred, had the criteria and procedures of GSC 88-21 been applied to the estimation and classification of resources in the MBGS report. The MBGS report states that the Harbour Seam contains an Indicated Resource of 101 million tonnes and an Inferred Resource of 115 million tonnes. This is a very conservative estimate for the Indicated portion compared with the result that would be obtained using the GSC criteria. Nevertheless, a portion of the resource would still be classified as Inferred. In addition, higher standards of resource and reserve definition that generally apply today would lead to the classification of more of the resource in the Inferred category than is found by strict application of 88-21 criteria. On balance, Norwest agrees that the MBGS estimate is a fair one and reasonably assigns tonnage to the two classes, Indicated and Inferred.

Note, however, that the nature and certainty of the coal resources are a subject of discussion that should be reviewed in Section 2 of this report.

## 7 MINE DESIGN AND OPERATIONS

The Donkin property is currently undeveloped with no production. Two slopes, approximately 7.5 m in diameter and 3.4 km long, provide access to the Harbour coal seam.

The following sections describe a conceptual design for an underground longwall mine at a level of detail consistent with the requirements of this Preliminary Assessment. This work does not satisfy the rigor or detail necessary for a feasibility study.

### 7.1 MINING OPERATIONS

#### MINING METHOD

The Donkin coal resource in the Harbour Seam lends itself to mining by the longwall mining method. The proposed mine plan will utilize a 300 m wide longwall face system and three continuous miner (CM) sections to develop the longwall panels. Each CM section will consist of one miner/bolter, two shuttle cars, one diesel scoop, one feeder-breaker and other miscellaneous equipment. Developed longwall panels will provide blocks of coal 300 m wide and 1,500 m to 5,000 m long for the operation of the longwall equipment. The mine development and production methods and equipment are summarized in Table 7.1.

**TABLE 7.1**  
**OPERATIONS SUMMARY**

Task	Approach	Primary Equipment
Main Entry Development	Room and pillar	Miner/bolter, shuttle cars, scoop, feeder-breaker
Gate Road Development	Room and pillar	Miner/bolter, shuttle cars, scoop, feeder-breaker
Panel Retreat	Longwall	180 longwall shields, Armoured Face Conveyor, stageloader, mobile tailpiece
Support Equipment	Various	Utility transport, supply, specialty vehicles, miscellaneous

#### PRODUCTION FORECAST AND MINE LIFE

Mine surface facilities construction is assumed, for this Preliminary Assessment, to take place over a three year time period. Year 1 is the designated start of coal production and follows the construction period.

Run-of-mine (ROM) coal production in Year 1 will be 0.2 million tonnes and will increase to 0.6 million tonnes per year in Years 2 through Year 4 as the mine is developed for the start of

longwall production in Year 5. The first full year of longwall operation (Year 6) will produce 4.3 million tonnes. These production figures are presented in Table 7.2 which shows that the total production life of the proposed mine is 33 years, and coal recovered during the mine life totals 109 million tonnes.

**TABLE 7.2**  
**PRODUCTION – MT (ROM)**

<b>Period</b>	<b>Mt</b>
Year 1	0.2
Year 2	0.6
Year 3	0.6
Year 4	0.6
Year 5	1.6
Year 6	4.3
Years 7- 32	98.9
Year 33	1.9
<b>Total</b>	<b>109</b>

### **MINE PLAN LIMITS**

The mining constraints for this mine plan are based upon the following assumptions:

- minimum overburden thickness of 250 m;
- maximum overburden thickness of 700 m;
- panel length between 1,500 m and 5,000 m;
- seam thickness from 1.8 m to 3.65 m;
- acceptable geologic mining conditions; and
- ocean borehole protection pillars of 75 m radius.

A minimum overburden thickness of 250 m is assumed to provide protection from ocean water inflow resulting from subsidence. A maximum mining depth of 700 m is assumed to reduce the magnitude of geotechnical anomalies affecting the mining conditions. These constraints establish the southern and northern mining boundaries. These constraints have not been verified by geotechnical analysis specific to this mine plan. Geotechnical analysis should be performed to determine the minimum and maximum mining depth.

Maximum panel lengths of 5,000 m are projected. The Harbour Seam thins to a thickness of 1.8 m to the west and there is a projected fault to the east. These constraints establish the eastern and western boundaries. The above constraints are shown on the mine plan in Figure 7.1 at the end of this section.

In addition, a protection pillar with a radius of 75 m has been assumed around drill holes where no longwall mining occurs. Geotechnical analysis should be performed to determine this pillar size.

## MINING ASSUMPTIONS

Grids prepared from a geologic model of the drill hole information were used to determine coal seam depth, thickness, dip and quality. This information was used to develop the productivity assumptions utilized in this preliminary assessment. Table 7.3 summarizes the physical properties of the coal and the mining parameters and assumptions for the mine plan.

**TABLE 7.3**  
**MATERIAL PROPERTIES AND MINING PARAMETERS**

Parameter	Value
<b>Coal</b>	
Coal density (in place)	1.27 to 1.44 tonnes/m <sup>3</sup>
Percent Ash	8.9% to 18.0%
Percent Sulphur	4% to 7.4%
Seam thickness (recoverable)	1.8 m to 3.65 m
Dilution rock quality, density	80% ash, 2.36 tonnes/m <sup>3</sup>
Dip (percent)	0 to 25%
<b>CM Section Productivity</b>	
Dip 0 to 5%	18 m/shift
Dip 5 to 10%	15 m/shift
Dip 10 to 15%	12 m/shift
Dip > 15%	9 m/shift
Minimum height	2.6 m
Entry width	5.5 m
<b>Longwall Productivity</b>	
Retreat rate	5.4 m/shift
Moves between panels	35 days
Moves around drill holes (within panel)	21 days
Cutting cycle	Bi-directional
Drum web (effective web)	0.9 m (0.78 m)
Maximum cutting speed (average w/ gate turnaround)	9.1 m/min (5.0 m/min)
Minimum Height	2.1 m

Additional assumptions were used to develop this mine plan and the estimated productivity levels of the equipment and the workforce. These assumptions concern mine management and the use of modern mining technology and include the following:

- mine management including first line supervision will be excellent and practice continuous improvement with respect to mine operations, safety and cost control;
- the workforce will be skilled, motivated and not encumbered by inefficient work practices;
- schedule based on two 10 hour production shifts per day, 365 days per year,
- modern longwall technology will be implemented;
- miner/bolters will be effective in main entry and gate road development;
- effective and efficient ground control techniques will be used including roof bolting and proper pillar design;
- the mine plan will be designed effectively in all areas include longwall panel and infrastructure design;
- no major unexpected adverse geologic issues will be present beyond the existing data;
- the mine will operate at productivity levels comparable to the average productivity ranges of the North Appalachian longwall mines in the United States;
- mining conditions will permit operations at the projected productivity levels;
- the existing two slopes will be adequate for mine production conveyance, ventilation, personnel and material transportation;
- no coal preparation facilities are required.

## **7.2 MINING SEQUENCE**

The construction of the surface facilities and installation of conveyor and ventilation systems in the two slopes will be required before the start of mining. Main entry development will start in Year 1 at the slope bottom and proceed past the overburden depth of 250 m. Starting in Year 2, longwall gate roads will be developed into the thicker coal east of the main entries. Three sets of gate roads will be developed to a length of 5,000 m. This gate road development will create two 300 m wide by 5,000 m long longwall panels.

The longwall system will be installed and mining will commence in the first panel in Year 5. This will allow the installation of a methane drainage system in each longwall panel in the year prior to the longwall mining of that panel. Development of the rest of the main entries and longwall panels and longwall mining will occur in a similar sequence. Figure 7.1 shows the mine plan with yearly timing.

## **MINE DEVELOPMENT**

Longwall panels will be initially developed to the east to enable the thickest coal to be mined in the first half of the mine life. The eastern slope will be established as the main return air course to the surface.

## **CM DEVELOPMENT**

A miner/bolter system will be used for development activities. A miner/bolter also will allow the rapid installation of roof support into newly mined openings. This method will reduce the use of steel arches and square sets as primary entry support used in older adjacent mines. Haulage from the miner to the conveyor will use shuttle cars or equivalent haulage equipment capable of manoeuvring in the steeply dipping coal seam.

## **MAIN ENTRIES**

A six entry main development is anticipated. The length of pillars between crosscuts varies with depth and alignment with gate road conveyor systems.

The main entries will be advanced by one or two sets of CM mining equipment depending on development scheduling. Mine openings are projected at a minimum height of 2.6 m and an average width of 5.5 m for ventilation and equipment movement.

The infrastructure extended with main entry development includes a 1.83 m wide belt conveyor, 200 millimetre (mm) fresh waterline, 300 mm mine discharge waterline, 76 mm de-gasification methane transmission main pipeline, and 100 mm compressed air line. 15 KV power, communications and monitoring cables are also extended.

## **LONGWALL GATE ROADS**

The longwall panels are projected in four districts contained in groups of three to seven panels per district. Each longwall district contains multiple gate roads. One of the gate road developments will be designated as the “bleeder” which is used to collect ventilation air containing methane. The bleeder gate roads will be developed using three entries. The other gate roads in a longwall district will be developed using two entries.

The longwall gate roads will be developed by one set of CM equipment and will be generally oriented along the strike of the seam. The Out-of-Seam Dilution (OSD) expected in these entries results from mining of roof and floor strata to provide a level floor where the seam cross-pitch is significant.

During development of the gate roads, additional roof support will be installed to prepare for longwall retreat. This additional roof support installation and the seam dip are critical factors in determining the estimated development advance rates for these entries.

Infrastructure extended in the gate roads will consist of a 1.52 m wide conveyor belt, 150 mm fresh waterline, 300 mm mine discharge waterline, 38 mm de-gasification methane transmission branch pipeline, and 100 mm compressed air line. 15 KV power, communications and monitoring cables are also extended.

In-seam degasification holes are planned in the down-dip rib line of the gate roads. The number of holes varies with panel length. Each hole will contain 1,000 m to 1,200 m of collection borehole. A collection branch pipeline will connect to a main trunk line to the surface.

### **LONGWALL MINING**

A longwall system of approximately 180 face and gate end shields, armoured face conveyor (AFC), stageloader with crusher, mobile tail piece, hydraulic emulsion mixing and pumping system and shearer was selected for the proposed mine plan. The longwall system will extract panels during retreat in each district, mining successive panels down dip. This orientation will require the headgate conveyor on the north (down-dip) side of the panel with face haulage down the full seam dip, to reduce the AFC power requirements. Using this orientation over the full mine plan will require that the AFC drive ends will be converted to the opposite direction (re-handed) when the longwall moves to the west side of the mine.

The shearer will operate cutting coal in both directions (bi-directional) on the face. The maximum cutting speed will be realized cutting down-dip, as productivity is restricted when cutting up-dip due to the limited 'throat' beneath the shearer and ability of face personnel to keep up with the shearer. Productivity will also be reduced at both ends of the face during the turn-around manoeuvre where additional cut-out time will be required to limit the amount of rock mined at the gate roads.

The depth of cut for each pass along the face was determined using a 0.91 m web at an assumed 85% cutting efficiency, producing an effective cut depth that allows for variation of cutting height. This produces an effective cutting depth of 0.78 m over the entire mine plan and results in a face retreat rate of about 10.8 m/day.

The retreat of the longwall will also require the installation of additional support along the gate road entries. This support will require manpower and utility support equipment to operate in conjunction with the retreat of the longwall.

Equipment moves from panel to panel and around ocean floor drill holes will require significant support equipment and downtime. The mine plan includes 35 days of non-production downtime in moving equipment from panel to panel and 21 days of non production downtime in moving around ocean floor drill holes.

## 7.3 MINE LAYOUT

### UNDERGROUND MINE LAYOUT

The mine layout is divided into the east and west areas by the north-south main development. The life-of-mine layout from the bottom of the slopes is presented in Figure 7.1 which shows the mains extending to the north and the longwall panels extending from the mains in both east and west directions.

Longwall gate road development will begin after the 250 m minimum depth limit is reached. This depth is assumed for this preliminary assessment to provide sufficient strata separation below the ocean floor to prevent subsidence-induced fractures from allowing sea-water ingress into the mine from the ocean floor. This depth requires verification by geotechnical analysis.

The eastern area contains two longwall districts separated by a projected fault whose western extent is not well defined in the geologic data provided to Norwest. Panel lengths do not exceed 5,000 m in order to avoid intercepting this fault zone. Panels on the east side will be sequenced from south to north, with the Harbour Seam thickening to the east.

The western area contains two longwall districts separated by a coal barrier pillar that is in close proximity to two ocean floor drill holes. The northern long wall district will be mined before the southern longwall district. Panels will be recovered south to north. Panel lengths are limited to 5,000 m in order to limit mining of areas with coal thickness less than 1.8 m and to allow for safety barrier pillars to maintain separation from old mine workings in the Harbour Seam.

### ANNUAL PRODUCTION

Development advance rates for CM sections were discounted through an efficiency rating system that projected the advance rate per shift as the dip increased. The advance rate in flat conditions was 18 m per shift, and this was reduced to 9 m per shift when the dip was greater than 15%. Intermediate advance rates for incremental increases in dip are presented in Table 7.3 at 5% intervals.

Longwall mining rates were projected to determine annual production volumes. The shearer cutting speed, turn-around times, web thickness, and cycle cutting method were modelled and mining condition parameters used to determine the cutting cycle time. The cycle time was then used in a shift model to determine the daily longwall retreat distance based on the shift schedule.

Development OSD is included in this plan for CM sections based on a minimum mining height of 2.6 m with 0.2 m of additional dilution from outside the seam. Where the seam is thinner than 2.6 m, the difference will be mined as OSD. The longwall OSD is based on a minimum longwall mining height of 2.1 m, and the difference between this height and the average seam thickness in panels where the seam thickness was less than 2.1 m was included as OSD.

Initial longwall mining will start after two complete panels are developed to facilitate in-seam degasification. This delayed longwall production will allow time for methane drainage to take place before longwall extraction begins. This time for methane drainage is an estimate only as coal seam methane drainage characteristics are not completely defined in the data provided to Norwest. Gate road development is sequenced to maintain development of 1.5 panels ahead of the longwall throughout the entire mine life. Panel lengths were limited to 5,000 m so that the potential for major equipment failures mid-panel are reduced by limiting wear and condition related factors.

Coal production from development and longwall is presented annually in Table 7.4, together with the combined rock dilution, ROM production, and the weighted product quality (% ash and % sulphur) for the entire mine life. Quality parameters for typical OSD were not available. Norwest assumed an ash percentage of 80% and no sulphur.

The above estimated advance rates, OSD quantities, timing and panel dimensions were based upon analysis of the limited available data. These parameters may change based upon further analysis and the availability of additional data.

**TABLE 7.4**  
**ANNUAL PRODUCTION SUMMARY**

Year	Production			ROM Quality		
	Development (tonnes)	Longwall (tonnes)	Dilution Rock (tonnes)	ROM Total (tonnes)	% Ash	% Sulfur
1	198,370	-	21,372	219,742	16.53%	4.17%
2	527,836	-	57,930	585,766	17.27%	4.42%
3	511,528	-	96,561	608,089	22.13%	4.48%
4	556,991	-	80,672	637,663	20.39%	4.80%
5	554,609	975,145	64,515	1,594,269	12.71%	4.06%
6	286,685	3,937,764	33,418	4,257,867	9.51%	4.10%
7	232,658	3,810,102	28,618	4,071,378	9.84%	4.10%
8	231,371	3,953,214	25,483	4,210,068	9.85%	4.15%
9	245,654	4,288,080	27,018	4,560,752	9.92%	4.36%
10	271,392	3,597,642	29,403	3,898,437	11.03%	4.70%
11	272,642	4,012,078	30,744	4,315,463	10.66%	4.61%
12	254,070	4,399,900	27,537	4,681,506	10.93%	4.64%
13	291,634	4,679,305	32,294	5,003,234	11.09%	4.80%
14	245,208	4,469,457	162,168	4,876,834	12.11%	4.66%
15	253,840	3,998,648	159,447	4,411,935	13.54%	4.75%
16	242,635	4,047,754	157,230	4,447,619	13.24%	4.50%
17	224,766	4,263,822	123,682	4,612,270	15.05%	5.16%
18	199,142	3,039,645	466,866	3,705,654	25.21%	6.31%
19	211,931	2,995,132	277,098	3,484,161	21.73%	5.68%
20	205,717	2,822,860	441,249	3,469,825	25.91%	6.09%
21	271,070	2,807,138	178,841	3,257,049	21.22%	5.82%
22	250,505	2,938,241	115,308	3,304,054	19.53%	4.95%
23	269,900	2,841,119	119,045	3,230,064	19.81%	5.09%
24	233,151	3,394,304	126,012	3,753,468	19.59%	5.41%
25	162,274	3,739,629	90,420	3,992,323	18.90%	4.94%
26	166,220	3,054,511	100,497	3,321,229	17.88%	5.70%
27	165,872	3,317,756	109,183	3,592,811	16.89%	5.49%
28	157,657	3,094,651	111,684	3,363,992	17.14%	5.54%
29	52,167	2,811,037	37,524	2,900,729	16.22%	5.80%
30	-	2,695,571	-	2,695,571	16.36%	6.19%
31	-	2,821,120	220,216	3,041,336	20.97%	6.39%
32	-	2,649,840	93,294	2,743,134	17.45%	6.09%
33	-	1,667,079	268,140	1,935,218	27.69%	7.54%
<b>Totals</b>	<b>7,747,496</b>	<b>97,122,546</b>	<b>3,913,470</b>	<b>108,783,511</b>		

The mine plan production includes significant OSD in the thinner seam zones. The potential to reduce OSD by varying the mining heights, leaving roof or bottom coal, using an ash analyzer or other procedures has not been evaluated.

#### 7.4 WORKFORCE REQUIREMENTS

Workforce levels were estimated according to the requirements to operate and maintain the underground mining sections, with personnel levels fluctuating as the mining requirements dictate. Surface crews and management personnel were estimated by required function to maintain the mine performance. The availability of mining personnel has not been evaluated for this preliminary assessment. Personnel were assumed to be available and workforce costs were estimated. The average CM development crew manning level is shown in Table 7.5, with the number of CM crews peaking at 12 and averaging eight for most of the mine life.

**TABLE 7.5**  
**CM DEVELOPMENT CREW REQUIREMENT**

Position Description	Number
CM Operator	1
Bolter Operator	2
Shuttle Car Operator	2
Utility	1
Mechanic	1
Foreman	1
<b>Total</b>	<b>8</b>

Table 7.6 shows the longwall crew requirement. Four longwall crews will be required for longwall operations.

**TABLE 7.6**  
**LONGWALL CREW REQUIREMENT**

Position Description	Number
Shearer Operator	2
Headgate Operator	1
Utility	2
Mechanic	1
Foreman	1
<b>Total</b>	<b>7</b>

The management and hourly personnel are estimated by function and Table 7.7 shows average yearly hourly and salaried levels by function.

**TABLE 7.7**  
**AVERAGE YEARLY REQUIREMENT BY FUNCTION**

Function Description	Number
<b>Hourly</b>	
<b>Underground</b>	
CM	35
Longwall	19
Maintenance	14
Support	94
<i>Subtotal</i>	<i>162</i>
<b>Surface</b>	
Coal Handling	20
Railroad	6
Maintenance	16
<i>Subtotal</i>	<i>42</i>
<b>Total Hourly</b>	<b>204</b>
<b>Salary</b>	
<b>Underground</b>	
Production	17
Maintenance	16
Support	6
Safety	2
<i>Subtotal</i>	<i>41</i>
<b>Surface</b>	
Coal Handling	3
Railroad	2
Administration	20
Engineering	6
<i>Subtotal</i>	<i>31</i>
<b>Total Salary</b>	<b>72</b>
<b>Total Workforce</b>	<b>276</b>

The average annual total personnel required is estimated to be 276, with the mine production schedule based on a 365-day operation. The mine will operate two 10 hour production shifts per day with a four hour idle period between the production shifts. Mining, maintenance, and surface operations personnel will be scheduled to work four 10 hour shifts followed by four days off. Four complete crews will be required to staff the mine.

## **7.5 MINE SUPPORT FACILITIES**

This conceptual study envisions that the coal produced will be transported from the mine by the slope belt to the surface coal handling facilities. Coal is transported by rail from the surface facilities to the International Pier at Sydney. The mine support facilities include the following:

- administration building;
- change house;
- warehouse;
- diesel fuel station;
- equipment maintenance shops;
- water and fire protection systems; and
- sewage treatment plant.

### **MATERIAL HANDLING EQUIPMENT**

The major components of the surface coal handling systems are described below.

The 1.83 m wide main slope conveyor from the mine has a peak capacity of 4,000 tonne/hour. This conveyor transports material either to:

- the rock bypass system, or
- the ROM stockpile reclaim and sizing system.

### **ROCK BYPASS SYSTEM**

The Rock Bypass System will divert mine development rock away from the coal handling systems. This system includes the bypass conveyor and a 50 tonne truck loading bin.

The ROM system will continue from the Rock Bypass on an open gallery conveyor to the 50,000 tonne stockpile. The end of the stockpile feed conveyor will be supported by a stacking tube.

### **ROM STOCKPILE RECLAIM AND SIZING SYSTEM**

The ROM stockpile reclaim system is planned for a 2,000 tonne/hour capacity. The reclaim equipment will be installed in a tunnel constructed from multi-plates and concrete vaults under the ROM stockpile. A D9 dozer has been planned to assist with reclaiming the stockpile.

The stockpile reclaim conveyor will convey material to the sizing equipment. The sizer will reduce the material from a top size of 600 mm to 50 mm. The sizing equipment will be positioned to allow a future transfer conveyor to feed a potential wash-plant, or to allow material transfer to the sized coal stockpile.

### **SIZED COAL STOCKPILE AND TRANSFER CONVEYOR**

A 150,000 tonne stockpile is planned for the sized coal. This facility is comprised of three stacking tubes with a tripper conveyor in a gallery over the stockpile. The stockpile will be used to store coal during any shipping delays to the Sydney International Pier. The configuration allows for additional pushing by dozer if more storage is required. This facility would be constructed similarly to the ROM storage pile to economize engineering, equipment purchases and other considerations.

### **DUST CONTROL**

Stockpile dust control is a water spray system similar to that which is successfully used at the Sydney International Pier. The meteorological conditions at the port are similar to that of the mine site. When the stockpiles require treatment, Rain Gun sprays will be fired over the stockpiles.

### **TRANSPORTATION**

Trains to transport the coal from the mine to the port will be loaded from a batch loading system fed from the 150,000 tonne stockpile. The reclaim rate is 2,000 tonne/hour. The trains will travel to the Sydney International Pier and unload with the existing equipment and the proposed extended facilities at the port.

The trains will travel approximately 25 km from the mine site to the port. The existing rail system runs from the port to within 11 km of the mine site. This 11 km of rail was decommissioned when the Nova Scotia rail system no longer had any mines to support near Donkin. Norwest understands the right-of-way exists for the majority the 11 km extension. The grade is still in place along the existing route and a bridge over the provincial highway will be required.

Norwest has included the capital costs for the 11 km rail extension, 63 rail cars, two locomotives and a train servicing shop in the project capital costs.

### **SYDNEY INTERNATIONAL PIER**

Two 250,000 tonne stockpiles at the Sydney International Pier are planned by the operator, LOGISTEC, to support mine operation. These stockpiles are sufficient to allow the mine to operate during delays in shipping that may occur due to weather.

This port has existing ship loading equipment designed for Panamax-size ships. The ship loader has not been used in several years and is in serviceable condition. The ship loader likely could be upgraded from 3,000 tonne/hour to 3,500 tonne/hour. In order to fully load the ships, the harbour will need to be dredged. The cost to restart or upgrade the loader and the cost of dredging are not included in the Norwest estimate.

## **7.6 RECOVERABILITY**

Coal washing facilities are not considered in this study; hence no coal processing losses are calculated. It is assumed all coal produced will be sold and development rock will be disposed of on site.

Overburden Thickness (m)	Year 1	Year 17	"Original signed and sealed by Author"
Harbour Seam Thickness (m)	Year 2	Year 18	
Inferred Faults	Year 3	Year 19	
Existing Workings	Year 4	Year 20	
Lease Boundary	Year 5	Year 21	
Ocean Drillhole	Year 6	Year 22	
	Year 7	Year 23	
	Year 8	Year 24	
	Year 9	Year 25	
	Year 10	Year 26	
	Year 11	Year 27	
	Year 12	Year 28	
	Year 13	Year 29	
	Year 14	Year 30	
	Year 15	Year 31	
	Year 16	Year 32	
		Year 33	

**XCDM and Erdene Gold Inc.**

DONKIN MINE

**HARBOUR SEAM MINE PLAN**

FIGURE 7-1

DATE: 11/21/2007      SCALE: 1:1000

PROJECT: 07-3130      **NORWEST CORPORATION**



## 8 CAPITAL AND OPERATING COST ESTIMATES

Norwest has developed estimated capital and operating costs for the mining operation, surface facilities, rail transportation, and vessel loading charges at the Sydney port. These costs are based upon the conceptual mine plan, mining equipment selection, conceptual surface facilities, projected productivities, and assumptions stated in Section 7 of this report. As this study is of a conceptual level, these costs may vary by as much as 30%. Additional geologic data and more detailed evaluations will allow further refinement of these costs. Capital, material, and supply costs have escalated at a rapid pace over the past three years after a prolonged period of stagnation. No property acquisition costs have been included. All costs are in constant 2007 dollars.

The Donkin surface facilities costs were estimated on information for recent similar projects, vendor sources as appropriate, or from the 2007 Western Mine Engineering Mine and Mill Equipment Costs. Mining equipment and operating costs were based upon Norwest's knowledge and database of costs and vendor quotes.

### **CAPITAL COST ESTIMATES**

Capital estimates were developed for the following categories:

- underground mining equipment;
- mine surface facilities and associated mobile equipment; and
- rail transportation.

Table 8.1 summarizes the initial capital expenditures and the life of mine expenditures including replacements.

**TABLE 8.1**  
**CAPITAL (\$M)**

Year	-3,-2,-1	1	2	3	4	5	6	7-33	Total
CM Sections		9	17	-	-	0	0	18	<b>44</b>
Longwall		-	-	-	-	81	-	137	<b>218</b>
Mine Extensions		21	16	10	13	6	4	86	<b>156</b>
Mine Support		1	1	2	1	2	1	18	<b>27</b>
Safety		1	0	0	0	0	-	5	<b>6</b>
Mine Fan	2	1	-	-	-	-	-	-	<b>3</b>
Surface Facilities	103	-	-	-	-	-	-	-	<b>103</b>
Project Development	6	-	-	-	-	-	-	-	<b>6</b>
Surface Mobile Equipment	0	5	-	-	-	-	-	5	<b>10</b>
Railcars and Locomotives	-	16	-	-	-	-	-	-	<b>16</b>
Total Capital	111	53	34	12	15	89	6	269	<b>588</b>
Cumulative Capital	111	164	198	210	224	313	319	588	<b>588</b>

The estimated capital required to bring the mine to longwall production is \$313 million. Mine extension items such as conveyor belts were classified as capital in the years after the mine reaches full production. All capital expenditures include a 10% contingency.

#### **OPERATING COST ESTIMATES**

Operating costs were estimated based on the mine plan, equipment selection, workforce estimates and other pertinent factors over the life of the conceptual mine. Rail transportation costs to the Sydney port and vessel loading fees have been estimated based upon estimated train cycle times and workforce requirements.

Mine operating costs have been estimated for the following categories:

- salary and hourly labour;
- materials and supplies including repair and maintenance;
- electrical power; and
- other costs (G&A, insurance, etc.).

Table 8.2 summarizes the average operating costs per tonne over the mine life:

**TABLE 8.2**  
**MINE LIFE AVERAGE OPERATING COSTS (\$/TONNE)**

Total Mine Labour	\$ 8.37
Total Mine Materials & Supplies	\$ 5.43
Electrical Power	\$ 1.61
Other Mine Costs (including indirect costs)	\$ 1.30
Total Mine Operating Cost	\$ 16.70

Labour costs include a 15% contingency and the material and supply costs include a 10% contingency. No corporate overhead costs are included.

Norwest estimated the rail transportation costs from the mine to the port using a dedicated mine rail crew and equipment. The port fee to load the vessel was estimated upon fees at similar operations. Table 8.3 summarizes these costs.

**TABLE 8.3**  
**TRANSPORTATION COSTS AND FEES (\$/TONNE)**

Total Railroad Labour	\$ 0.31
Railroad Materials & Supplies	\$ 0.44
Port Fee	\$ 4.50
Total Transportation	\$ 5.25

A \$1.18 per tonne royalty, per the current regulations to the government of Nova Scotia, is included.

Table 8.4 summarizes the total cash costs for coal production, transportation to the port and loading into the ocean-going vessel.

**TABLE 8.4**  
**TOTAL CASH COSTS (\$/TONNE)**

Royalty	\$ 1.18
Mine operating	\$ 16.70
Transportation	\$ 5.25
Total cash cost	\$ 23.13

## 9 ECONOMIC ANALYSIS

### MARKETS

A brief independent coal marketing presentation prepared by Wood Mackenzie Limited, for Xstrata, concerning the Donkin Coal Project was provided to Norwest by Xstrata. There is a more detailed marketing report by Wood Mackenzie but that material has not been reviewed by Norwest. The marketing presentation assumes that power plants equipped with flue gas desulphurization and located along the Eastern U.S. seaboard are the target market. Competing coals would be mid-sulphur coal from Northern Appalachia in south-western Pennsylvania.

### PRODUCTION AND COST ASSUMPTIONS

A financial evaluation has been performed based on the production plan shown in Table 7.4 and the operating and capital costs developed by Norwest in Section 8. A final reclamation cost of \$5 million has also been included in Year 33, the last year of the project.

Working capital has been included to cover initial cash requirements to build inventories and cover timing differences for receivables and payables. Norwest assumes that covering two months of operating costs will be required for working capital. Norwest further assumes that working capital is recovered at the end of the mine's life in Year 33.

### SALES AND PRICING ASSUMPTIONS

A pricing schedule and guidelines for the coal product that they can market were provided by Xstrata. These guidelines address heat content, ash content, sulphur and moisture content of the coal product. The following is a list of the specifications provided by Xstrata:

- Product heat content of 13,500 btu/lb;
- Target ash content in the 10% to 14% range (ar); and
- Sulphur content range from 2% to 3.8%.

Xstrata's assessment that these specifications are suitable for the sale of the product by Xstrata into any market of their choice, has been used by Norwest.

The ROM tonnage after year 16 would be above the market specification for ash provided by Xstrata of 14%. In order to better simulate market requirements, the ROM production was adjusted to reduce out-of-seam dilution. The ash level, hence saleable production, was reduced, but still remained above 14%. However, the exploration data that is presently available to define the coal characteristics is quite sparse. It is not designed to provide a great amount of detail of the vertical quality characteristics of the seam. With new exploration, designed for the purpose, it will be possible to characterize the internal seam composition in a way that may allow mining to proceed in a more selective manner. This will allow large quantities of undesirable coal

components to be avoided and not included in the product. Norwest assumes that ash levels at or below 14% may be achieved by following such an approach. Therefore the saleable production level developed by Norwest and shown on Table 9.4 may be achievable. The sale price used in this evaluation for the higher ash coal has been adjusted on an energy basis to apply an appropriate penalty in the market place. The base case uses:

- an FOB Donkin loading port price adjusted for heat content based on ash levels; and
- long-term exchange rate of \$1.15CDN:\$1.00US.

### **TAXATION ASSUMPTIONS**

The analysis is based on presently legislated income tax regulations. The major features include:

- federal income tax rate declines from 21% in 2007 to 18.5% in 2011;
- the federal surtax of 4% is eliminated in 2008;
- as of 2007, the resource allowance is phased out completely and 100% of royalties and mining taxes can be deducted;
- Class 41A capital cost allowance rate is 25%, but can be accelerated to reduce taxable income to zero;
- Class 41B capital cost allowance rate is 25%;
- Nova Scotia income tax rate of 16%; and
- Nova Scotia capital tax rate of 0.25% on taxable capital employed where the amount is more than \$10 million. This tax is eliminated by July 1, 2012.

Norwest assumes the following for the tax calculations:

- year -3 of the production plan is 2007 (to phase in legislated tax changes);
- all capital expenditures up to full production (Year 6) will qualify as Class 41A, except rail rolling stock which is Class 41B;
- sustaining capital assumed to be all Class 41B;
- operating costs net of sales revenue assumed to qualify as Canadian Exploration Expense (CEE) until Year 5;
- the project will qualify for an investment tax credit of 10%, due to its location (Nova Scotia) for the cost of acquiring “qualified property” (buildings, machinery etc). Norwest assumes the investment tax credit program expires in 2015; and
- capital expenditures are a preliminary estimate of capital employed and used for the Nova Scotia capital tax calculation.

## ROYALTY AND MINING TAX ASSUMPTIONS

- coal will be subject to a Nova Scotia coal royalty of \$1.07 per short ton (\$1.18/tonne), the prescribed rate which is set by the Governor in Council (cabinet), and may be changed from time to time.

## FINANCIAL ASSUMPTIONS

- discount rate of 10%

## RESULTS

Under the base case assumptions, the project provides a net present value of \$195 million or a 16% internal rate of return on an after tax basis.

The base case was tested by simulating the inclusion of a wash plant to produce saleable coal from the ROM production plan (Table 7.4). The saleable coal would then have a consistent ash level and provide a heat content of 13,047 btu/lb. It was assumed that \$50 million in additional capital and an operating cost of \$3.00/tonne of feed would be incurred and that a yield of 90% may be reached. This simulation provided a net present value within 26% of the base case.

As an additional test, an alternative scenario was simulated by reducing the base case longwall tonnage by a further 20% after year 16. This simulated an even lower longwall height leaving behind possible ash bands, along with coal, as roof or floor material, in order to achieve a 14% ash product. This simulation resulted in a net present value within 13% of the base case.

These simulations support the conceptual basis of the base case.

The following table summarizes the base case results.

**TABLE 9.1**  
**BASE CASE RESULTS**

Net Present Value Before Taxes and Royalties \$ M CDN	\$371
Net Present Value After Taxes and Royalties \$ M CDN	\$195
IRR Before Taxes and Royalties	20%
IRR After Taxes and Royalties	16%

## SENSITIVITY ANALYSIS

Due to the conceptual basis of this study, numerous sensitivity analyses were completed to determine the impact on the project's net present value. The following were tested:

- coal price+/- \$US5.00;
- port cost +/- 20%;
- rail cost +/-20%;
- mine operating cost +/-20%;
- capital cost +/- 20%;
- exchange rate \$1.00Cdn: \$1.00US to \$1.2821Cdn: \$1.00US on coal price;
- discount rate 7% to 13%;
- heat content +/-300 btu/lb; and
- longwall start-up date.

The results are summarized in Tables 9.2 and 9.3. Under all sensitivity extremes, the after tax net present value remains positive, indicating project potential as being relatively strong under various cost related increases or revenue decreases.

As mentioned above, Norwest assumes that the project will qualify for the investment tax credit of 10% available in the Atlantic Provinces for “qualified property”. Norwest has not verified this assumption and recommends that Xstrata’s tax experts follow up on this. Norwest notes that if the investment tax credit were not available, the base case net present value would be reduced by about \$6 million.

**TABLE 9.2**  
**AFTER TAX NET PRESENT VALUE SENSITIVITY RESULTS (\$M)**

		Coal Price USD/tonne Sensitivity					
Port Cost Sensitivity	Base NPV=	\$195	-\$5.00	-\$2.50	<b>\$0.00</b>	\$2.50	\$5.00
	20%	\$105	\$144	\$183	\$221	\$260	\$260
	10%	\$111	\$150	\$189	\$227	\$266	\$266
	0%	\$117	\$156	<b>\$195</b>	\$233	\$272	\$272
	-10%	\$123	\$162	\$201	\$239	\$278	\$278
	-20%	\$130	\$169	\$207	\$246	\$284	\$284
		Coal Price USD/tonne Sensitivity					
Rail Cost Sensitivity	Base NPV=	\$195	-\$5.00	-\$2.50	<b>\$0.00</b>	\$2.50	\$5.00
	20%	\$115	\$154	\$193	\$231	\$270	\$270
	10%	\$116	\$155	\$194	\$232	\$271	\$271
	0%	\$117	\$156	<b>\$195</b>	\$233	\$272	\$272
	-10%	\$118	\$157	\$196	\$234	\$273	\$273
	-20%	\$119	\$158	\$197	\$236	\$274	\$274
		Coal Price USD/tonne Sensitivity					
Mine Operating Cost Sensitivity	Base NPV=	\$195	-\$5.00	-\$2.50	<b>\$0.00</b>	\$2.50	\$5.00
	20%	\$61	\$101	\$140	\$179	\$217	\$217
	10%	\$89	\$129	\$168	\$206	\$245	\$245
	0%	\$117	\$156	<b>\$195</b>	\$233	\$272	\$272
	-10%	\$145	\$184	\$222	\$261	\$299	\$299
	-20%	\$173	\$211	\$249	\$288	\$326	\$326
		Coal Price USD/tonne Sensitivity					
Capital Cost Sensitivity	Base NPV=	\$195	-\$5.00	-\$2.50	<b>\$0.00</b>	\$2.50	\$5.00
	20%	\$76	\$116	\$155	\$194	\$232	\$232
	10%	\$97	\$136	\$175	\$214	\$252	\$252
	0%	\$117	\$156	<b>\$195</b>	\$233	\$272	\$272
	-10%	\$138	\$176	\$215	\$253	\$291	\$291
	-20%	\$158	\$196	\$235	\$273	\$311	\$311
		Coal Price USD/tonne Sensitivity					
CDN:USD Exchange Rate Sensitivity	Base NPV=	\$195	-\$5.00	-\$2.50	<b>\$0.00</b>	\$2.50	\$5.00
	1.0000	\$26	\$61	\$96	\$130	\$164	\$164
	1.0526	\$59	\$95	\$131	\$166	\$202	\$202
	1.1111	\$94	\$132	\$170	\$207	\$244	\$244
	<b>1.1500</b>	\$117	\$156	<b>\$195</b>	\$233	\$272	\$272
	1.2195	\$159	\$200	\$240	\$281	\$322	\$322
	1.2500	\$177	\$219	\$260	\$302	\$343	\$343
	1.2821	\$196	\$239	\$281	\$324	\$366	\$366
		Coal Price USD/tonne Sensitivity					
Discount Rate % Sensitivity	Base NPV=	\$195	-\$5.00	-\$2.50	<b>\$0.00</b>	\$2.50	\$5.00
	7%	\$292	\$351	\$410	\$469	\$527	\$527
	8%	\$221	\$272	\$323	\$374	\$425	\$425
	9%	\$164	\$208	\$253	\$297	\$341	\$341
	<b>10%</b>	\$117	\$156	<b>\$195</b>	\$233	\$272	\$272
	11%	\$79	\$114	\$148	\$181	\$215	\$215
	12%	\$48	\$78	\$108	\$138	\$168	\$168
	13%	\$22	\$49	\$76	\$102	\$128	\$128
		Coal Price USD/tonne Sensitivity					
Average Heat Content btu/lb	Base NPV=	\$195	-\$5.00	-\$2.50	<b>\$0.00</b>	\$2.50	\$5.00
	-300	\$100	\$138	\$176	\$213	\$251	\$251
	-200	\$106	\$144	\$182	\$220	\$258	\$258
	-100	\$111	\$150	\$189	\$227	\$265	\$265
	<b>0</b>	\$117	\$156	<b>\$195</b>	\$233	\$272	\$272
	100	\$123	\$163	\$201	\$240	\$279	\$279
	200	\$129	\$169	\$208	\$247	\$286	\$286
	300	\$135	\$175	\$214	\$254	\$293	\$293



**TABLE 9.4**  
**DONKIN PROJECT**  
**CASH FLOW SUMMARY**

Calendar Year Project Year	2008 -3	2009 -2	2010 -1	2011 1	2012 2	2013 3	2014 4	2015 5	2016 6
Saleable Production Tonnes	0	0	0	219,742	585,766	608,089	637,663	1,594,269	4,257,867
Average Heating Value BTU/lb				11,178	11,069	10,345	10,604	11,747	12,222
Heat Adjusted FOB Price \$US/tonne				43.65	41.92	38.99	39.67	45.58	46.61
Gross Revenue \$CDN				\$11,031,265	\$28,236,533	\$27,265,593	\$29,088,886	\$83,559,518	\$228,204,228
Port Costs \$CDN				\$988,838	\$2,635,946	\$2,736,402	\$2,869,484	\$7,174,211	\$19,160,401
Rail Operating Costs \$CDN				\$579,937	\$735,545	\$947,891	\$960,464	\$1,464,660	\$2,912,525
<b>Net Revenue \$CDN</b>				<b>\$9,462,490</b>	<b>\$24,865,042</b>	<b>\$23,581,300</b>	<b>\$25,258,938</b>	<b>\$74,920,648</b>	<b>\$206,131,302</b>
Mine Operating Costs \$CDN				\$17,772,667	\$39,438,262	\$44,578,549	\$46,739,842	\$61,204,065	\$60,004,315
<b>Operating Cash Flow \$CDN</b>				<b>-\$8,310,198</b>	<b>-\$14,573,219</b>	<b>-\$20,997,249</b>	<b>-\$21,480,905</b>	<b>\$13,716,583</b>	<b>\$146,126,987</b>
Working Capital \$CDN				\$2,962,115	\$3,610,929	\$856,714	\$360,216	\$2,410,704	\$0
Rolling Stock Capital \$CDN				\$15,620,000	\$0	\$0	\$0	\$0	\$0
Mine Capital \$CDN				\$37,304,761	\$33,942,963	\$12,152,648	\$14,536,790	\$88,851,541	\$5,889,196
<b>Net Cash Flow Before Taxes and Royalties \$CDN</b>	<b>-\$18,179,920</b>	<b>-\$41,725,200</b>	<b>-\$50,776,680</b>	<b>-\$64,197,094</b>	<b>-\$52,127,112</b>	<b>-\$34,006,612</b>	<b>-\$36,377,910</b>	<b>-\$77,545,662</b>	<b>\$140,237,791</b>
Coal Royalty \$CDN	\$0	\$0	\$0	\$258,636	\$689,446	\$715,721	\$750,529	\$1,876,455	\$5,011,509
Income and Capital Taxes \$CDN	\$43,177	\$127,298	\$193,694	\$214,896	\$165,325	\$63,396	\$0	\$1,378,881	\$22,578,476
<b>Total Taxes and Royalty \$CDN</b>	<b>\$43,177</b>	<b>\$127,298</b>	<b>\$193,694</b>	<b>\$473,532</b>	<b>\$854,771</b>	<b>\$779,117</b>	<b>\$750,529</b>	<b>\$3,255,336</b>	<b>\$27,569,986</b>
<b>Net Cash Flow After Taxes and Royalties \$CDN</b>	<b>-\$18,223,097</b>	<b>-\$41,852,498</b>	<b>-\$50,970,574</b>	<b>-\$64,670,626</b>	<b>-\$52,981,883</b>	<b>-\$34,785,729</b>	<b>-\$37,128,439</b>	<b>-\$80,800,998</b>	<b>\$112,647,805</b>
Cumulative Net Cash Flow	-\$18,223,097	-\$60,075,596	-\$111,046,169	-\$175,716,795	-\$228,698,678	-\$263,484,407	-\$300,612,846	-\$381,413,845	-\$268,766,039

Discount Rate	10%
Net Present Value Before Taxes and Royalties \$CDN Jan 1, 2008	\$371,168,305
Net Present Value After Taxes and Royalties \$CDN Jan 1, 2008	\$195,045,134
IRR Before Taxes and Royalties Jan 1, 2008	20%

**TABLE 9.4 (CONT'D)  
DONKIN PROJECT  
CASH FLOW SUMMARY**

Calendar Year Project Year	2017 7	2018 8	2019 9	2020 10	2021 11	2022 12	2023 13	2024 14	2025 15
Saleable Production Tonnes	4,071,378	4,210,068	4,560,752	3,898,437	4,315,463	4,681,506	5,003,234	4,876,834	4,411,935
Average Heating Value BTU/lb	12,173	12,172	12,161	11,986	12,052	12,010	11,988	11,835	11,623
Heat Adjusted FOB Price \$US/tonne	47.01	47.16	47.51	49.16	50.44	51.61	52.54	52.33	53.66
Gross Revenue \$CDN	\$220,113,800	\$228,330,801	\$249,180,738	\$220,411,434	\$250,300,998	\$277,862,917	\$302,312,770	\$293,471,703	\$272,271,882
Port Costs \$CDN	\$18,321,200	\$18,945,306	\$20,523,385	\$17,542,969	\$19,419,685	\$21,066,777	\$22,514,552	\$21,945,754	\$19,853,706
Rail Operating Costs \$CDN	\$2,833,243	\$2,892,204	\$3,041,290	\$2,759,720	\$2,937,011	\$3,385,167	\$3,521,943	\$3,468,207	\$3,270,564
<b>Net Revenue \$CDN</b>	<b>\$198,959,358</b>	<b>\$206,493,291</b>	<b>\$225,616,063</b>	<b>\$200,108,745</b>	<b>\$227,944,402</b>	<b>\$253,410,973</b>	<b>\$276,276,274</b>	<b>\$266,057,742</b>	<b>\$249,147,612</b>
Mine Operating Costs \$CDN	\$59,887,976	\$60,185,236	\$58,009,660	\$62,695,946	\$64,806,587	\$65,478,927	\$68,643,525	\$65,057,863	\$68,156,994
<b>Operating Cash Flow \$CDN</b>	<b>\$139,071,382</b>	<b>\$146,308,055</b>	<b>\$167,606,403</b>	<b>\$137,412,800</b>	<b>\$163,137,815</b>	<b>\$187,932,046</b>	<b>\$207,632,749</b>	<b>\$202,999,879</b>	<b>\$180,990,618</b>
Working Capital \$CDN	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rolling Stock Capital \$CDN	\$3,851,663	\$8,872,889	\$6,194,808	\$11,053,256	\$9,475,483	\$11,702,389	\$28,470,848	\$11,682,513	\$6,622,214
<b>Net Cash Flow Before Taxes and Royalties \$CDN</b>	<b>\$135,219,699</b>	<b>\$137,435,166</b>	<b>\$161,411,595</b>	<b>\$126,359,543</b>	<b>\$153,662,333</b>	<b>\$176,229,657</b>	<b>\$179,161,901</b>	<b>\$191,317,366</b>	<b>\$174,368,403</b>
Coal Royalty \$CDN	\$4,792,012	\$4,955,250	\$5,368,005	\$4,588,461	\$5,079,300	\$5,510,133	\$5,888,806	\$5,740,034	\$5,192,847
Income and Capital Taxes \$CDN	\$9,100,567	\$0	\$12,418,177	\$43,521,636	\$51,917,815	\$60,062,985	\$65,714,758	\$63,407,856	\$56,375,747
<b>Total Taxes and Royalty \$CDN</b>	<b>\$13,892,578</b>	<b>\$4,955,250</b>	<b>\$17,786,183</b>	<b>\$48,110,097</b>	<b>\$56,997,116</b>	<b>\$65,573,118</b>	<b>\$71,603,565</b>	<b>\$69,147,890</b>	<b>\$61,568,594</b>
<b>Net Cash Flow After Taxes and Royalties \$CDN</b>	<b>\$121,327,121</b>	<b>\$132,479,916</b>	<b>\$143,625,412</b>	<b>\$78,249,446</b>	<b>\$96,665,217</b>	<b>\$110,656,539</b>	<b>\$107,558,336</b>	<b>\$122,169,476</b>	<b>\$112,799,809</b>
Cumulative Net Cash Flow	-\$147,438,919	-\$14,959,003	\$128,666,410	\$206,915,855	\$303,581,072	\$414,237,611	\$521,795,947	\$643,965,423	\$756,765,232

**TABLE 9.4 (CONT'D)  
DONKIN PROJECT  
CASH FLOW SUMMARY**

Calendar Year Project Year	2027 17	2028 18	2029 19	2030 20	2031 21	2032 22	2033 23	2034 24	2035 25	2036 26
<b>Saleable Production Tonnes</b>	4,612,270	3,347,802	3,284,763	3,145,801	3,157,044	3,304,054	3,320,064	3,753,468	3,992,323	3,321,229
Average Heating Value BTU/lb	11,398	10,758	10,930	10,611	10,757	10,733	10,690	10,723	10,825	10,977
Heat Adjusted FOB Price \$US/tonne	52.78	49.82	50.62	49.14	49.81	49.70	49.50	49.66	50.13	50.84
Gross Revenue \$CDN	\$279,966,983	\$191,796,836	\$191,201,408	\$177,760,149	\$180,857,763	\$188,845,764	\$183,887,428	\$214,344,089	\$230,149,159	\$194,160,011
Port Costs \$CDN	\$20,755,216	\$16,675,442	\$15,678,723	\$15,614,214	\$14,656,720	\$14,868,244	\$14,535,290	\$16,890,607	\$17,965,452	\$14,945,529
Rail Operating Costs \$CDN	\$3,355,733	\$2,677,762	\$2,583,599	\$2,577,504	\$2,487,047	\$2,507,030	\$2,475,575	\$2,698,090	\$2,799,634	\$2,514,332
<b>Net Revenue \$CDN</b>	<b>\$255,856,035</b>	<b>\$172,443,632</b>	<b>\$172,939,086</b>	<b>\$159,568,430</b>	<b>\$163,713,996</b>	<b>\$171,470,490</b>	<b>\$166,876,563</b>	<b>\$194,755,393</b>	<b>\$209,384,073</b>	<b>\$176,700,150</b>
Mine Operating Costs \$CDN	\$66,613,840	\$58,636,663	\$61,895,769	\$62,473,823	\$63,384,442	\$59,489,080	\$64,065,641	\$63,935,666	\$57,274,155	\$57,108,731
<b>Operating Cash Flow \$CDN</b>	<b>\$189,242,195</b>	<b>\$113,806,969</b>	<b>\$111,043,318</b>	<b>\$97,094,607</b>	<b>\$100,329,554</b>	<b>\$111,981,410</b>	<b>\$102,810,922</b>	<b>\$130,819,727</b>	<b>\$162,109,918</b>	<b>\$119,591,419</b>
Working Capital \$CDN	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rolling Stock Capital \$CDN	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mine Capital \$CDN	\$8,637,017	\$56,910,350	\$2,505,090	\$8,982,823	\$15,869,867	\$9,626,874	\$7,685,975	\$2,508,706	\$12,208,747	\$2,418,189
<b>Net Cash Flow Before Taxes and Royalties \$CDN</b>	<b>\$180,605,177</b>	<b>\$56,896,619</b>	<b>\$108,538,228</b>	<b>\$88,111,784</b>	<b>\$84,459,687</b>	<b>\$102,354,536</b>	<b>\$95,124,947</b>	<b>\$128,311,020</b>	<b>\$139,901,171</b>	<b>\$117,173,230</b>
Coal Royalty \$CDN	\$5,428,642	\$4,361,554	\$4,100,857	\$4,083,984	\$3,833,547	\$3,888,872	\$3,801,786	\$4,417,832	\$4,698,964	\$3,909,086
Income and Capital Taxes \$CDN	\$59,251,558	\$31,808,849	\$29,870,494	\$26,324,757	\$27,896,420	\$32,146,352	\$29,552,355	\$39,714,660	\$47,301,594	\$36,613,229
<b>Total Taxes and Royalty \$CDN</b>	<b>\$64,680,199</b>	<b>\$36,170,404</b>	<b>\$33,971,351</b>	<b>\$30,408,742</b>	<b>\$31,729,966</b>	<b>\$36,035,223</b>	<b>\$33,354,141</b>	<b>\$44,132,492</b>	<b>\$52,000,558</b>	<b>\$40,522,315</b>
<b>Net Cash Flow After Taxes and Royalties \$CDN</b>	<b>\$115,924,978</b>	<b>\$20,726,215</b>	<b>\$74,566,877</b>	<b>\$57,703,042</b>	<b>\$52,729,721</b>	<b>\$66,319,312</b>	<b>\$61,770,806</b>	<b>\$84,178,528</b>	<b>\$87,900,613</b>	<b>\$76,650,914</b>
Cumulative Net Cash Flow	\$978,945,135	\$999,671,350	\$1,074,238,227	\$1,131,941,270	\$1,184,670,990	\$1,250,990,303	\$1,312,761,109	\$1,396,939,637	\$1,484,840,250	\$1,561,491,164

**TABLE 9.4 (CONT'D)  
DONKIN PROJECT  
CASH FLOW SUMMARY**

Calendar Year Project Year	2037 27	2038 28	2039 29	2040 30	2041 31	2042 32	2043 33	Total
Saleable Production Tonnes	3,592,811	3,363,992	2,900,729	2,695,571	2,821,120	2,649,840	1,667,079	107,220,583
Average Heating Value BT/lb	11,125	11,088	11,224	11,202	11,203	11,369	10,769	11,438
Heat Adjusted FOB Price \$/tonne	51.52	51.35	51.98	51.88	51.88	52.65	49.87	\$50.29
Gross Revenue \$CDN	\$212,855,908	\$198,635,804	\$173,389,601	\$160,814,231	\$168,307,779	\$160,432,661	\$95,606,425	\$6,200,858,957
Port Costs \$CDN	\$16,167,648	\$15,137,964	\$13,053,279	\$12,130,071	\$13,686,012	\$12,344,105	\$8,708,482	\$489,525,800
Rail Operating Costs \$CDN	\$2,629,790	\$2,532,512	\$2,335,565	\$2,248,346	\$2,395,341	\$2,268,566	\$1,730,070	\$81,812,600
<b>Net Revenue \$CDN</b>	<b>\$194,058,470</b>	<b>\$180,965,329</b>	<b>\$158,000,757</b>	<b>\$146,435,815</b>	<b>\$152,226,427</b>	<b>\$145,819,990</b>	<b>\$85,167,874</b>	<b>\$5,629,520,557</b>
Mine Operating Costs \$CDN	\$57,427,198	\$56,457,066	\$44,696,048	\$36,851,028	\$33,558,323	\$35,195,810	\$31,959,306	\$1,821,753,815
<b>Operating Cash Flow \$CDN</b>	<b>\$136,631,272</b>	<b>\$124,508,263</b>	<b>\$113,304,709</b>	<b>\$109,584,787</b>	<b>\$118,668,104</b>	<b>\$110,624,180</b>	<b>\$53,208,568</b>	<b>\$3,807,766,742</b>
Working Capital \$CDN	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rolling Stock Capital \$CDN	\$2,544,672	\$17,075,488	\$3,251,966	\$2,231,426	\$1,575,151	\$903,171	\$166,092	\$571,931,291
<b>Net Cash Flow Before Taxes and Royalties \$CDN</b>	<b>\$134,086,600</b>	<b>\$107,432,774</b>	<b>\$110,052,743</b>	<b>\$107,353,360</b>	<b>\$117,092,953</b>	<b>\$109,721,009</b>	<b>\$63,243,154</b>	<b>\$3,220,215,451</b>
Coal Royalty \$CDN	\$4,228,738	\$3,959,419	\$3,414,158	\$3,172,687	\$3,579,652	\$3,228,669	\$2,277,752	\$128,038,193
Income and Capital Taxes \$CDN	\$42,991,969	\$38,728,053	\$34,889,645	\$34,208,757	\$37,663,794	\$35,413,282	\$16,296,393	\$1,045,756,468
<b>Total Taxes and Royalty \$CDN</b>	<b>\$47,220,707</b>	<b>\$42,687,472</b>	<b>\$38,303,803</b>	<b>\$37,381,444</b>	<b>\$41,243,446</b>	<b>\$38,641,951</b>	<b>\$18,574,145</b>	<b>\$1,173,794,661</b>
<b>Net Cash Flow After Taxes and Royalties \$CDN</b>	<b>\$86,865,892</b>	<b>\$64,745,303</b>	<b>\$71,748,940</b>	<b>\$69,971,916</b>	<b>\$75,849,507</b>	<b>\$71,079,058</b>	<b>\$44,669,009</b>	<b>\$2,046,420,790</b>
Cumulative Net Cash Flow	\$1,648,357,057	\$1,713,102,360	\$1,784,851,300	\$1,854,823,216	\$1,930,672,723	\$2,001,751,781	\$2,046,420,790	

## 10 INTERPRETATION AND CONCLUSIONS

The Preliminary Assessment prepared by Norwest for the Donkin Coal Project addresses two main areas of work. The first is concerned with the confirmation of the tonnage and classification of coal resources presented in the MBGS Technical Report. The second is the subsequent use of that resource estimation and other historic geologic data to prepare a conceptual mine design and economic analysis that is complementary to it. We have assumed that information concerning the saleability of the product quality, as provided to us by Xstrata, is correct.

Norwest has satisfied itself that the MBGS resource estimates are fair and consistent with the classification requirements that apply today for coal deposits. However, the conceptual mine design necessarily addresses coal tonnage that is reported in the Inferred category as well as material classified as Indicated. This is one of the key reasons why the Norwest report can only be considered as a Preliminary Assessment in accordance with the requirements of NI 43-101.

As is provided for in the Instrument, this information has been used to develop a conceptual mine layout and a mining plan using the longwall method of extraction with development by continuous miners. This mining plan uses proven methods and production levels. These have then been used to develop capital and operating costs. A review of coal markets and a financial analysis is also included in the report.

Although the exploration data that is available for this project is widely spaced by today's standards, there is a long history of successful coal mining in this area in the past. Regardless of any other circumstances, those mining activities were not unduly affected by variations in the nature of the geology and we believe that that will likely be the case for this project as well. Further exploration of the area, which will no doubt have to be innovative and unusual for a coal deposit, will certainly help a great deal to remove geological uncertainty. Such activities might include geophysical surveying and long-hole in-mine drilling in advance of mining as opposed to offshore marine drilling.

## 11 RECOMMENDATIONS

As development activities continue on the Donkin project, Norwest recommends that the following be completed:

- Perform further drilling, horizontally from slope bottom, along the projected mains to determine if the east-west fault impacts the development of the mains to the north.
- Determine methane liberation rates from the Harbour seam and any seams within 100 m above for ventilation system and methane drainage system design requirements.
- Evaluate transportation method in the steepest section of the slopes and mine to determine the best method to move loaded vehicles.
- Evaluate surge capacities, such as a bunker, to maximize slope belt efficiency.
- Evaluate the ventilation capacity of the two slopes. The potential air velocity in the slopes may require isolating the belt system to prevent coal being blown from the belt. Additional evaluation should be undertaken to determine the need for an additional airway access.
- Perform more detailed modeling of the Harbour seam coal to determine the effects of mining horizon control in the thicker seam sections to reduce the sulphur values and mining height control in the thinner seam sections to reduce ash values.
- Determine the economic benefits of utilizing online ash analysis or coal beneficiation to reduce the ash in the saleable coal product.
- Evaluate the coal south of the 250 m depth to determine the viability as CM room and pillar recovery.
- Evaluate use of the Sydney International Pier compared to construction of a port at Donkin.
- Examine the project timing for the potential to reduce the mine construction timeframe and to accelerate the start of longwall mining.
- Determine the availability and cost of the required workforce.
- Determine the actual port charges associated with the loading of coal into vessels.
- Evaluate the capacity of the surface coal handling facilities in conjunction with the mine production levels to determine the most economic blend of equipment selections.
- Evaluate the coal stockpiling requirements in terms of tonnage capacity, alternative equipment such as grade linear or radial stackers and potential stockpile sizes at the port.
- Evaluate quality options concerning ash and sulphur with regard to determining mining strategies.

## 12 REFERENCES

Technical Report, Donkin Coal Project – Prepared for Xstrata Coal Donkin Management Limited and Erdene Gold Inc., dated April 2007. McElroy Bryan Geological Services.

Pre-Feasibility Scoping Study – Draft dated May 2007. Xstrata Coal Donkin Management Limited.

Independent third party marketing presentation - Xstrata – Delivered Price Analysis – Donkin Mine, prepared by Wood Mackenzie Limited.

**13 AUTHENTICATION**

**CERTIFICATE OF QUALIFICATIONS**

I, Geoffrey R. Jordan, *P.Geol.*, *P.Geo.*, do hereby certify that:

1. I am currently employed as Senior Vice President by:

*Norwest Corporation  
Suite 2700, 411 – 1st Street SE.,  
Calgary, Alberta, Canada  
T2G 4Y5*

2. I graduated with a Bachelor of Science degree from the University of *New South Wales* in 1971.
3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta, (Member #22095) and the Association of Professional Engineers and Geoscientists of BC, (Member #30827).
4. I have worked as a geologist for thirty-five years since my graduation from university.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional associations (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I am responsible for the preparation of Sections 1 to 5 and Section 10 of the report titled “Preliminary Assessment Donkin Coal Project Nova Scotia” dated November 21, 2007. I have also reviewed the entire report on behalf of Norwest Corporation.
7. I am not aware of any material fact or material change with respect to the subject matter of the Preliminary Assessment report that is not reflected in the Preliminary Assessment report, the omission to disclose which makes the Preliminary Assessment report misleading.
8. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
9. I have read National Instrument 43-101, and the Preliminary Assessment report has been prepared in compliance with that instrument.

Dated this 21<sup>st</sup> Day of November, 2007.

**“ORIGINAL SIGNED AND SEALED BY AUTHOR”**

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Geoff Jordan, P. Geol., P.Geo.  
Senior Vice President

**CERTIFICATE OF QUALIFICATIONS**

I, Kirk A. Nobis, *P.E.*, do hereby certify that:

1. I am currently employed as Senior Project Manager by:

*Norwest Corporation  
136 East South Temple, 12<sup>th</sup> Floor.,  
Salt Lake City, Utah, USA 84111*

2. I graduated with a Bachelor of Science degree, Mining Engineering, from the Colorado School of Mines, in 1975.
3. I am a Registered Professional Engineer in the State of Colorado, (License #19212).
4. I have worked as an engineer for thirty-two years since my graduation from university.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I contributed to the Executive Summary and Section 11, and am responsible for the preparation of the mine design and operations portion of Section 7 and the underground mine capital, operating and transportation cost portion of Section 8 of the report titled “Preliminary Assessment Donkin Coal Project Nova Scotia” dated November 21, 2007.
7. I am not aware of any material fact or material change with respect to the subject matter of the Preliminary Assessment report that is not reflected in the Preliminary Assessment report, the omission to disclose which makes the Preliminary Assessment report misleading.
8. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
9. I have read National Instrument 43-101, and the Preliminary Assessment report has been prepared in compliance with that instrument.

Dated this 21<sup>st</sup> Day of November, 2007.

**“ORIGINAL SIGNED AND SEALED BY AUTHOR”**

---

Kirk A. Nobis, *P.E.*  
Senior Project Manager

**CERTIFICATE OF QUALIFICATIONS**

I, Craig J. Hawe, P.E., do hereby certify that:

1. I am currently employed as Project Engineer by:

*Norwest Corporation  
136 East South Temple, 12<sup>th</sup> Floor.,  
Salt Lake City, Utah, USA 84111*

2. I graduated with a Bachelor of Science degree, Civil Engineering, from the University of *Utah* in 1982.
3. I am a Registered Professional Engineer in the State of Utah, (License #175858-2202) and am also registered in the States of Nevada (No. 017530), Washington (No. 31135) and Wyoming (NO. 6895).
4. I have worked as an engineer for twenty-five years since my graduation from university.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional associations (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I contributed to the Executive Summary and Section 11 and am responsible for the preparation of the material handling and surface facilities sections of the report titled "Preliminary Assessment Donkin Coal Project Nova Scotia" dated November 21, 2007.
7. I personally visited the site in September, 2007.
8. I am not aware of any material fact or material change with respect to the subject matter of the Preliminary Assessment report that is not reflected in the Preliminary Assessment report, the omission to disclose which makes the Preliminary Assessment report misleading.
9. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101, and the Preliminary Assessment report has been prepared in compliance with that instrument.

Dated this 21<sup>st</sup> Day of November, 2007.

**"ORIGINAL SIGNED AND SEALED BY AUTHOR"**

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Craig J. Hawe, P.E.  
Project Engineer

**CERTIFICATE OF QUALIFICATIONS**

I, Ted Hannah, P.Geol., P.Geo., do hereby certify that:

1. I am currently employed as Manager, Coal Geology by:

*Norwest Corporation  
Suite 2700, 411 – 1st Street SE.,  
Calgary, Alberta, Canada  
T2G 4Y5*

2. I graduated with a Bachelor of Science degree from the University of New Brunswick in 1973.
3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta, (Member #22009) and the Association of Professional Engineers and Geoscientists of BC, (Member #27030).
4. I have worked as a geologist for thirty-four years since my graduation from university.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional associations (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I contributed to the Executive Summary and Section 11 and am responsible for the preparation of Section 6 of the report titled “Preliminary Assessment Donkin Coal Project Nova Scotia” dated November 21, 2007.
7. I am not aware of any material fact or material change with respect to the subject matter of the Preliminary Assessment report that is not reflected in the Preliminary Assessment report, the omission to disclose which makes the Preliminary Assessment report misleading.
8. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
9. I have read National Instrument 43-101, and the Preliminary Assessment report has been prepared in compliance with that instrument.

Dated this 21<sup>st</sup> Day of November, 2007.

**“ORIGINAL SIGNED AND SEALED BY AUTHOR”**

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Ted Hannah, P. Geol., P.Geo.  
Manager, Coal Geology

**CERTIFICATE OF QUALIFICATIONS**

I, Ken Shinya, *P. Eng.*, do hereby certify that:

1. I am a Senior Associate with:

*Norwest Corporation  
Suite 2700, 411 – 1st Street SE.,  
Calgary, Alberta, Canada  
T2G 4Y5*

2. I graduated with a Bachelor of Engineering (mining) and an M>B.A. in Finance and Management Science, both from McGill university of Montreal, Quebec, in 1973.
3. I am a member of the Professional Engineers Ontario (Member #42141010).
4. I have been employed in various capacities in the mining industry since 1973 and have held senior management and executive positions in the Canadian coal industry.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional associations (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I contributed to the Executive Summary and am responsible for the preparation of Section 9 of the report titled “Preliminary Assessment Donkin Coal Project Nova Scotia” dated November 21, 2007.
7. I am not aware of any material fact or material change with respect to the subject matter of the Preliminary Assessment report that is not reflected in the Preliminary Assessment report, the omission to disclose which makes the Preliminary Assessment report misleading.
8. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
9. I have read National Instrument 43-101, and the Preliminary Assessment report has been prepared in compliance with that instrument.

Dated this 21<sup>st</sup> Day of November, 2007.

**“ORIGINAL SIGNED AND SEALED BY AUTHOR”**

---

Ken Shinya, *P. Eng.*  
Senior Associate