



**NAME OF APPLICANT: INSA COAL HOLDINGS – DUNBAR COAL PROJECT**

**REFERENCE NUMBER: P0366/RPRT/02**

**MINING WORK PROGRAMME -  
SUBMITTED FOR A MINING RIGHT APPLICATION**

**PROJECT NAME: DUNBAR COAL PROJECT**

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**DOCUMENT CONTROL**

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**Authors** : **Helmut Niebuhr**

**Reviewer** : **John le Roux**

**Copies Issued to** : **INSA Coal Holdings (Pty) LTD**

**Document Revisions**

Version	Summary of Amendments	Authors	Reviewers	Date
0	First Issue	Helmut Niebuhr	John le Roux	2019/05/06
01	Update Mine Model / Financial	Helmut Niebuhr		2019/09/16

**The original document is signed and stored in the offices of Nurizon Consulting Engineers (Pty) Ltd.,  
Route 21 Corporate Park, 36 Regency Drive, Irene X 72, South Africa**

## EXECUTIVE SUMMARY

This Mine Works Programme (desktop level) is prepared INSA Coal Holdings; and is specific to the Dunbar reserve, an intended opencast Coal Mine. The project area is located in the Bethal Magisterial District in the Mpumalanga Province of the Republic of South Africa, about 40 km southeast of the city of Emalahleni (previously Witbank) and 30 km north of the town of Bethal.

**DRAFT**

**SUBMITTED FOR A MINING RIGHT APPLICATION**

**AS REQUIRED IN TERMS OF SECTION 23 (a), (b) AND (c) READ TOGETHER WITH REGULATION 11(1) (g) OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (ACT 28 of 2002)**

### **STANDARD DIRECTIVE**

**All applicants for mining rights are herewith, in terms of the provisions of Section 23 (a), (b) and (c) and in terms of Regulation 11 (1) (g) of the Mineral and Petroleum Resources Development Act, directed to submit a Mining Work Programme, strictly under the following headings and in the following format together with the application for a mining right.**

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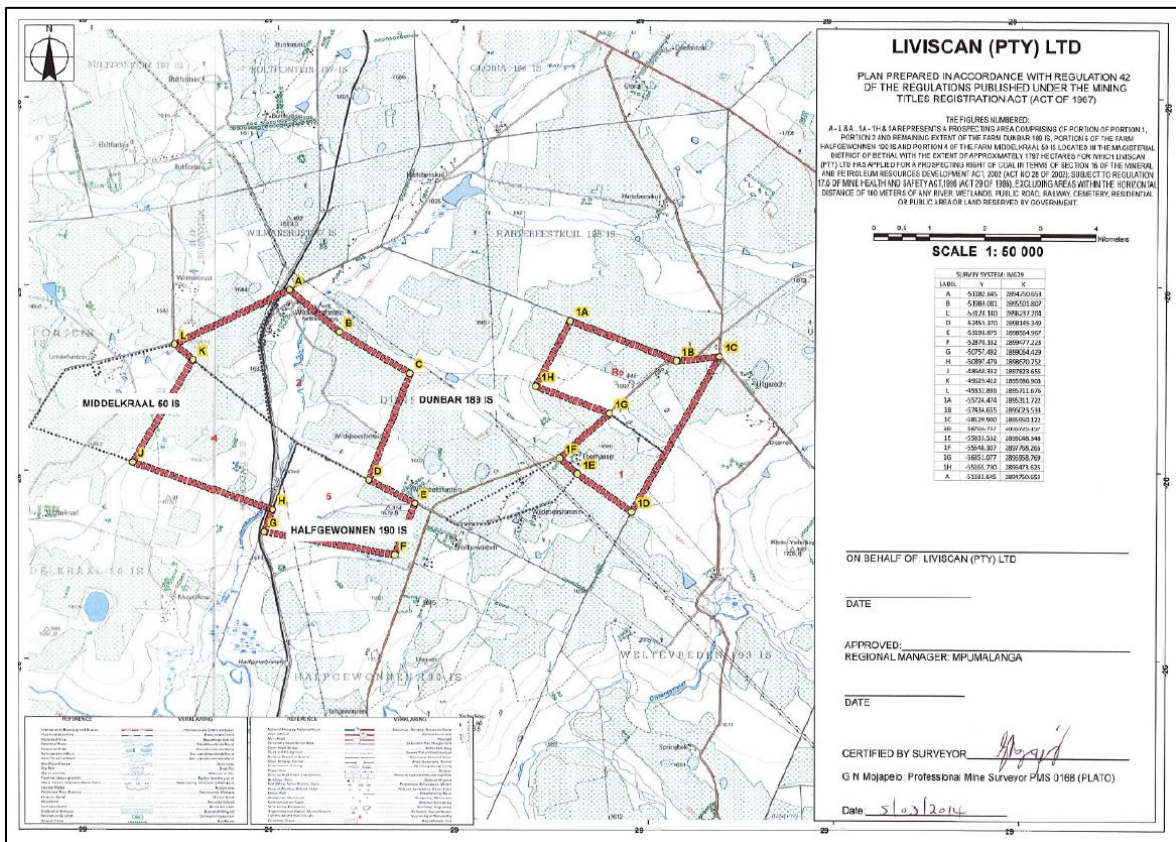
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1. REGULATION 11.1.(A): FULL PARTICULARS OF THE APPLICANT

ITEM	COMPANY CONTACT DETAILS
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Tel no	012 771 44 11
Fax no	086 604 5100
Cellular no	083 314 0309
E-mail address	<a href="mailto:bjorn@insacaol.co.za">bjorn@insacaol.co.za</a>
Postal address	P.O. Box 68727 Highveld 0169 South Africa

ITEM	CONSULTANT CONTACT DETAILS (if applicable)
Name	Nurizon Consulting (Pty) Ltd
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Fax no	087 941 1755
Cellular no	076 568 2024
E-mail address	info@nurizon.co.za
Postal address	Postnet Suit 282, Private Bag X8, Elarduspark, 0047.

**2. REGULATION 11(1)(B) PLAN SHOWING THE LAND AND MINING AREA TO WHICH THE APPLICATION RELATES (THE PLAN REQUIRED IN TERMS OF REGULATION 2(2))**



**Figure 2-1 – Prospecting Rights Area. (Outlined in Red.)**

### 3. REGULATION 11(1)(C): THE REGISTERED DESCRIPTION OF THE LAND TO WHICH THE APPLICATION RELATES

The Dunbar West project is situated in the Bethal Magisterial District in the Mpumalanga Province of the Republic of South Africa, about 40 km southeast of the city of Emalahleni (previously Witbank) and 30 km north of the town of Bethal (Figure 1.4\_1). The PR area is easily accessible for exploration and the local infrastructure links the project area with the inland markets of South Africa and the Richards Bay Coal Terminal.

The undulating nature of the surface topography provides for well-defined hills and valleys with the Leeufontein Spruit, a tributary of the Olifants River, bisecting the Dunbar West area.

The Richards Bay railway is running through the area while a newly tarred road is located on the eastern boundary.

Infrastructure on the farms includes informal houses and outside buildings with a few small dams. Houses do get their power from existing ESKOM power lines. Farming activities include dry land and irrigated maize cultivation, sheep and cattle farming. Open grasslands are used for cattle grazing.

## 4. REGULATION 11(1)(D): THE DETAILS OF THE IDENTIFIED MINERAL DEPOSIT

### 4.1 RESOURCE PARTICULARS

ITEM	DETAIL																																												
<b>Type of mineral</b>	Coal (C)																																												
<b>Locality</b> (Direction and distance from nearest town)	The Dunbar West project is situated in the Bethal Magisterial District in the Mpumalanga Province of the Republic of South Africa, about 40 km southeast of the city of Emalahleni (previously Witbank) and 30 km north of the town of Bethal.																																												
<b>Extent of the area required for mining</b>	± 200 Ha of Mining area ± 1840 Ha Mining Right Application																																												
<b>Extent of the area required for infrastructure, roads, servitudes etc</b>	<p>± 50 Ha</p> <table border="1"> <thead> <tr> <th>#</th> <th>Infrastructure</th> <th>Square Meters</th> <th>Hectares</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Offices Area</td> <td>10 380</td> <td>1.038</td> </tr> <tr> <td>2</td> <td>Workshop Area</td> <td>7 765</td> <td>0.776</td> </tr> <tr> <td>3</td> <td>ROM Stockpile Area</td> <td>29 785</td> <td>2.978</td> </tr> <tr> <td>4</td> <td>Processing Plant Area</td> <td>23 051</td> <td>2.305</td> </tr> <tr> <td>5</td> <td>Unwashed Product Stockpile</td> <td>29 784</td> <td>2.9784</td> </tr> <tr> <td>6</td> <td>Topsoil Stockpile</td> <td>113 973</td> <td>11.397</td> </tr> <tr> <td>7</td> <td>Soft OVB Stockpile</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td>Hard OVB Stockpile</td> <td>83 833</td> <td>8.3833</td> </tr> <tr> <td>9</td> <td>PCD Dam</td> <td>5491</td> <td>0.549</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Total Area</b></td> <td><b>304 062</b></td> <td><b>30.406</b></td> </tr> </tbody> </table>	#	Infrastructure	Square Meters	Hectares	1	Offices Area	10 380	1.038	2	Workshop Area	7 765	0.776	3	ROM Stockpile Area	29 785	2.978	4	Processing Plant Area	23 051	2.305	5	Unwashed Product Stockpile	29 784	2.9784	6	Topsoil Stockpile	113 973	11.397	7	Soft OVB Stockpile			8	Hard OVB Stockpile	83 833	8.3833	9	PCD Dam	5491	0.549	<b>Total Area</b>		<b>304 062</b>	<b>30.406</b>
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9	PCD Dam	5491	0.549																																										
<b>Total Area</b>		<b>304 062</b>	<b>30.406</b>																																										
<b>Depth of the mineral below surface</b>																																													
<b>Geological formation</b>	See Coal seam stratigraphy.																																												

4.2 DETAIL OF PERSON WHO COMPILED THE RESOURCE STATEMENT

ITEM	DETAIL
<b>Name</b>	Petrus C. Meyer
<b>Qualification/s</b>	B.Sc. Hons. (Geology) and M.Sc. (Earth Science Practice and Management)
<b>Profession</b>	Geology – Competent Person
<b>Experience</b>	25 Years
<b>Professional Body</b> (If registered)	SACNASP registered Professional Natural Scientist.
<b>Registration number</b> (if applicable):	400025/03

DRAFT

4.3 LOCALITY SPECIFIC GEOLOGICAL MAP (IN COLOUR)

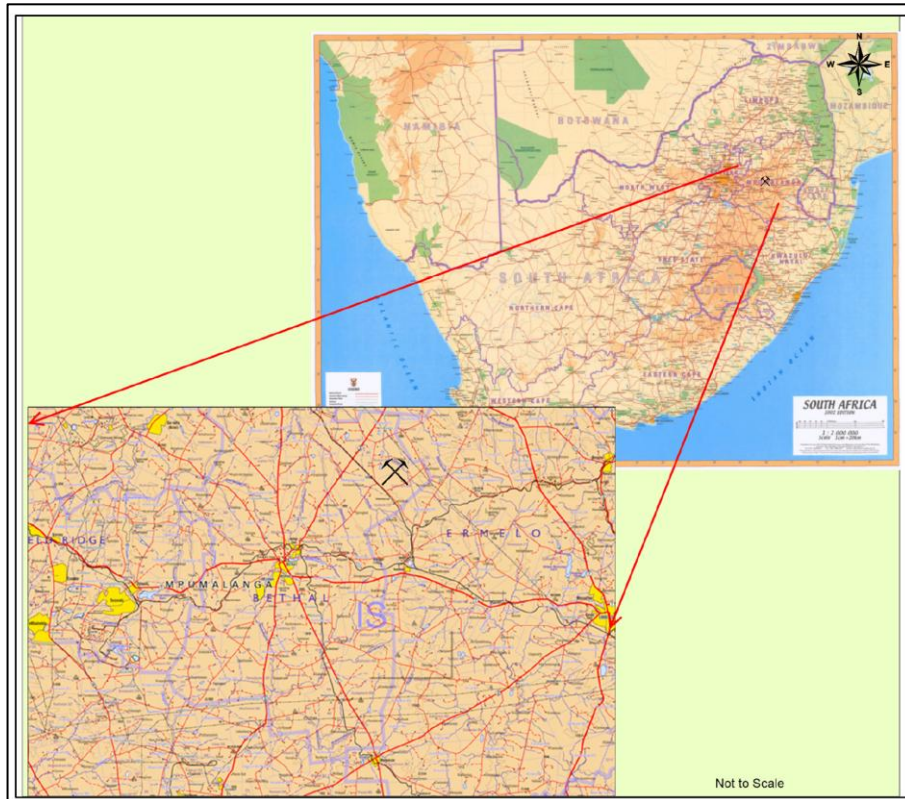


Figure 4-1 – Location.

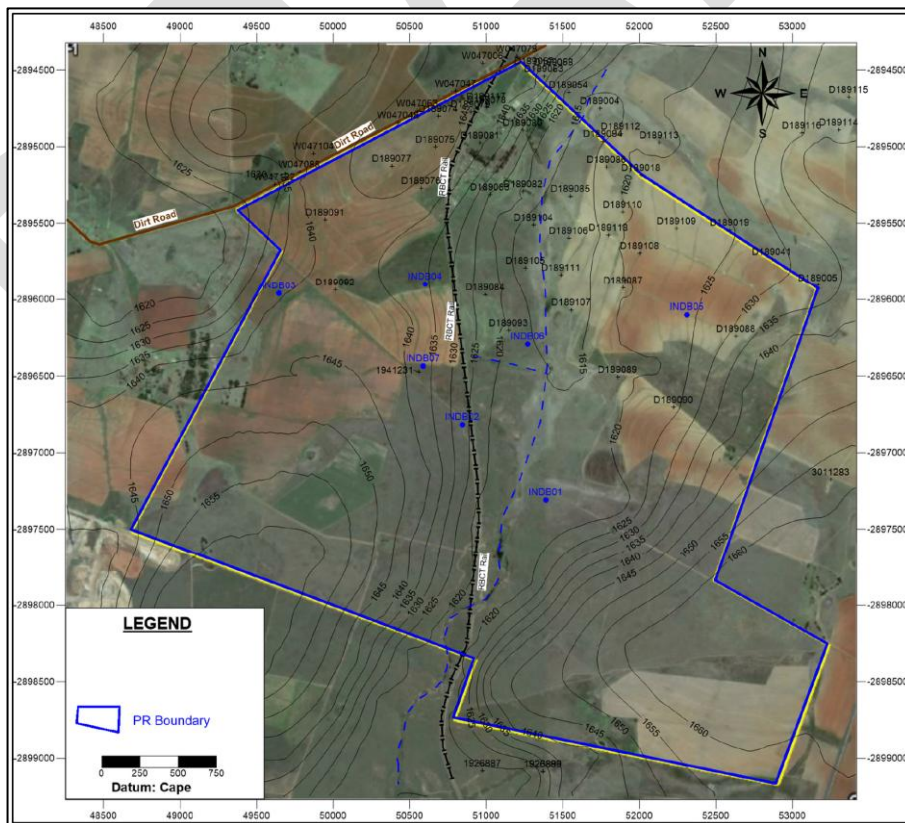


Figure 4-2 – Surface Contours and DTM.

4.4 EXPLORATION RESULTS (SUPPORTING GEOLOGICAL REPORTS TO BE LISTED AND APPENDED)

	<p><b>PC MEYER CONSULTING</b> Reg. No: 2007/201051/23</p> <p>Geology Consulting Services</p>	<p>Contact: Peet Meyer Tel: +2782 8916485 Email: <a href="mailto:peet@coal-consulting.com">peet@coal-consulting.com</a> Web: <a href="http://www.coal-consulting.com">www.coal-consulting.com</a> Facebook: PC Meyer Consulting</p>
	<p>PO Box 41157, Reyno Ridge, 1049</p>	<p>Date: 03 May 2019</p>

**Company Name:** INSA Coal Holdings (Pty) Ltd  
**Address:** 2nd Floor, Tugela House  
Riverside Office Park  
1303 Heuvel Ave  
Centurion, 0157

**DUNBAR: MINING RIGHTS AREA RESOURCE.**

For the Mining Rights Application of Dunbar Project, the resources for a specific area were estimated. This area was chosen for its potential for surface mining and distance from environmentally sensitive areas.

Historical data from Council for Geosciences still forms the bulk of the data but INSA Coal drilled 7 holes and another company, ACT Mining, drilled another 12 holes. All these holes have washability data for the main target seams, namely Seam 4 Lower and Seam 2. The databases were merged and the resource modelling done on the combined CGS, INSA and ACT databases. The coordinates are still in the Cape Datum.

Coal washed products were not determined as the target CV is unknown at his point in time. The Resource Statement only tables the raw coal qualities.

**Table 1. Resource for the Mining Rights Area.**

Seam	Block	Area (m <sup>2</sup> )	RD (g/cm <sup>3</sup> )	Thick	GTS	TTS	MIS	RCV %	RA %	RDM %	RV %	RFC %	RS %
4	1	1 204 440	1.75	4.00	8 431 100	7 166 400	7 166 400	16.67	41.58	2.93	17.51	37.98	1.30
	2	377 110	1.67	3.28	2 065 700	1 755 800	1 755 800	18.78	35.87	3.24	18.13	42.76	1.57
2		2 300 840	1.6	3.95	14 541 300	12 796 344	12 796 344	20.75	28.97	3.30	20.10	47.63	0.86
<b>Total</b>			<b>1.66</b>	<b>4.51</b>	<b>25 038 100</b>	<b>21 718 544</b>	<b>21 718 544</b>	<b>19.21</b>	<b>33.79</b>	<b>3.17</b>	<b>19.07</b>	<b>43.98</b>	<b>1.07</b>

**ABBREVIATIONS**

GTS = Gross tonnes in situ  
TTS = Total tonnes in situ  
MIS = Mineable tonnes in situ  
RD = Relative Density  
RCV = Raw Calorific Value (MJ/kg)  
RA = Raw Ash Content (%)  
RDM = Raw Inherent Moisture (%)  
RV = Raw Volatile Matter Content (%)  
RFC = Raw Fix Carbon Content (%)  
RS = Raw Sulphur Content (%)

  
PC Meyer  
Pr. Sci. Nat.

4.5 INFORMATION REQUIRED IN TERMS OF REGULATION 8 (IN CASES WHERE THE APPLICATION WAS PRECEDED BY A PROSPECTING RIGHT)

The holder of the Prospecting Right (PR No: 10737PR), issued on 22 May 2014 and expiring on 21 May 2019, is Liviscan (Pty) Ltd. This PR covers 1 797 ha of the farms a



portion of Ptn. 1, RE of Dunbar 189 IS, Ptn. 6 of Halfgewonnen 190 IS and Ptn. 4 of Middelkraal 50 IS.

The surface rights are held by private individuals and access for the exploration was arranged with them.

#### 4.6 MINERAL RESOURCE MAP

South Africa's Coal Resources are restricted to the area east of the longitude 26° E and are hosted by the Late Carboniferous to middle Jurassic sedimentary deposits of the Karoo Supergroup (320-180 Ma).

Within the main Karoo Basin, coal is hosted in the Vryheid Formation of the Ecca Group, where rank increases eastwards, as well as in the Emakwezini Formation of the Beaufort Group. In the Eastern Cape, the Molteno Formation hosts coal deposits, with rank increasing to the southeast.

South Africa is host to 19 coalfields (Figure 1.6\_1) which encompass a total area of about 9.7 million hectares. The largest of these coalfields by coal reserves are the Highveld and Witbank coalfields, followed by Ermelo and Waterberg where bituminous coal dominates. South Africa's coal seams are characteristically thin and are found at relatively shallow depths and extraction is thus easier and often more economical.

South Africa's coal deposits form part of the Permian age Karoo Supergroup which was deposited on the Gondwanaland Supercontinent. The Main Karoo basin is underlain by the Kaapvaal Craton in the north and the Namaqua-Natal Metamorphic Belt in the south. The Karoo Supergroup from the base upwards is sub-divided into the following subgroups from bottom to top as:

- Dwyka Group.
- Ecca Group.
- Beaufort Group.
  - o Molteno Formation.
  - o Elliot Formation.
  - o Clarens Formation.
- The volcanic rocks of the Stormberg Group.

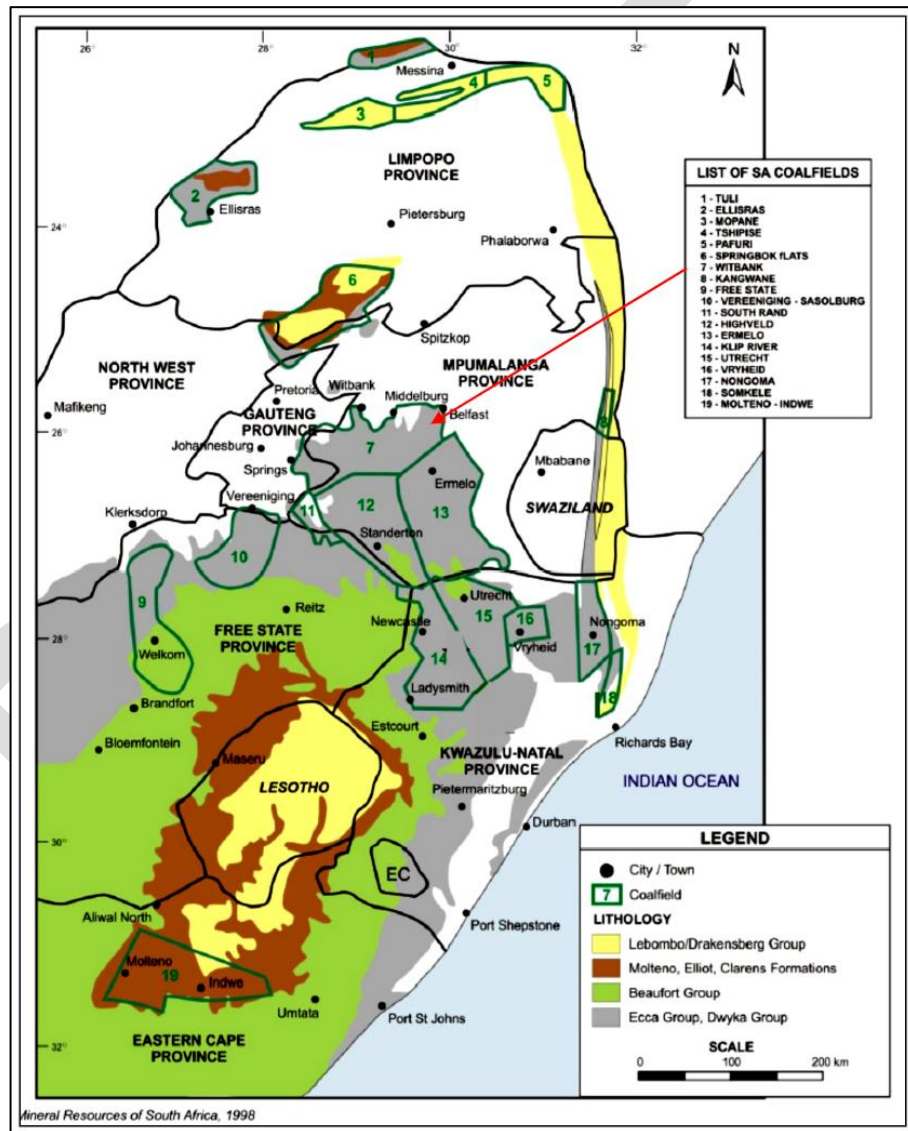
The vast majority of coal beds occur in the Ecca Group with some minor coal seams in the Beaufort Group and the Molteno Formation as well.

During coal deposition, fluvio-deltaic complexes prograded in a southerly direction across an epicontinental platform, resulting in the infilling of pre-existing glacial valleys. These glacial valleys controlled the flow of water during deposition as well as the extent and position of the swamps and resultant coal development. Present day coal beds are restricted to some of these valleys.

The 19 coalfields of South Africa are mainly concentrated in the north-eastern parts of the country in the provinces of KwaZulu-Natal, Mpumalanga, Limpopo and the Free State with lesser deposits in Gauteng and the Eastern Cape.

The Witbank / Highveld Coalfields are currently the most important coalfields in the RSA. There are normally four major coal seams developed, which are from top to bottom as follows:

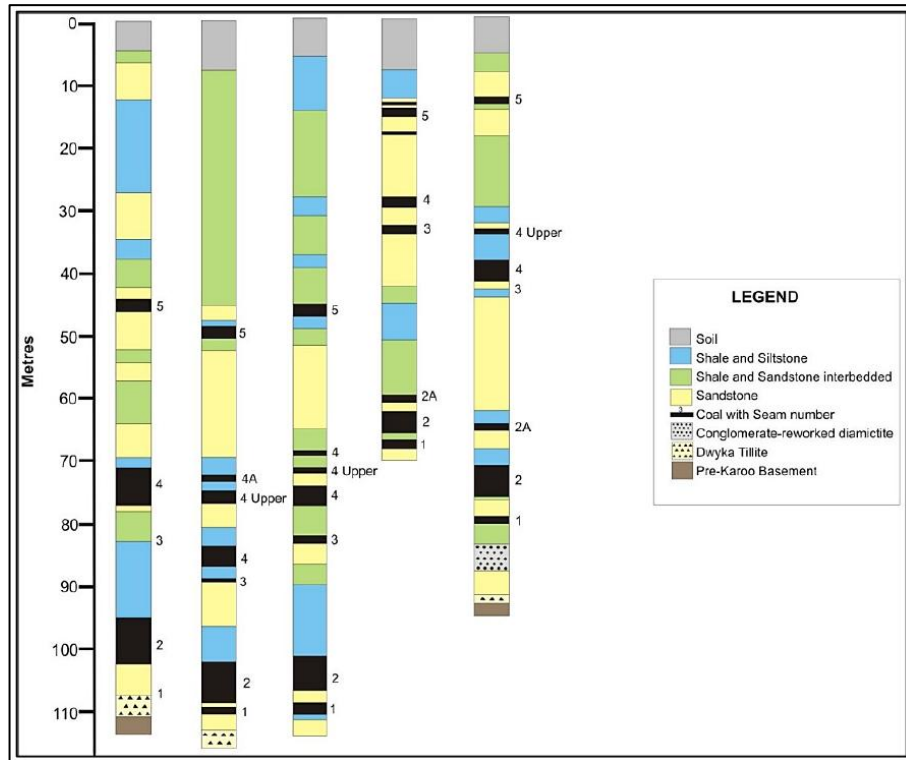
- Seam 5,
- Seam 4,
- Seam 2, and
- Seam 1.



**Figure 4-3 – The Coalfields of South Africa.**

Basement topography and the present-day erosional surface control the distribution of the coal seams and not all the seams may be present at any one locality. Seams 5 and 1 are usually thin to absent over much of the coalfield. The Seams 4 and 2 are most widely developed, and often achieve mineable thicknesses in the coalfield. Seam 4 usually splits

into the 4 Upper (“4U”) and 4 Lower (“4L”) Seams, and similar Seam 2 into a 2 Upper (“2U”) and 2 Lower (“2L”). The 5 Seam has, over large areas of the northern and central areas of the coalfield, been removed by erosion.



**Figure 4-4 – Regional Stratigraphy.**

**Local Geology.**

There is sufficient data available for Dunbar West to make an initial assessment of its potential. Both Seams 4 and 2 occur on the PR area with Seam 4 reaching a maximum thickness of 5.89 m and Seam 2 a maximum of 9.95 m. In the shallowest parts, Seam 4 starts at a depth of 2.45 m and goes as deep as 100.9 m with Seam 2 at depths from 29.80 to 122.70 m. Seam 5 is thin and not regarded as economical. The typical stratigraphy of the Dunbar West area is displayed in **Figure 2-1**.

There is a persistent dolerite sill in the western part and another in the north-east that caused large areas of the coal to be burnt or devolatilised.

Ave (m)	Profile	Lithology
0 to 27		Overburden
0.46		5 Seam
35		Interburden
< 1.0		4U Seam
2.5		Interburden
3.76		4L Seam
15		Interburden
5.72		2 Seam
		Tillite
		Felsite

**Figure 4-5 – Detailed Seam Stratigraphy.**

#### 4.7 RESOURCE STATEMENT

For the Mining Rights Application of Dunbar Project, the resources for a specific area were estimated. This area was chosen for its potential for surface mining and distance from environmentally sensitive areas.

Historical data from Council for Geosciences still forms the bulk of the data but INSA Coal drilled 7 holes and another company, ACT Mining, drilled another 12 holes. All these holes have washability data for the main target seams, namely Seam 4 Lower and Seam 2. The

databases were merged and the resource modelling done on the combined CGS, INSA and ACT databases. The coordinates are still in the Cape Datum.

Coal washed products were not determined as the target CV is unknown at his point in time. The Resource Statement only tables the raw coal qualities.

**Table 4-1 – Resource for the Mining Rights Area.**

SEAM	BLOCK	AREA (m <sup>2</sup> )	RD (g/cm <sup>3</sup> )	Thick-ness	GTIS	TTIS	MTIS	RCV %	RA%	RIM %	RV%	RFC%	RS%
4	1	1 204 440	1.75	4.00	8 431 100	7 166 400	7 166 400	16.67	41.58	2.93	17.51	37.98	1.30
	2	377 110	1.67	3.28	2 065 700	1 755 800	1 755 800	18.78	35.87	3.24	18.13	42.76	1.57
2		2 300 840	1.6	3.95	14 541 300	12 796 344	12 796 344	20.75	28.97	3.30	20.10	47.63	0.86
<b>Total</b>			<b>1.66</b>	<b>4.51</b>	<b>25 038100</b>	<b>21 718 544</b>	<b>21 718 544</b>	<b>19.21</b>	<b>33.79</b>	<b>3.17</b>	<b>19.07</b>	<b>43.98</b>	<b>1.07</b>

**ABBREVIATIONS**

GTIS = Gross tonnes in situ

TTIS = Total tonnes in situ

MTIS = Mineable tonnes in situ

RD = Relative Density

RCV = Raw Calorific Value (MJ/kg)

RA = Raw Ash Content (%)

RIM = Raw Inherent Moisture (%)

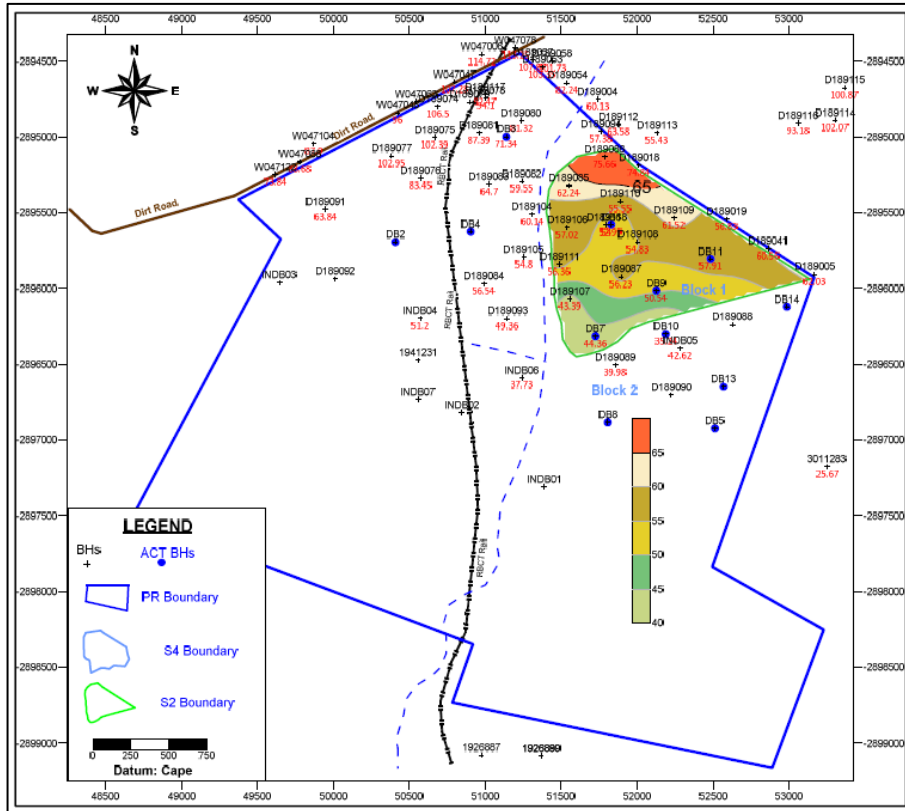
RV = Raw Volatile Matter Content (%)

RFC = Raw Fix Carbon Content (%)

RS = Raw Sulphur Content (%)







**Figure 4-10 – Seam 2 Roof Depth Contour Plan**

The 2016 borehole data in the database for Dunbar West is listed in **Table 4-2** and illustrated in **Figure 4-11**.

**Table 4-2 – 2016 Borehole Collar Data. (Cape Datum: LO 29)**

BH_ID	LoX	LoY	Elevation
INDB01	51360.00	-2897603.99	1619.02
INDB02	50814.71	-2897113.88	1628.86
INDB03	49617.29	-2896256.90	1642.50
INDB04	50572.00	-2896196.00	1638.35
INDB05	52282.11	-2896395.77	1623.66
INDB06	51241.14	-2896587.50	1616.43
INDB07	50558.66	-2896730.22	1638.48





## 5. REGULATION 11(1)(E): THE DETAILS OF THE MARKET FOR, THE MARKETS REQUIREMENTS AND PRICING IN RESPECT OF THE MINERAL CONCERNED

### 5.1 A LIST OF PRODUCTS AND THEIR PROPORTIONATE QUANTITIES

A low-quality thermal coal will be produced from the different coal seams that will be mined.

### 5.2 MARKET FOR EACH SPECIFIC PRODUCT IN TERMS OF LOCAL, REGIONAL OR INTERNATIONAL

The current coal qualities that will be produced can be utilised by local power stations around the proposed mine. These power stations currently receive its coal from various suppliers. There is currently a shortage of coal supply to the power station.

### 5.3 SUMMARY OF PRODUCT CONSUMERS

Eskom

### 5.4 SUMMARY OF CUSTOMER SPECIFICATIONS AND DETAILS OF ANY PROPOSED BENEFICIATION OF THE PRODUCTS

Eskom Coal product specifications is presented in the figure below.

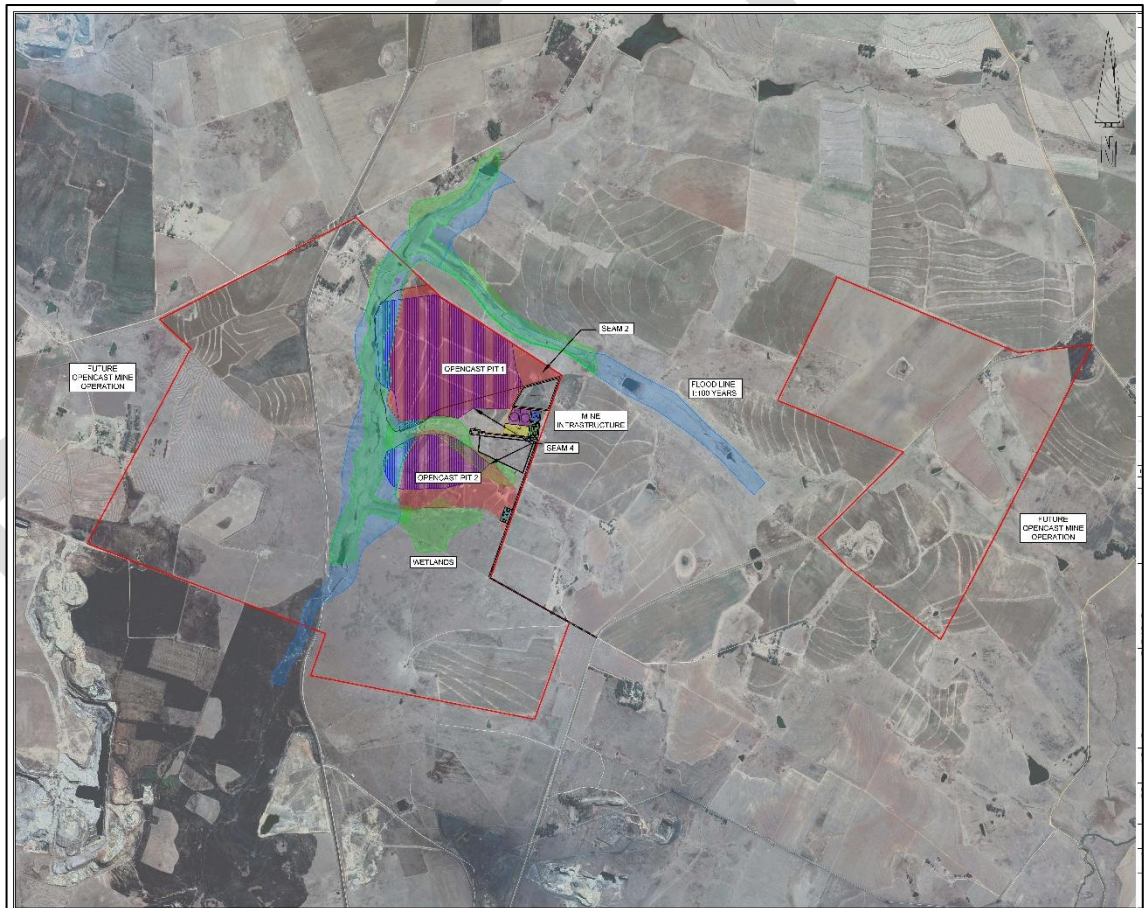
Parameter	Unit	Basis	Power Station Acceptable	Coal Quality Specification
Total Moisture	%	As Received	7.0	≤8.0
Inherent Moisture	%	As Received	3.1	N/A
Ash	%	Air Dried	34.2	≤36.0
Calorific Value	MJ/kg	Air Dried	18.8	≥18.1
Volatiles	%	Air Dried	19.4	≥18.5
Sulphur	%	Air Dried	<1.1	≤1.1
Abrasive Index (Eskom Mining House Method)	mg Fe/4kg	As Received	<450	≤450
AFT (Ash fusion temp-initial def.)	°C	As Received	>1230	≥1230
Sizing:				
+60mm	%	As Received	<0	0
+50mm	%		<5	≤5
-3mm (cumulative)	%		<25	≤25
-1mm	%		<15	≤15

**Figure 5-1 – Eskom Coal Product Specifications.**

The coal will only be crushed to a -50mm size fraction for power station use. No other additional beneficiation of the products will be required.

## 5.5 SUMMARY OF INFRASTRUCTURE REQUIREMENTS SUCH AS ROADS, RAIL, ELECTRICITY AND WATER

- Access & Haul roads (with necessary security) including the upgrading of the access point to mining area;
- Contractor's Yard with septic/chemical abluent facilities;
- Offices;
- Weighbridge, workshop and stores (with septic/chemical abluent facilities);
- Rail Siding (possible future expansion);
- Diesel facilities and a hardstand;
- Power and Water;
- Boxcut;
- Stockpiles (topsoil, overburden, subsoil/softs, ROM)
- Crushing, screening & wash facility; and
- Surface water management measures (stormwater diversion berms and trenches; pollution control dams etc).



**Figure 5-2 – Dunbar Mine Layout.**



product is based on a comparative study of small mining (listed and public enterprises companies that deliver coal to Eskom.

The price used for the product is based on a comparative study of small mining (listed and public enterprises companies that deliver coal to Eskom.

**Table 5-2 – Coal Price US Dollar Aug 2018 – Aug 2019.**

<b>Month</b>	<b>Price (US Dollar)</b>	<b>Change</b>
<b>Aug 2018</b>	98.48	-
<b>Sep 2018</b>	102.14	3.72 %
<b>Oct 2018</b>	100.34	-1.76 %
<b>Nov 2018</b>	91.58	-8.73 %
<b>Dec 2018</b>	95.41	4.18 %
<b>Jan 2019</b>	91.29	-4.32 %
<b>Feb 2019</b>	84.16	-7.81 %
<b>Mar 2019</b>	78.81	-6.36 %
<b>Apr 2019</b>	72.49	-8.02 %
<b>May 2019</b>	68.93	-4.91 %
<b>Jun 2019</b>	62.94	-8.69 %
<b>Jul 2019</b>	65.79	4.53 %
<b>Aug 2019</b>	60.43	-8.15 %

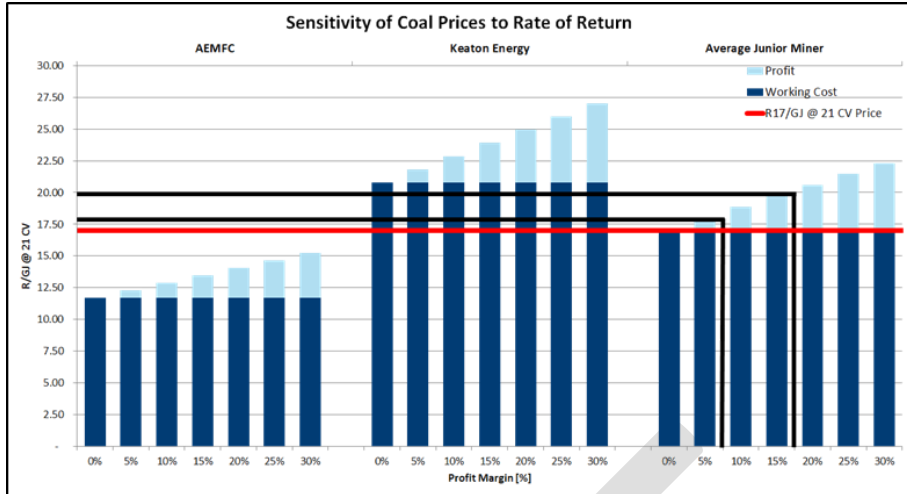


Figure 5-4 – Sensitivity of Coal Prices to Rate of Return.

## 6. REGULATION 11(1)(F): THE DETAILS WITH REGARD TO THE APPLICABLE TIMEFRAMES AND SCHEDULING OF THE VARIOUS IMPLEMENTATION PHASES AND A TECHNICALLY JUSTIFIED ESTIMATE OF THE PERIOD REQUIRED

### 6.1 TIMEFRAMES AND SCHEDULING OF IMPLEMENTATION PHASES

#### 6.1.1 Explanation of time taken to develop the mine and commence production.

The actual operational time frame is calculated from the date of granting of a mining right. The operational period has been subdivided into a construction and implementation phase and a production phase.

##### Construction Phase

The construction phase will commence immediately upon granting of a mining right and will include the following items and expected timeframes:

- Preparation of Access Roads (3 Weeks)
- Construction of contractor's yard. (1 Week)
- Workshop Construction (3 Weeks)
- Fencing and trenching of Mining Area (4 Weeks)
- Construction of Security (Boom Gates, Security house) (4 Weeks)
- Installation of Weighbridge (3 Weeks)
- Construction of Ablutions (5 Weeks)
- Construction of Diesel bunds and Installation of Tanks (2 Weeks)
- Construction of Mine haul roads (4 Weeks)
- Development of trenches and pollution control facilities (8 Weeks)
- Setting up crushing, screening and washing plant (8 weeks)
- Boxcut development. (9 Weeks)

#### 6.1.2 Explanation of the production build up period once production commences.

The mine model was used as bases for the LOM scheduling. The mining modifying factors and assumption as stated in Section 2 were applied in the scheduling model. Schedule reports were created for waste material, ROM tonnages and product tonnages. The project life of mine ("LOM") schedule was determined on no annual basis, with initial production waste volumes excavated from the western side of the Pit 1. A scheduled duration of 10 years was planned with a ROM production rate of 1.5Mtpa during steady state.

##### Scheduling calendar

The basis for the excavator production calendar is a seven-day week with a 20-hour production shift per day.

##### Life of mine schedule

The LOM production profile is shown in Figure 6-1 below.

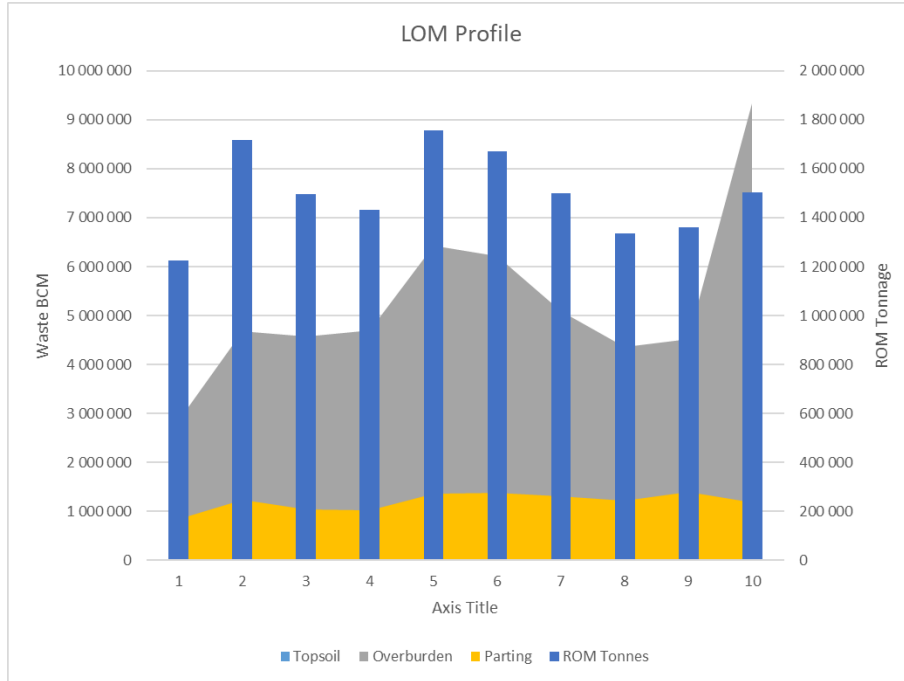


Figure 6-1 – LOM production profile

**6.1.3 Explanation of production decline period (as grades deteriorate).**

The LOM mining layout and progress plot is indicated in Figure 6-2 below

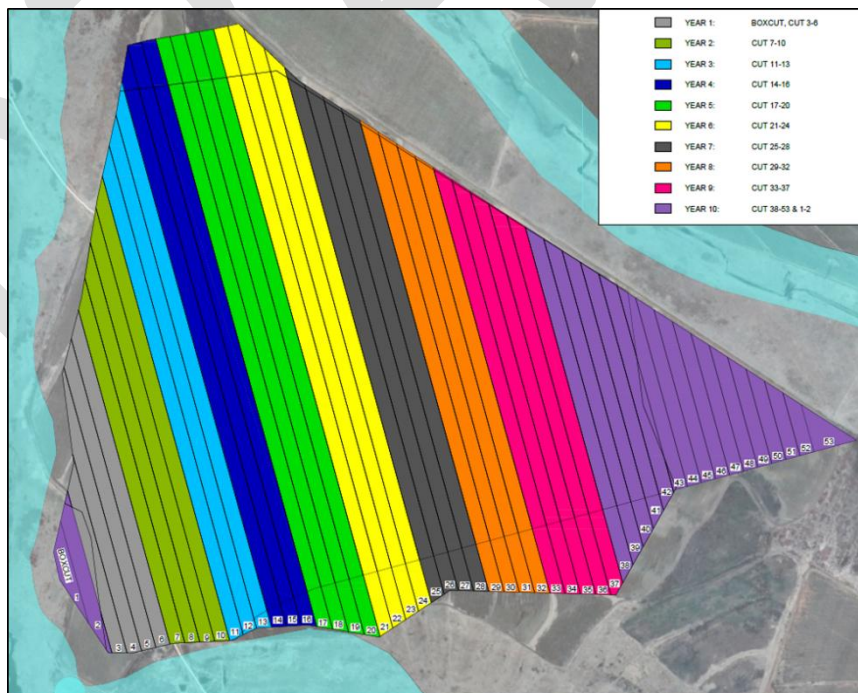


Figure 6-2 – Mining layout and detail progress plot



**6.1.4 Production forecast for each year over the full period applied for based on the above explanations. (Not Life of Mine calculation)**

The following table shows the production forecast for the Life of Mine (LOM).

**Table 6-1 – LOM production schedule for year 1 to year 10**

Total Pit	Unit	Y1	Y2	Y3	Y4	Y5
<b>Waste Total</b>	bcm	2 968 965	4 971 968	4 877 305	5 757 449	7 933 516
Topsoil	bcm	71 280	102 070	95 971	110 590	153 228
Overburden	bcm	2 274 818	3 847 549	3 820 240	4 630 811	6 419 668
Parting	bcm	622 867	1 022 348	961 094	1 016 048	1 360 620
<b>ROM Total</b>		<b>902 165</b>	<b>1 396 017</b>	<b>1 313 734</b>	<b>1 421 669</b>	<b>1 747 715</b>
Seam 4	t	448399.776	667400.08	609 784	631 225	792 492
Seam 2	t	521024.72	828726.544	795417.504	885128.08	1074096.928
Mining Losses (7.5%)	t	-33 630	-50 055	-45 734	-47 342	-59 437
Geological Losses (7.5%)	t	-33 630	-50 055	-45 734	-47 342	-59 437
<b>Strip Ratio</b>	%	<b>3.3</b>	<b>3.6</b>	<b>3.7</b>	<b>4.0</b>	<b>4.5</b>
Total Pit	Unit	Y6	Y7	Y8	Y9	Y10
<b>Waste Total</b>	bcm	7 739 155	6 533 228	5 696 870	6 032 678	10 059 757
Topsoil	bcm	148 977	126 329	113 924	126 141	186 524
Overburden	bcm	6 210 683	5 090 751	4 363 810	4 516 262	8 711 988
Parting	bcm	1 379 495	1 316 148	1 219 137	1 390 274	1 161 245
<b>ROM Total</b>		<b>1 669 491</b>	<b>1 500 596</b>	<b>1 335 101</b>	<b>1 361 139</b>	<b>1 372 377</b>
Seam 4	t	824 944	852 843	829 963	906 758	593 895
Seam 2	t	968289.04	775 680	629 632	590 395	867 566
Mining Losses (7.5%)	t	-61 871	-63 963	-62 247	-68 007	-44 542
Geological Losses (7.5%)	t	-61 871	-63 963	-62 247	-68 007	-44 542
<b>Strip Ratio</b>	%	<b>4.6</b>	<b>4.4</b>	<b>4.3</b>	<b>4.4</b>	<b>7.3</b>

**6.2 TECHNICALLY JUSTIFIED ESTIMATE OF THE PERIOD REQUIRED (DESCRIPTION OF THE RATE OF PRODUCTION, ESTIMATED PAYABLE RESERVE RATIO, EFFICIENCY FACTORS AND EXTRACTION RATES, RELATIVE TO AVAILABLE RESOURCES TO JUSTIFY THE PERIOD APPLIED FOR)**

The Dunbar coal project CPR geological report was used to identify the economical minable coal seam by means of opencast mining methods. Coal Seam 4 and Seam 2 was used to determine the coal inventory. The estimated potential ROM coal inventory was calculated, which is indicated by Table 6-2 at 12.95Mt. Based on the estimated potential ROM tonnages the project has a LOM of 10 years.

**Table 6-2 – Potential mineable coal inventory**

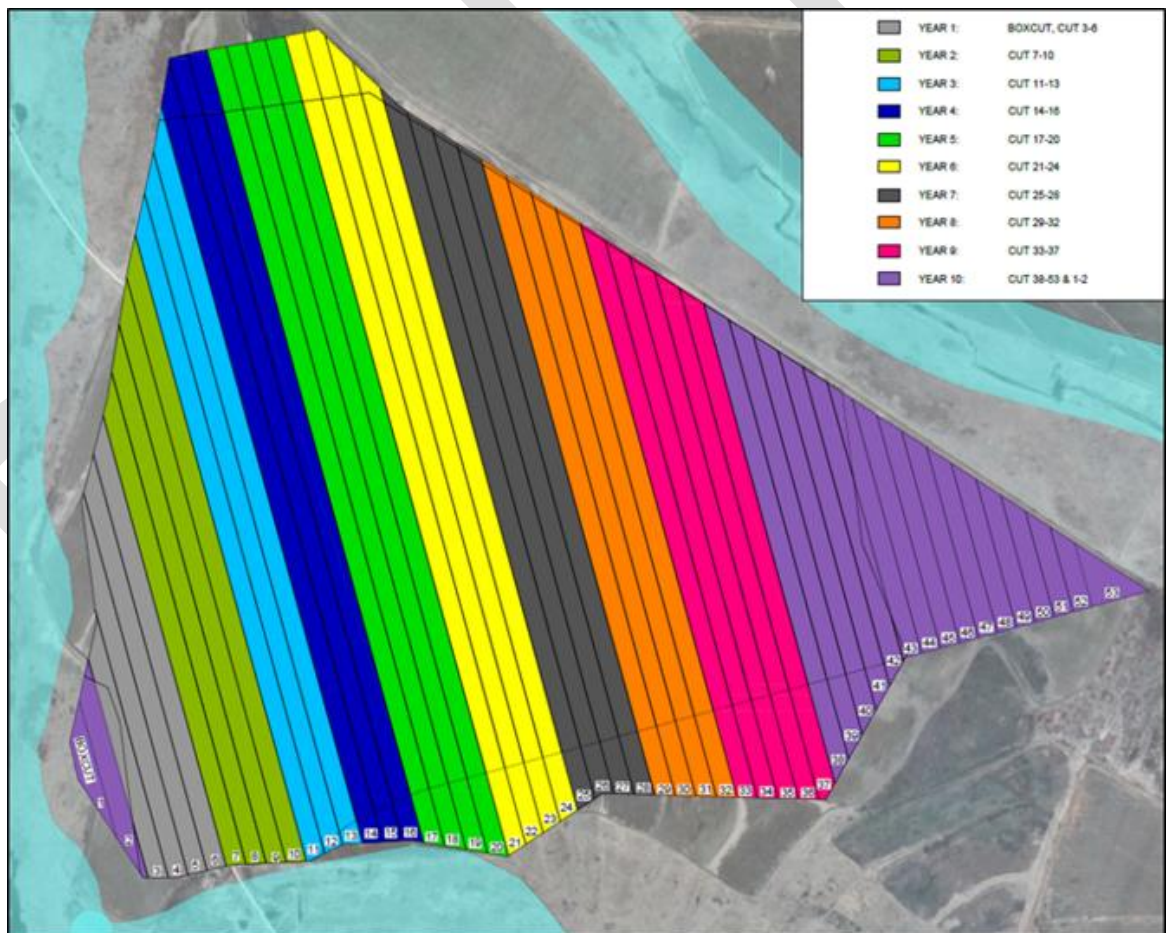
Resource	GTI (Mt)	Geo loss (Mt)	TTIS(Mt)	Mining Loss (Mt)	Estimated ROM Inventory (Mt)
Total coal seam	14.02	0.54	13.48	0.54	12.95

**Excavator productivity rates**

The result of the productivity estimate is a theoretical instantaneous production rate for 100% availability and 100% utilisation of the equipment configuration and specifications. The instantaneous rate estimated multiplied by 70% to derive the practical productivity rate achievable per direct operating hour (“DOH”).

**Table 6-3 – illustrates the theoretical calculation for DOH dig rate.**

Material type	Unit	Excavator (120t) Overburden	Excavator (120t) Coal
Seconds per hour	sec	3 600	3 600
Bucket cycle time	sec	36	36
Bucket size	m <sup>3</sup>	7.0	3.4
Material RD	t/m <sup>3</sup>	2.4	1.6
Swell	%	30	30
Bucket fill factor	%	100	100
Bucket BCM per cycle	BCM/cycle	5.4	2.6
Bucket tonnes per cycle	t/cycle	-	4.2
Availability	%	100	100
Cycles/hour	Cycles	100	100
BCM/hr (theoretical)	BCM/hr	538	-
Tonnes/hr (theoretical)	t/hr	-	418
Planned 70% of instantaneous rate	BCM/DOH	377	-
Planned 70% of instantaneous rate	t/DOH	-	293



**Figure 6-3 – Mining layout and detail progress plot**

## 7. REGULATION 11(1)(G)(I) THE DETAILS WITH REGARD TO THE COSTING OF THE MINING TECHNIQUE, MINING TECHNOLOGY AND PRODUCTION RATES

### 7.1 MINE DESIGN MAP (INCLUDE A HIGH-LEVEL MAP INDICATING THE BASIC MINE DESIGN AND SCHEMATIC MINING SCHEDULE)

Project area was determined based on the low strip ratio areas with a reasonable expectation for inclusion as part of a low-cost coal operation and fall within the project optimal economic mining limit.

These target areas were selected through the consideration of surface constraints such as:

- Existing infrastructure
- Topography
- Archaeological sites
- Rivers
- Faults and dykes
- Coal qualities
- Strip ratio
- Higher theoretical yield areas
- Measured and Indicated Coal Resources
- Minimum mine life.

The potential mining opencast area is shown in figure below.



**Figure 7-1 – Mining footprint**

**Pit design**

Block, strip and boxcut designs were based on practical considerations and the project geotechnical criteria. Material handling was critical in the planning of the mining methodology. The mine was designed based on multiple coal benches to achieve full production. Parameters applied in the mined design are illustrated in Table 5 and Table 6.

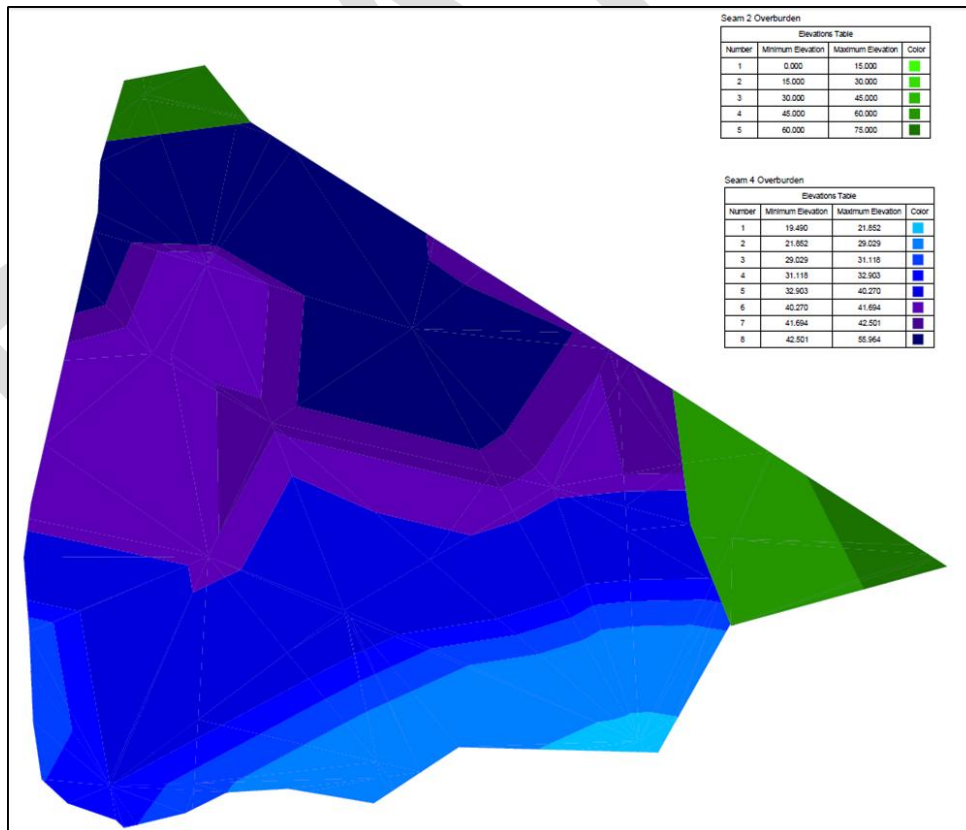
**Table 7-1 – Mine design parameters**

Parameter	Value [m]
Block length	50
Strip width	30

**Table 7-2 – Mine coal seam bench design parameters**

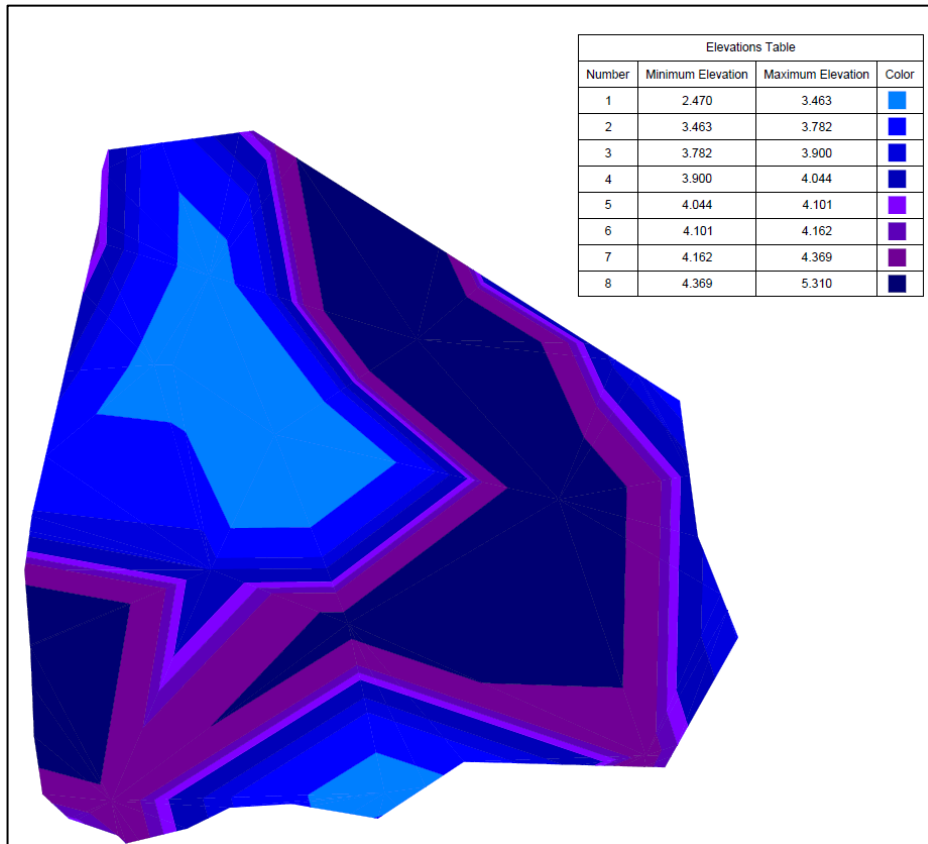
Coal Seam	Average Bench Height[m]
SEAM 4	5.87
SEAM 2	6.17

Figure below illustrates the planned Overburden thickness over the designed opencast area.



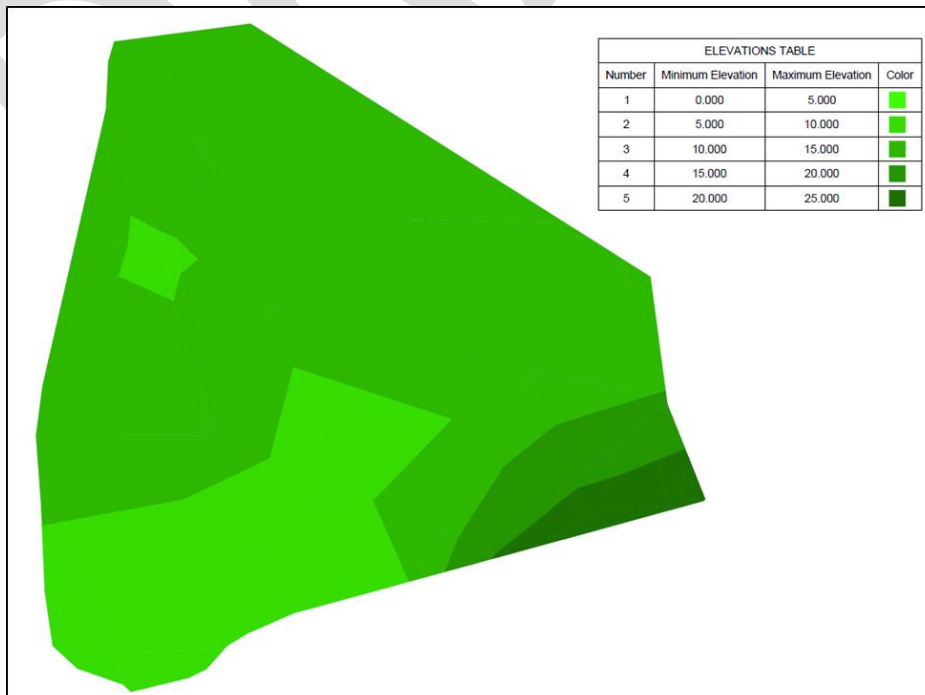
**Figure 7-2 – Overburden thickness in opencast area.**

Figure below illustrates the planned SEAM 4 thickness over the designed opencast area.



**Figure 7-3 – Seam 4 thickness in opencast area.**

Figure below illustrates the planned parting thickness over the designed opencast area.



**Figure 7-4 – Parting thickness in opencast area.**

Figure below illustrates the planned Seam 2 thickness over the designed opencast area.

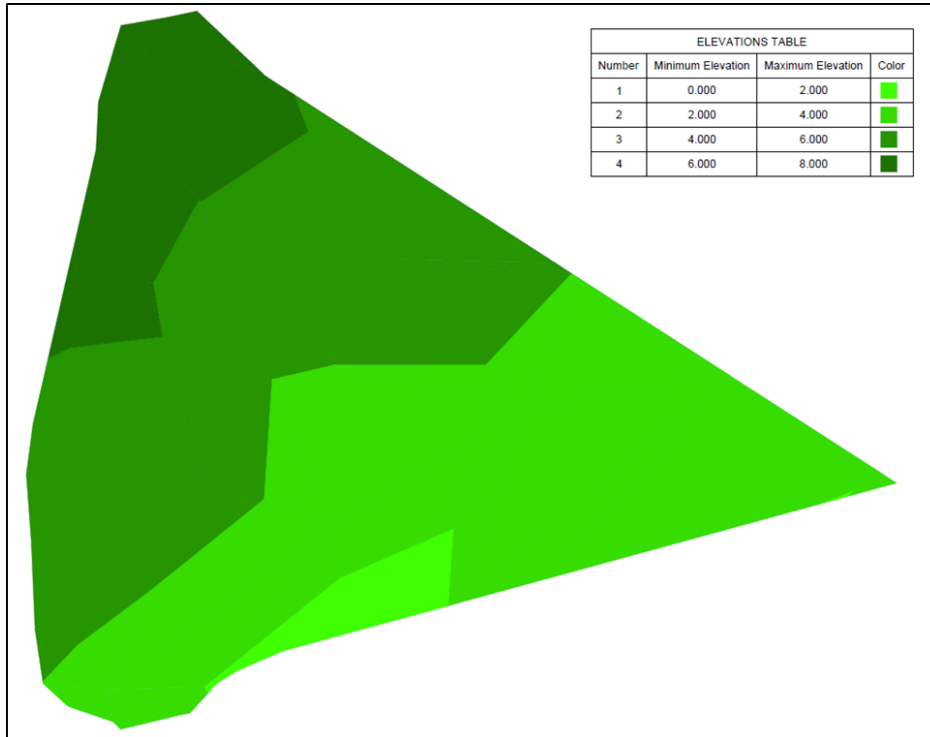


Figure 7-5 – Seam 2 thickness in opencast area.

#### Mining blocks

Waste volumes were generated for the following intervals: -

- Topsoil
- Overburden
- Parting

Table below illustrates the average thickness and total quantity of the different waste material in the project period.

Table 7-3 – Mine coal seam bench design parameters

Project area	Waste Material	Avg Thickness[m]	Volume [bcm]
Pit 1	Topsoil	1	1 235 034
	Overburden	40.2	49 886 580
	Parting	9.4	11 449 276
	<b>Total</b>		<b>141 015 389</b>

The numbers may not round up due to decimal placement.

### Mining related modifying factors

Modifying factors are considerations used to convert Coal Resources to Coal Reserves. These include, but are not restricted to: mining, processing, infrastructure, economic, marketing, legal, environmental, social and governmental factors. The mining related modifying factors refer specifically to mining. Appropriate assessment has been carried out, including the consideration of realistically assumed mining and geotechnical factors. No dilution is added due to the fact that the equipment and infrastructure selection does not require the intentional addition of non-coal material outside the theoretical mining height to obtain a practical mining height. Contamination is extraneous coal and non-coal material unintentionally added to the practical mining horizon as a result of mining operations.

**Table 7-4 – Mine coal seam bench design parameters**

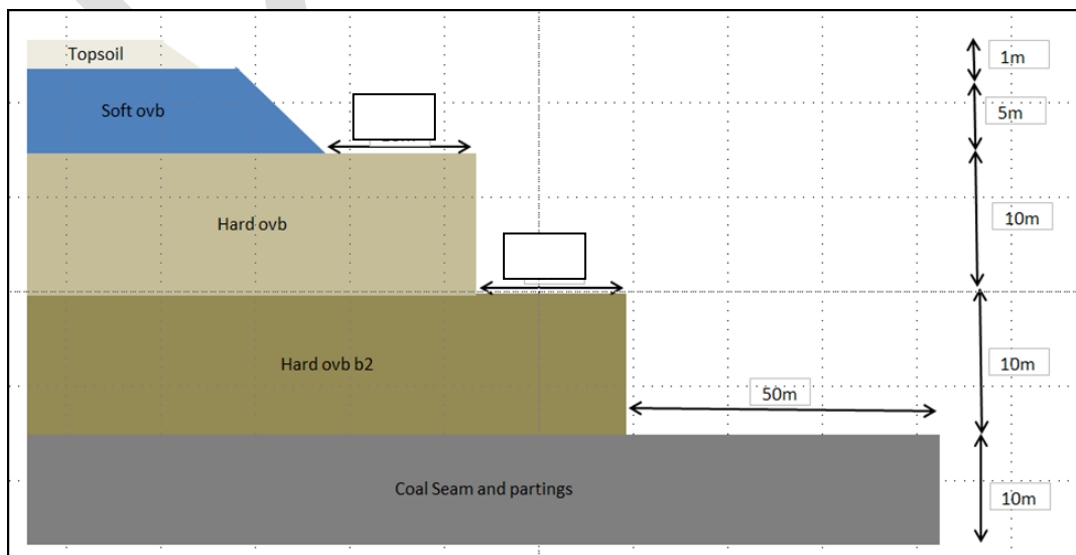
Description	Unit	Value
Minimum seam thickness cut-off	m	0.8
Mining losses	%	7.5
Geological losses	%	7.5

Mining layout develop was based on a 100m x 50m mining block size. The purpose of a square mining layout was to increase the ease of strategic mine scheduling. The start of the mining block layout was based on the mining boundary.

The mining block layout was constricted by the resource plans as produced by P.C. Meyer in the “Competent Persons Report for the Coal Resources of the Dunbar West Coal Project” as well as the 32m buffer zone from the wetland areas as indicated in the Environmental reports.

### Geotechnical parameters

The geotechnical consideration and design parameters were based on the following criteria. The slope geometry for the operational highwalls are shown in the Figure and Table below.

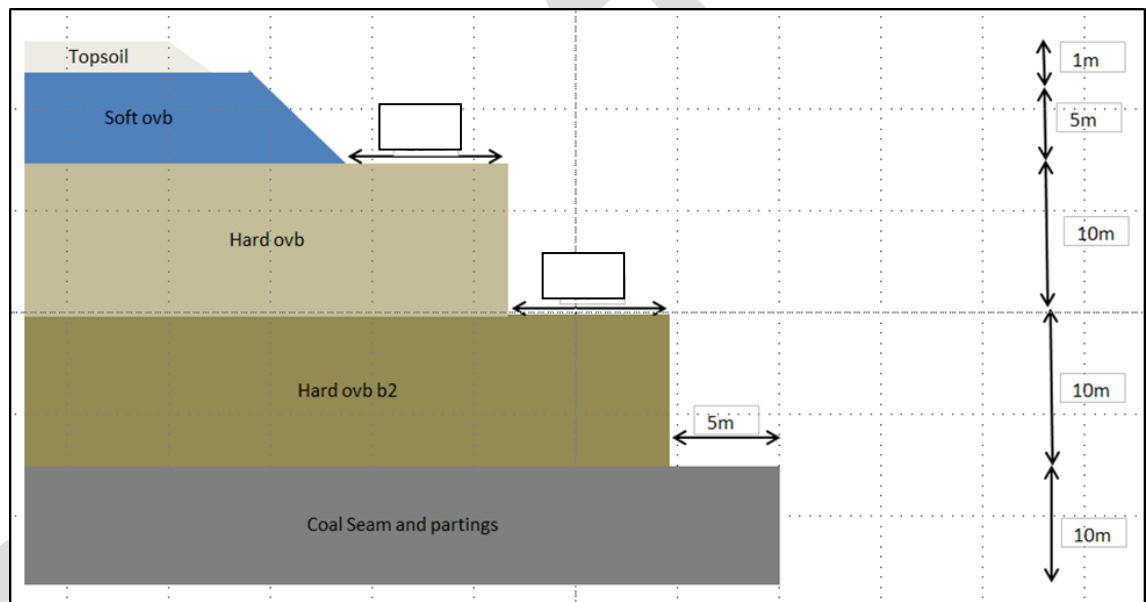


**Figure 7-6 – Operational highwall design.**

**Table 7-5 – Operational highwall design criteria**

Parameter	Unit	Criteria
Topsoil bench angle	Degrees	37
Topsoil height	m	1
Soft ovb bench angle	Degree	45
Soft ovb bench width	m	5
Hard ovb bench angle	Degrees	90
Hard ovb berm width	m	50
Coal material bench angle	Degrees	90
Coal and parting material bench width	m	50

The slope geometry for the endwalls are shown in the Figure and Table below.



**Figure 7-7 – Endwall design.**

**Table 7-6 – Endwall design criteria**

Parameter	Unit	Criteria
Topsoil bench angle	Degrees	45
Topsoil height	m	1
Soft ovb bench angle	Degrees	45
Soft ovb bench height	m	5
Hard ovb bench angle	Degrees	90
Hard ovb berm width	m	5
Coal material bench angle	Degrees	90
Coal material berm width	m	5



## 7.2 DESCRIPTION OF THE MINING METHOD'S IMPACT ON OPERATING COST.

### 7.2.1 Basic overview of the mining method.

The generally low strip ratios and wide surface area of the project area makes it ideal for the opencast truck and shovel mining method. Also, the mining method applicability is driven by technical applicability, economic viability, safety, equipment and infrastructure.

The mining method comprised of the following main mining activities for both waste and coal:

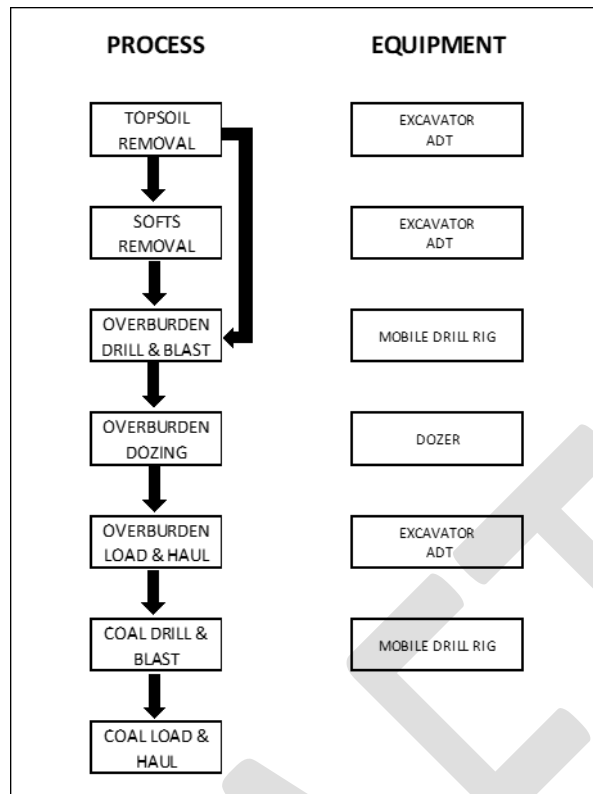
- Topsoil and soft overburden removal
- Drilling of hard overburden material
- Charging and Blasting
- Loading and Hauling
- Tipping or Dumping.

The operational phase, known as steady-state, will commence after the completion of the boxcut. A conventional strip mining [roll-over] method will be employed. Material from the boxcut phase will be stored per overburden classification, with the bulk of the material placed in a position alongside the final strip, to facilitate filling of the final void. Steady-state mining includes the following processes and equipment.

#### **Mining Sequence**

The volumes in the LOM production schedule are expected to include:

- Topsoil -Thickness of the topsoil is assumed to be 1.0m. Loading and hauling to topsoil stockpile by truck and shovel.
- Soft overburden - Loading and hauling to waste stockpile or in-pit backfill by truck and shovel.
- Hard overburden - This material lies just below the weathered material and above the coal seam and will require drilling and blasting. Loading and hauling to waste stockpile or in-pit backfill by truck and shovel.
- The coal seams are expected to be drilled and blasted. Loading and hauling to ROM Tip by truck and shovel.



**Figure 7-8 – Coal Mining Sequence.**

### 7.2.2 Description of equipment and activities impacting electricity cost. (excluding the processing plant)

The size and scale of the open-pit mine entails that small and conventional truck and shovel mining equipment is used to mine both waste material and coal.

The following equipment was selected for this study:

- 120t Backhoe hydraulic excavators on coal and overburden material
- Articulated dump trucks (“ADT”).
- Hauler selection is based on the optimal fit and number of passes with excavators and loaders with standardization if appropriate.

### 7.2.3 Description of equipment and activities impacting on fuel cost.

To conduct the above-mentioned process the planned mining equipment to be utilized is as follows –

- Contractor 1: (mining – equipment per team)
- 2 x CAT Bulldozer
- 3 X Bell Hydraulic Excavators
- 12 X Bell B40 Articulated 6X6 Dump trucks
- 1 X CAT 140 Motor Grader
- 1 X 10 000 litre Water Bowser
- 1 x 4 000 litre Diesel Bowser

- 2 X Mobile Percussion Drill Rig.
- 4 X Service Truck
- Support equipment (transport / material handling – Diesel)
- Contractor 4 (beneficiation / crushing)

The above equipment will be supplied by the mining contractor and the costing thereof will be included in the contractor's unit rates.

#### **7.2.4 Description of equipment and activities impacting on cost of stores and materials.**

The costs of stores and materials are impacted by the cost of ground engaging tools (GET), wear parts and consumables such as drill rods, drill bits, explosives and accessories.

#### **7.2.5 Description of equipment and activities impacting on the cost of water.**

Water required for mining operations will be supplied from the underground water, Municipality supply and extraction from streams. Excess mine water will be pumped to a Raw Water Dam from where it will be utilised in the mining operations as dust suppression and washing.

Potable water will be required for ablution and showers in the change house and office use.

The following table provides a summary of the daily potable water requirement.

**Table 7-7 – Daily Potable Water Requirement.**

	Total personnel	Potable Water (ℓ) per person per day
Total Mining Personnel	60	100
Total Staff Personnel	34	50
<b>TOTAL (ℓ/day)</b>		7700
<b>TOTAL (m3/day)</b>		7.7

The following table shows the expected peak flow rate for potable water. This is based on an estimated peak water flow rate for 20 showers at 10 ℓ/min per shower and 2 ℓ/s for ablution facilities.

**Table 7-8 – Peak Potable Water Requirement.**

Building	Peak Flow (ℓ/s)
Change house	2.5
Offices and other buildings	0.5
<b>TOTAL Peak Flow (excluding fire flows)</b>	<b>3</b>

Potable water supply to be confirmed.

**7.2.6 Description of activities impacting on other cost not included above**

Additional costs not included above will be the maintenance costs of primary, secondary and tertiary mining equipment.

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**7.2.7 Operating Cost Forecast (Excluding the Processing Plant and Labour) For first 10 years**

**Table 7-9 – Operating Cost Forecast (Excluding the Processing Plant and Labour) For first 10 years**

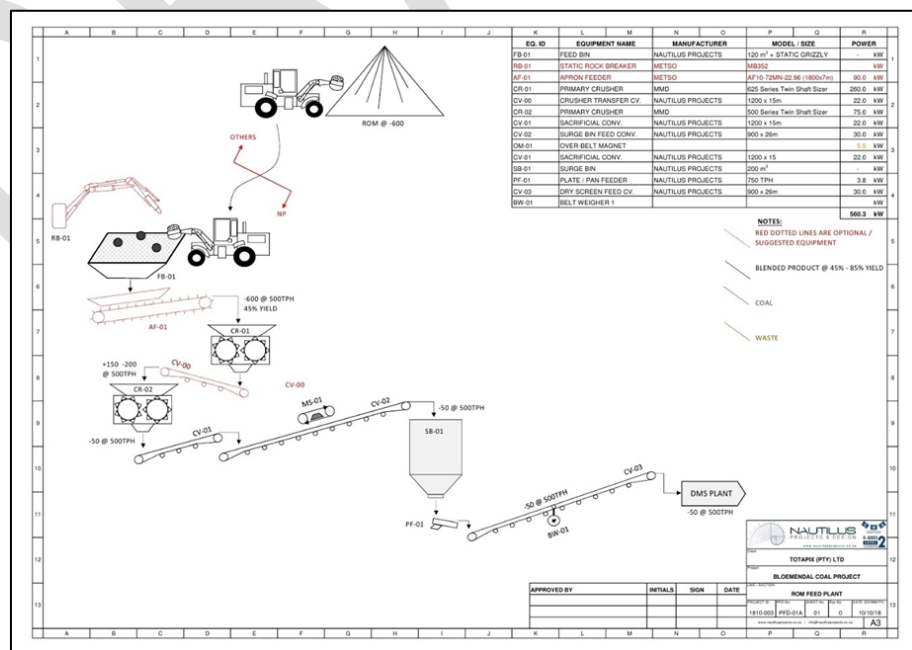
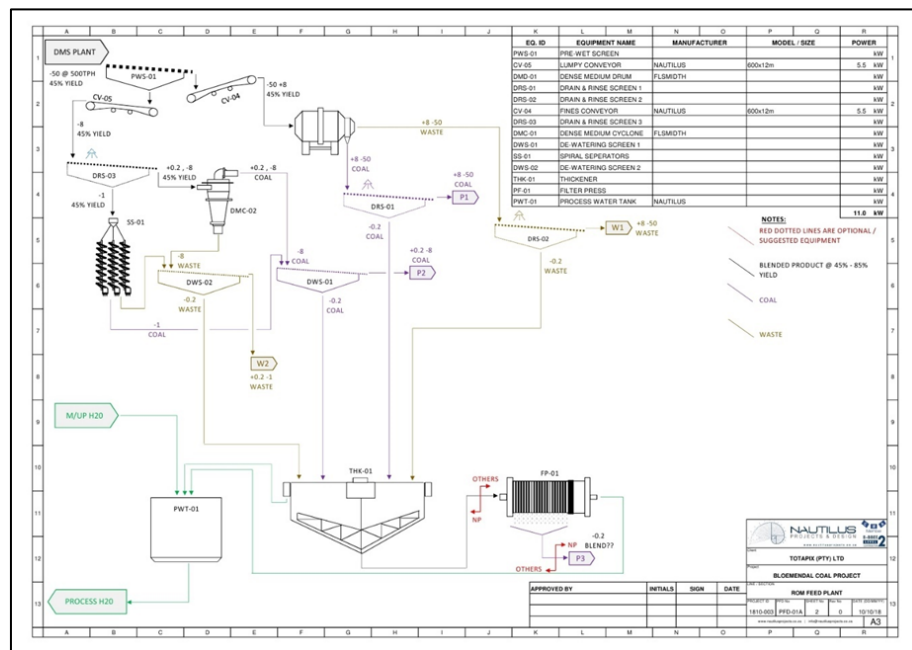
COST CATEGORY		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
<b>Mining Cost</b>	ZAR	165 750 707	228 458 648	230 248 757	275 004 560	343 954 471	330 238 391	282 906 856	256 852 464	266 587 727	404 619 273
<b>Coal Handling and Preparation</b>	ZAR	127 170 763	119 442 155	128 890 014	158 660 079	152 424 776	138 424 392	124 065 615	127 257 962	124 224 182	135 641 165
<b>Overhead Cash Costs</b>	ZAR	23 629 033	22 197 877	23 947 398	29 460 114	28 305 482	25 712 940	23 054 033	23 645 180	23 083 396	25 197 552
<b>TOTAL COST</b> (To be reflected in the cash flow forecast)	<b>ZAR</b>	<b>316 550 503</b>	<b>370 098 679</b>	<b>383 086 169</b>	<b>463 124 753</b>	<b>524 684 728</b>	<b>494 375 723</b>	<b>430 026 503</b>	<b>407 755 607</b>	<b>413 895 304</b>	<b>565 457 990</b>

NB! The costs determined here must explain the costs used in line item 4 of the cash flow forecast required herein under Regulation 11 (1) (g) (v)

## 8. REGULATION 11(1) (G) (II): DETAILS AND COSTS OF THE TECHNOLOGICAL PROCESS APPLICABLE TO THE EXTRACTION AND PREPARATION OF THE MINERAL OR MINERALS TO COMPLY WITH MARKET REQUIREMENTS

### 8.1 HIGH LEVEL DESCRIPTION OF THE PROCESSING PLANT

#### 8.1.1 Basic plant design. (supported by a process flow diagram, of the plant)





**8.5 DESCRIPTION OF EQUIPMENT AND ACTIVITIES IMPACTING ON THE COST OF WATER.**

Potable water will be required for ablution and showers in the change house. Potable water requirements are summarised above point 7.2.5.

**8.6 DESCRIPTION OF ACTIVITIES IMPACTING ON OTHER COST NOT INCLUDED ABOVE.**

The activities impacting on other costs not included above will be:

- Site establishment.

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**8.6.1 Processing plant operating cost forecast (Excluding Labour) For first 10 years**

**Table 8-1 – Operating Cost Forecast (Excluding the Processing Plant and Labour) For first 10 years**

COST CATEGORY		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
<b>Coal Crushing &amp; Screening</b>	ZAR	52 364 432	49 182 064	53 072 359	65 330 621	62 763 143	56 998 279	51 085 842	52 400 337	51 151 134	55 852 245
<b>Coal Washing</b>	ZAR	59 845 065	56 208 073	60 654 124	74 663 567	71 729 306	65 140 890	58 383 819	59 886 100	58 458 438	63 831 137
<b>Coal Handling</b>	ZAR	14 961 266	14 052 018	15 163 531	18 665 892	17 932 327	16 285 223	14 595 955	14 971 525	14 614 610	15 957 784
<b>TOTAL COST</b> (To be reflected in the cash flow forecast)	<b>ZAR</b>	<b>127 170 763</b>	<b>119 442 155</b>	<b>128 890 014</b>	<b>158 660 079</b>	<b>152 424 776</b>	<b>138 424 392</b>	<b>124 065 615</b>	<b>127 257 962</b>	<b>124 224 182</b>	<b>135 641 165</b>

NB! The costs determined here must explain the costs used in line item 5 of the cash flow forecast required herein under Regulation 11 (1) (g) (vi)

## 9. REGULATION 11 (1) (G) (Iii): DETAILS AND COSTING OF THE TECHNICAL SKILLS AND EXPERTISE AND EXPERTISE AND ASSOCIATED LABOUR IMPLICATIONS REQUIRED TO CONDUCT THE PROPOSED MINING OPERATION

### 9.1 ORGANIZATIONAL STRUCTURE OF THE MINE

#### 9.1.1 Description of positions requiring certificates of competency and under which skills category they have been budgeted for.

The Board of Directors will be responsible for the company and financial management of the Mine, including the Social and Labour Plan and Financial Provisions. The following technical skills are required:

- Mining Engineering, Health & safety knowledge and experience;
- Practical mining knowledge in all aspects of the safe daily operation of an underground mine and processing plant operation;
- A sound knowledge of coal, and the mining thereof;
- The relevant legally required knowledge and competencies; and
- A sound geological knowledge.

Since owner mining is envisaged, the necessary practical skills and experience will be employed as permanent mine employees. Furthermore, mining consultants will be contracted for the relevant mining studies to follow the Mine Works Program as well as mine planning throughout the life of mine.

#### 9.1.2 Description of which part or parts of the mining operation will be outsourced (if any)

##### 9.1.2.1 Description of positions requiring certificates of competency and under which skills category they have been budgeted for.

### 9.2 COSTING OF THE SKILLS CATEGORIES IN THE MINING OPERATION TO DETERMINE IF TECHNICAL COMPETENCE HAS BEEN BUDGETED FOR: COMPLETE THE FOLLOWING TABLES:

**MINE EMPLOYEES**

**Table 9-1 – Personnel on The Mine’s Payroll: (Years 1 To5)**

Category	Year 1		Year 2		Year 3		Year 4		Year 5	
	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget
<b>General</b>										
Mine Manager	1	R 75 000.00	1	R 75 000.00	1	R 75 000.00	1	R 75 000.00	1	R 75 000.00
Site Manager	1	R 55 000.00	1	R 55 000.00	1	R 55 000.00	1	R 55 000.00	1	R 55 000.00
Plant Manager	1	R 45 000.00	1	R 45 000.00	1	R 45 000.00	1	R 45 000.00	1	R 45 000.00
Site Clerk	1	R 9 788.00	1	R 9 788.00	1	R 9 788.00	1	R 9 788.00	1	R 9 788.00
HSEC Manager	1	R 17 800.00	1	R 17 800.00	1	R 17 800.00	1	R 17 800.00	1	R 17 800.00
Training Offices	1	R 15 000.00	1	R 15 000.00	1	R 15 000.00	1	R 15 000.00	1	R 15 000.00
Cleaner	1	R 3 000.00	1	R 3 000.00	1	R 3 000.00	1	R 3 000.00	1	R 3 000.00
<b>TOTAL</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>

**Table 9-2 – Personnel on The Mine’s Payroll: (Years 6 To 10)**

Category	Year 6		Year 7		Year 8		Year 9		Year 10	
	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget
<b>General</b>										
Mine Manager	1	R 75 000.00	1	R 75 000.00	1	R 75 000.00	1	R 75 000.00	1	R 75 000.00
Site Manager	1	R 55 000.00	1	R 55 000.00	1	R 55 000.00	1	R 55 000.00	1	R 55 000.00
Plant Manager	1	R 45 000.00	1	R 45 000.00	1	R 45 000.00	1	R 45 000.00	1	R 45 000.00
Site Clerk	1	R 9 788.00	1	R 9 788.00	1	R 9 788.00	1	R 9 788.00	1	R 9 788.00
HSE Manager	1	R 17 800.00	1	R 17 800.00	1	R 17 800.00	1	R 17 800.00	1	R 17 800.00
Training Offices	1	R 15 000.00	1	R 15 000.00	1	R 15 000.00	1	R 15 000.00	1	R 15 000.00
Cleaner	1	R 3 000.00	1	R 3 000.00	1	R 3 000.00	1	R 3 000.00	1	R 3 000.00
<b>TOTAL</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>	<b>7</b>	<b>R 220 588.00</b>

**SUBCONTRACTORS EMPLOYEES (if applicable) (Duplicate this form for each Subcontractor)**

**Table 9-3 – Subcontractor Personnel: (Years 1 To 5)**

Category	Year 1		Year 2		Year 3		Year 4		Year 5	
	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget
<b>General</b>										
Production Supervisors	2	R 20 000.00	2	R 20 000.00	2	R 20 000.00	2	R 20 000.00	2	R 20 000.00
Plant Supervisors	1	R 10 000.00	1	R 10 000.00	1	R 10 000.00	1	R 10 000.00	1	R 10 000.00
Mechanic	1	R 26 000.00	1	R 26 000.00	1	R 26 000.00	1	R 26 000.00	1	R 26 000.00
Mechanical Assistant	1	R 16 000.00	1	R 16 000.00	1	R 16 000.00	1	R 16 000.00	1	R 16 000.00
Service Crew	4	R 34 800.00	4	R 34 800.00	4	R 34 800.00	4	R 34 800.00	4	R 34 800.00
Security	9	R 14 000.00	9	R 14 000.00	9	R 14 000.00	9	R 14 000.00	9	R 14 000.00
Logistics and Transport	1	R 9 844.00	1	R 9 844.00	1	R 9 844.00	1	R 9 844.00	1	R 9 844.00
Weighbridge Clerks	3	R 21 000.00	3	R 21 000.00	3	R 21 000.00	3	R 21 000.00	3	R 21 000.00
Conveyor assistants	6	R 21 000.00	6	R 21 000.00	6	R 21 000.00	6	R 21 000.00	6	R 21 000.00
<b>TOTAL</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>
<b>Opencast Fleet</b>										
Bulldozer Operator D 375	2	R 13 800.00	2	R 13 800.00	2	R 13 800.00	2	R 13 800.00	2	R 13 800.00

<b>Dozer Operator D65</b>	4	R 27 600.00	4	R 27 600.00	4	R 27 600.00	4	R 27 600.00	4	R 27 600.00
<b>Hydraulic Excavator Operator</b>	6	R 41 400.00	6	R 41 400.00	6	R 41 400.00	6	R 41 400.00	6	R 41 400.00
<b>Articulated Dump Truck Operations</b>	24	R 137 400.00	24	R 137 400.00	24	R 137 400.00	24	R 137 400.00	24	R 137 400.00
<b>Grader Operator</b>	2	R 6 429.00	2	R 6 429.00	2	R 6 429.00	2	R 6 429.00	2	R 6 429.00
<b>Water Bowser Operator</b>	4	R 22 196.00	4	R 22 196.00	4	R 22 196.00	4	R 22 196.00	4	R 22 196.00
<b>TOTAL</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>
<b>Drill and Blast</b>										
<b>Coal Drill Operator</b>	2	R 10 000.00	2	R 10 000.00	2	R 10 000.00	2	R 10 000.00	2	R 10 000.00
<b>Drill Helper</b>	2	R 7 200.00	2	R 7 200.00	2	R 7 200.00	2	R 7 200.00	2	R 7 200.00
<b>Blaster Helper</b>	4	R 14 400.00	4	R 14 400.00	4	R 14 400.00	4	R 14 400.00	4	R 14 400.00
<b>Blasting Technician</b>	2	R 6 900.00	2	R 6 900.00	2	R 6 900.00	2	R 6 900.00	2	R 6 900.00
<b>TOTAL</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>
<b>Other</b>										
<b>Operator Leave / Sick Leave Relief</b>	5	R 32 500.00	5	R 32 500.00	5	R 32 500.00	5	R 32 500.00	5	R 32 500.00
<b>Pit Services</b>	2	R 13 000.00	2	R 13 000.00	2	R 13 000.00	2	R 13 000.00	2	R 13 000.00
<b>TOTAL</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>
<b>GRAND TOTAL</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>

**Table 9-4 – Subcontractor Personnel: (Years 6 To10)**

Category	Year 6		Year 7		Year 8		Year 9		Year 10	
	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget	No of Positions	Budget
<b>General</b>										
Production Supervisors	2	R 20 000.00	2	R 20 000.00	2	R 20 000.00	2	R 20 000.00	2	R 20 000.00
Plant Supervisors	1	R 10 000.00	1	R 10 000.00	1	R 10 000.00	1	R 10 000.00	1	R 10 000.00
Mechanic	1	R 26 000.00	1	R 26 000.00	1	R 26 000.00	1	R 26 000.00	1	R 26 000.00
Mechanical Assistant	1	R 16 000.00	1	R 16 000.00	1	R 16 000.00	1	R 16 000.00	1	R 16 000.00
Service Crew	4	R 34 800.00	4	R 34 800.00	4	R 34 800.00	4	R 34 800.00	4	R 34 800.00
Security	9	R 14 000.00	9	R 14 000.00	9	R 14 000.00	9	R 14 000.00	9	R 14 000.00
Logistics and Transport	1	R 9 844.00	1	R 9 844.00	1	R 9 844.00	1	R 9 844.00	1	R 9 844.00
Weighbridge Clerks	3	R 21 000.00	3	R 21 000.00	3	R 21 000.00	3	R 21 000.00	3	R 21 000.00
Conveyor assistants	6	R 21 000.00	6	R 21 000.00	6	R 21 000.00	6	R 21 000.00	6	R 21 000.00
<b>TOTAL</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>	<b>28</b>	<b>R 172 644.00</b>
<b>Opencast Fleet</b>										
Bulldozer Operator D 375	2	R 13 800.00	2	R 13 800.00	2	R 13 800.00	2	R 13 800.00	2	R 13 800.00
Dozer Operator D65	4	R 27 600.00	4	R 27 600.00	4	R 27 600.00	4	R 27 600.00	4	R 27 600.00

Hydraulic Excavator Operator	6	R 41 400.00	6	R 41 400.00	6	R 41 400.00	6	R 41 400.00	6	R 41 400.00
Articulated Dump Truck Operations	24	R 137 400.00	24	R 137 400.00	24	R 137 400.00	24	R 137 400.00	24	R 137 400.00
Grader Operator	2	R 6 429.00	2	R 6 429.00	2	R 6 429.00	2	R 6 429.00	2	R 6 429.00
Water Bowser Operator	4	R 22 196.00	4	R 22 196.00	4	R 22 196.00	4	R 22 196.00	4	R 22 196.00
<b>TOTAL</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>	<b>42</b>	<b>R 248 825.00</b>
<b>Drill and Blast</b>										
Coal Drill Operator	2	R 10 000.00	2	R 10 000.00	2	R 10 000.00	2	R 10 000.00	2	R 10 000.00
Drill Helper	2	R 7 200.00	2	R 7 200.00	2	R 7 200.00	2	R 7 200.00	2	R 7 200.00
Blaster Helper	4	R 14 400.00	4	R 14 400.00	4	R 14 400.00	4	R 14 400.00	4	R 14 400.00
Blasting Technician	2	R 6 900.00	2	R 6 900.00	2	R 6 900.00	2	R 6 900.00	2	R 6 900.00
<b>TOTAL</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>	<b>10</b>	<b>R 38 500.00</b>
<b>Other</b>										
Operator Leave / Sick Leave Relief	5	R 32 500.00	5	R 32 500.00	5	R 32 500.00	5	R 32 500.00	5	R 32 500.00
Pit Services	2	R 13 000.00	2	R 13 000.00	2	R 13 000.00	2	R 13 000.00	2	R 13 000.00
<b>TOTAL</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>	<b>7</b>	<b>R 45 500.00</b>
<b>GRAND TOTAL</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>	<b>87</b>	<b>R 505 469.00</b>



**SERVICE PROVIDERS**

**Table 9-5 – Specialists, Consultants and Service Providers**

LIST OF SPECIALISTS, CONSULTANTS AND SERVICE PROVIDERS	BUDGET YEAR 1	BUDGET YEAR 2	BUDGET YEAR 3	BUDGET YEAR 4	BUDGET YEAR 5	BUDGET YEAR 6	BUDGET YEAR 7	BUDGET YEAR 8	BUDGET YEAR 9	BUDGET YEAR 10
Survey	R 600 000.00	R 600 000.00	R 600 000.00	R 600 000.00	R 600 000.00	R 600 000.00	R 600 000.00	R 600 000.00	R 600 000.00	R 600 000.00
Geology, Mine Planning & Environmental	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00	R 6 650 000.00
Environmental Monitoring	R 420 000.00	R 420 000.00	R 420 000.00	R 420 000.00	R 420 000.00	R 420 000.00	R 420 000.00	R 420 000.00	R 420 000.00	R 420 000.00
Occupational Health	R 92 500.00	R 92 500.00	R 92 500.00	R 92 500.00	R 92 500.00	R 92 500.00	R 92 500.00	R 92 500.00	R 92 500.00	R 92 500.00
<b>TOTAL</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>	<b>R 7 762 500.00</b>

**TOTAL COST OF ALL TECHNICAL SKILLS AND SERVICES REQUIRED TO OPERATE THE MINE**

**Table 9-6 – Total Cost of All Technical Skills and Services Required to Operate the Mine**

CATEGORY	BUDGET YEAR 1	BUDGET YEAR 2	BUDGET YEAR 3	BUDGET YEAR 4	BUDGET YEAR 5	BUDGET YEAR 6	BUDGET YEAR 7	BUDGET YEAR 8	BUDGET YEAR 9	BUDGET YEAR 10
IN HOUSE SKILLS AND SERVICES	R 220 588.00	R 220 588.00	R 220 588.00	R 220 588.00	R 220 588.00	R 220 588.00	R 220 588.00	R 220 588.00	R 220 588.00	R 220 588.00
SKILLS AND SERVICES PROVIDED BY SUBCONTRACTORS	R 505 469.00	R 505 469.00	R 505 469.00	R 505 469.00	R 505 469.00	R 505 469.00	R 505 469.00	R 505 469.00	R 505 469.00	R 505 469.00
SKILLS AND SERVICES PROVIDED BY SERVICE PROVIDERS	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00	R 7 762 500.00
<b>TOTAL BUDGET FOR TECHNICAL SKILLS AND COMPETENCE</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>	<b>R 8 488 557.00</b>

NB! The total budget for technical skills and services and competence must be transferred to line item 6 in the cash flow forecast

## 10. REGULATION 11(1) (G) (IV): DETAILS AND COSTING OF REGULATORY REQUIREMENTS IN TERMS OF THE ACT AND OTHER APPLICABLE LAW, RELEVANT TO THE PROPOSED MINING OPERATION

### 10.1 ENVIRONMENTAL COST FORECAST.

**10.1.1 Rehabilitation cost estimate.** (Refer to the guideline for Financial provision (described in Regulation 54 (1) (2) published on the Departments website. Complete 10 forecasts and paste them into this section, i.e. one for the progressive impact in each of the first 10 years of operation. The progressive total (10th year must be stated under this heading and also included into the first year of the cash flow under Regulation 11 (1) (g) (vi) below in the environmental cost category)

**10.1.2 Socio Economic impact cost estimate.** (Refer to the guidelines on community consultation, and the scoping report template. Estimate the risk of compensation to persons whose socio-economic conditions may be directly affected by the mining operation. Provide the estimated total under this heading and also include it into the first year of the cash flow under regulation 11 (1) (g) (vi) below in the environmental cost category)

#### 10.1.3 Summary of estimated environmental cost: complete the table below.

CATEGORY	COST ESTIMATE
a) Progressive total for rehabilitation	R 57 220 847
b) Cost to mitigate socio-economic conditions of directly affected persons	R 7 860 006
<b>TOTAL COSTS</b> (Transfer amount to cash flow forecast – Line 7 Year 1 only)	R 65 080 854

### 10.2 OTHER REGULATORY COSTS (COMPLETE THE TABLE BELOW)

COST	LIFE OF MINE	EXPLANATION ON HOW AMOUNT WAS CALCULATED
DSEs (excluding Royalty)	R 15 720 013	
Royalty - Government	R 70 630 016	Royalty % on sales=0.5 + [EBIT / (Gross sales x 9)] x 100

The costs thus derived must be clearly explained and used to justify the numbers that are reflected in line item 7 of the cash flow forecast required in terms of regulation 11 (1) (g) (vi).

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**11. REGULATION 11 (1) (G) (VIII): PROVISIONS FOR THE EXECUTION OF THE SOCIAL AND LABOUR PLAN**

11.1 THE FOLLOWING TABLE MUST BE DUPLICATED HERE FROM THE TABLE IN SECTION 5: FINANCIAL PROVISION OF THE SOCIAL AND LABOUR PLAN

ESTIMATED EXPENDITURE ON THE SOCIAL AND LABOUR PLAN IN A 10 YEAR PERIOD										
ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
Social and Labour Cost	R 748 063	R 702 601	R 758 177	R 933 295	R 896 616	R 814 261	R 729 798	R 748 576	R 730 730	R 797 889

The costs quantified in the aforesaid categories must justify the numbers that are reflected in line item 8 of the cash flow forecast required in terms of Regulation 11(1)(g)(vi).

**12. REGULATION 11 (1) (G) (IV): DETAILS REGARDING OTHER RELEVANT COSTING, CAPITAL EXPENDITURE REQUIREMENTS AND EXPECTED REVENUE APPLICABLE TO THE PROPOSED MINING OPERATION.**

**12.1 EXPECTED REVENUE**

**12.1.1 Explanation of revenue determination.** (given the prices of the various relevant products and by products produced) how the price referred to in item 5.9 above, and the production referred to in item 6.1.4 above was arrived at and applied to each year's production estimate in order to estimate revenue.

<b>PRODUCTION (100% BASIS)</b>		
<b>MINING</b>		
Waste (Prime) - Opencast	bcm	62 570 890
Coal Mined - Opencast	t	14 541 012
<b>ROM</b>		
ROM Strip Ratio - Opencut		4.30
Washed Yield - 4 seam	%	75.65%
Washed Yield - 2 seam	%	82.99%
<b>EQUIVALENT SALEABLE PRODUCT</b>	t	11 570 385
<b>EQUIVALENT SALEABLE TONNES BY PRODUCT</b>		
Seam 4	t	5 119 303
Seam 2	t	6 451 082
<b>Total</b>	t	11 570 385
<b>SALES</b>		
Seam 4	t	5 119 303
Seam 2	t	6 451 082
<b>Total</b>	t	11 570 385
<b>COAL PRICES</b>		
ZAR Price - HG Eskom	ZAR / t	407.00
ZAR Price - LG Eskom	ZAR / t	407.00

**12.1.2 Revenue forecast.** (for each year over the full period applied for based on the above explanations. Note that this revenue estimate must be stated both here and in line item 3 of the cash flow forecast required below in terms of Regulation 11 (1) (g) (vi))

CASHFLOWS		1	2	3	4	5	6	7	8	9	10
Sales Revenue	ZAR	R 448 984 648	R 422 169 802	R 456 304 086	R 561 270 124	R 537 454 200	R 485 222 410	R 433 077 092	R 442 688 014	R 440 186 130	R 481 790 232
Revenue per sales tonne	ZAR / sales	407.00	407.00	407.00	407.00	407.00	407.00	407.00	407.00	407.00	407.00

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12.2 ESTIMATED CAPITAL EXPENDITURE

**12.2.1 Initial capital expenditure.** (List of expenditure on the initial capital expenditure items)

CAPITAL EXPENSE		
Sustaining Capex	ZAR	-
Expansionary Capex	ZAR	51 500 000
Surface Right Holder	ZAR	10 000 000
EMP	ZAR	1 500 000
Surface and Establishment	ZAR	40 000 000

**12.2.2 Ongoing capital expenditure.** (A discussion on ongoing capital expenditure items and estimated amount thereof in each of the years in which it will be incurred)

**12.2.3 Summary, in a 10-year tabular format.** (stating the initial, ongoing, and total amount of capital expenditure in each of the first ten years in which it will be incurred)



12.3 **EXPLANATION AND SUMMARY OF OTHER COSTS (NOT ADDRESSED ELSEWHERE IN THE MINING WORK PROGRAMME, IN EACH YEAR IN WHICH THEY ARE TO BE INCURRED.)**

<b>COST ASSUMPTIONS</b>			
<b>MINING COSTS</b>		<b>Boxcut</b>	<b>Steady State</b>
<b>Topsoil Stripping</b>	ZAR/bcm	23.45	22.70
<b>Waste Removal</b>			
Soft Removal	ZAR/bcm	23.45	22.70
Hards - Drill and Blast	ZAR/bcm	12.52	11.60
Hards - Removal	ZAR/bcm	24.43	21.50
Dozer Push	ZAR/bcm	-	13.80
Parting Drill and Blast	ZAR/bcm	12.52	14.00
Parting Removal	ZAR/bcm	24.43	21.30
<b>Coal Mining</b>			
Coal Drilling & Blasting	ZAR/bcm	3.55	6.00
Coal Mining / Hauling	ZAR/bcm	11.31	19.00
Coal Mining Support	ZAR/bcm	-	3.00
<b>MINE SERVICES (Survey, Geology, Mine planning)</b>	ZAR/ROMt	3.80	
<b>COAL HANDLING AND PREPARATION COSTS</b>			
	ZAR/ROMt	85.00	
Coal Crushing & Screening	ZAR/ROMt	35.00	
Coal Washing	ZAR/ROMt	40.00	
Coal Handling	ZAR/ROMt	10.00	
<b>OVERHEAD COSTS</b>			
Management	ZAR/ROMt	3.50	
Occupational Health	ZAR/ROMt	0.35	
Power	ZAR/ROMt	0.65	
Rehabilitation	ZAR/ROMt	3.64	
Social And Labour Cost	ZAR/ROMt	0.50	
Security	ZAR/ROMt	0.50	
Infrastructure Maintenance	ZAR/ROMt	1.00	
Sampling and Analysis	ZAR/ROMt	0.80	
Distribution Cost	ZAR/st	1.00	

12.4 SUMMARY OF CAPITAL AND OTHER COSTS. COMPLETE THE TABLE BELOW

CAPITAL EXPENSE		
Sustaining Capex	ZAR	-
Expansionary Capex	ZAR	51 500 000
Surface Right Holder	ZAR	10 000 000
EMP	ZAR	1 500 000
Surface and Establishment	ZAR	40 000 000

(Note! These total amounts must be transferred to line item 9 of the cash flow forecast required in terms of Regulation 11 (1) (g) (vi) below.

**13. REGULATION 11 (1) (G) (VI): A DETAILED CASH FLOW FORECAST AND VALUATION, EXCLUDING FINANCING OF THE PROPOSED MINING OPERATION, WHICH FORECAST MUST ALSO CLEARLY INDICATE HOW THE APPLICABLE REGULATORY COSTS WILL BE ACCOMMODATED THEREIN.**

(The following cash flow forecast must be submitted in accordance with the line items provided. The applicant may not change the line items or their sequence. The applicant may, however provide for escalation within accepted practice, and provide other indicators such as IRR in addition)

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
1. REGULATIONS 11(1) (d) and (f) PRODUCTION	1 103 156	1 037 272	1 121 140	1 379 042	1 320 526	1 192 193	1 064 071	1 087 686	1 081 538	1 183 760
2. REGULATION 11(1) (e) PRICE	407	407	407	407	407	407	407	407	407	407
3. REVENUE	448 984 648	422 169 802	456 304 086	561 270 124	537 454 200	485 222 410	433 077 092	442 688 014	440 186 130	481 790 232
4. REGULATION 11(1) (g) (i) MINING COST	316 550 503	370 098 679	383 086 169	463 124 753	524 684 728	494 375 723	430 026 503	407 755 607	413 895 304	565 457 990
5. REGULATION 11(1) (g) (ii) TECHNOLOGY COST	127 170 763	119 442 155	128 890 014	158 660 079	152 424 776	138 424 392	124 065 615	127 257 962	124 224 182	135 641 165
6. REGULATION 11(1) (g) (iii) TECHNICAL SKILLS COST	8 488 557	8 488 557	8 488 557	8 488 557	8 488 557	8 488 557	8 488 557	8 488 557	8 488 557	8 488 557
7. REGULATION 11(1) (g) (iv) REGULATORY REQUIREMENTS	18 455 954	9 301 731	11 933 197	15 577 981	5 899 333	3 037 599	3 963 935	7 591 971	6 583 594	4 004 729
ENVIRONMENTAL COST										
8. REGULATION 11 (1)(G) (viii) SOCIAL AND LABOUR PLAN COST	748 063	702 601	758 177	933 295	896 616	814 261	729 798	748 576	730 730	797 889
9. REGULATION 11(1) (g) (v) CAPITAL AND OTHER	51 500 000									
10. WORKING PROFIT/LOSS	113 978 190	42 769 392	61 284 719	82 567 391	6 870 138	(12 190 913)	(913 347)	27 340 436	19 707 232	(87 672 487)
11. TAX	17 493 893	11 975 430	17 159 721	23 118 869	1 923 639	(3 413 456)	(255 737)	7 655 322	5 518 025	(24 548 296)

12. NET CASH FLOW	96 484 297	30 793 962	44 124 998	59 448 521	4 946 499	(8 777 457)	(657 610)	19 685 114	14 189 207	(63 124 191)
13. DISCOUNTED CASH FLOW										

The Applicant may provide for escalation, based on accepted practice, and may provide other indicators such as IRR.

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**14. REGULATION 11 (1) (G) (VII): DETAILS REGARDING THE APPLICANTS RESOURCES OR PROPOSED MECHANISMS TO FINANCE THE PROPOSED MINING OPERATION, AND DETAILS REGARDING THE IMPACT OF SUCH FINANCING ARRANGEMENTS ON THE CASH FLOW FORECAST.**

**14.1 FINANCING THE CASH FLOW**

- (Provide in tabular format an explanation of how the cash flow will be financed, showing the amounts, the type of financing, eg. Loans, equity, retained earnings, etc, as well as the impact of financing on the cash flow in terms of financial arrangements and repayments)

**14.2 DETAIL REGARDING THE FINANCING ARRANGEMENTS**

- (Elaborate on the financing arrangements that are described in item 14.1 above, in terms of where the finance will be sourced, extent to which the financing has been finalized and on the level of certainty that such financing can be secured.)

**14.3 CONFIRMATION OF SUPPORTING EVIDENCE APPENDED**

- (Attach evidence of available funding and or financing arrangements such as balance sheets, agreements with financial institutions, underwriting agreements, etc. and specifically confirm in this regard what documentation has been attached as appendices)

**15. REGULATION 11 (1) (H): UNDERTAKING, SIGNED BY THE APPLICANT, TO ADHERE TO THE PROPOSALS AS SET OUT IN THE MINING WORK PROGRAMME**

Herewith I, the person whose name and identity number is stated below, confirm that I am the Applicant or the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application, and undertake to implement this mining work programme and adhere to the proposals set out herein.

<b>Full Names and Surname</b>	
<b>Identity Number</b>	

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## 16. APPENDICES

The following appendices are included in this proposal:

- Appendix A – 20160415 Dunbar West CPR.PDF;
- Appendix B – 20190503 MR Block.PDF;
- Appendix C – Nurizon Consulting’s ISO 9001 Certificate;
- Appendix D – Nurizon Consulting’s Company project list;
- Appendix E – Nurizon Consulting’s Case Studies;
- Appendix F – Nurizon Consulting’s Reference Letters;
- Appendix G – Nurizon Consulting’s CVs; and

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**APPENDIX A**

**20160415 Dunbar West CPR.PDF**

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**APPENDIX B**

**20190503 MR Block.PDF**

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APPENDIX C

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APPENDIX D

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APPENDIX G

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