Appendix D: Mining Work Programme

NAME OF APPLICANT:

Imerys Refractory Minerals South Africa: t/a Cape Bentonite Mine

REFERENCE NUMBER:

MINING WORK PROGRAMME

Submitted for

A MINING RIGHT APPLICATION

With respect to

REMAINING EXTENT OF FARM UITPANSKRAAL NR 585 HEIDELBERG, MAGISTERIAL DISTRICT OF SWELLENDAM

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 an Mining Work Programme, strictly under the following headings and in the following format together with the application for a mining right.

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

ITEM	COMPANY CONTACT DETAILS
Company Name	Imerys Refractory Minerals South Africa t/a Cape Bentonite Mine
Registration Nr	1963/005589/07
Physical Address	Sanlameerzicht Lower Level 259 West Street Centurion 0157
Contact Person	Mr Helmut Gemurr and Mr. Yoann Hoibian
Postal Address	Box 8118, Centurion 0046
Phone	012 643 5880; Cell 079 513 9503
Fax	012 643 1966
E-mail	*Julien.conte@imerys.com / yoann.hoibian@imerys.com*
Banking Details	*Ecca Holdings (Pty) Ltd-Standard Bank (Centurion Branch):01-26-45-40, Account number: 410305995*

ITEM	CONSULTANT CONTACT DETAILS (if applicable)
Company Name	Not applicable
Physical Address	
Contact Person	
Postal Address	
Phone	
Fax	
E-mail	

2. REGULATION 11(1) (b): PLAN SHOWING THE LAND AND MINING AREA TO WHICH THE APPLICANT RELATES (The plan required in term of Regulation 2(2))

Refer to Appendices D1 and D2

3. REGULATION 11(1) (c): THE REGISTERED DESCRIPTION TO WHICH THE APPLICANT RELATES

ERF 1401, ERF 1199 and ERF 2924, Swellendam Magisterial District

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

4.1 Resource Particulars

ITEM	DETAIL

Types of Mineral	Bentonite and Zeolite
Locality	Heidelberg
Extent of the area required for Mining	**Erf 1401:** • Property size – 75.5ha • Proposed mining activities areas size (as located on completely transformed cultivated lands – 57ha • Phase 1 Quarry – 4.6ha • Phase 2 Quarry – 4.33ha • Phase 3 Quarry – 1.05ha • Phase 6 Quarry – 1.24ha **Erf 1199 :** • Property size – 11.5ha • Proposed mining activities areas size (as located on completely transformed cultivated lands – 6ha **Erf 2924:** • Property size – 47.2ha • Proposed mining activities areas size (as located on completely transformed cultivated lands – 17ha • Phase 4 Quarry – 3.68ha • Phase 5 Quarry – 1.94ha **TOTALS:** • Total properties size – 135ha • Total mining activities area on completely transformed agricultural lands – 80ha Total quarries size – 16.84ha
Extent of the area required for infrastructure, roads, servitudes etc…	80 Hectares (Mining Activities Area)
Maximum depth below surface	25-30 m
Minimum depth below surface	1 m
Geological Formation	Kirkwood Formation

4.2 Detail of person that compiled the resource statement

ITEM	**DETAILS**
Name	Yoann Hoibian
Qualifications	MSc Degree in Reservoir Geology
Experience	3 years
Professional Body (if registered)	-
Registration number (if applicable)	-

4.3 Locality Specific Geological Map (in colour)

Refer to Appendix D3

4.4 Exploration result (supporting geological reports to be listed and appended)

Refer to Appendix D4 (Deposit Layout)

These plans summarize the extent and position of the known deposit on the Farm, which could be easily followed on the surface in the surroundings of the existing mining right areas.

4.5 Information required in terms of Regulation 8(in case where the application was preceded by a prospecting right)

Not applicable

4.6 Mineral Resource Map

Refer to Appendix D4

4.7 Resource Statement

***Table 1**: REMAINING EXTENT OF FARM UITPANSKRAAL RE NR 585: Reserves and Resources*

	Reserves		**Resources**		
	Proven	**Probable**	**Measured**	**Indicated**	**Inferred**
Clay (tons)	**-**	**-**	**-**	**-**	***50 000t***

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 product and their proportionate quantities

***Table 2:** Product grades produced at Cape Bentonite Mine*

Grade	***Uses***	***Annual Consumption (tons)***		***Price Range****
		Local/Regional	***Export***	
ECCABOND N	***Binder in moulding and pelletising***	***32 200***	***3 000***	***355 – 800***
ECCAGEL	***Drilling mud***	***700***	***3 400***	***700 – 1250***
ECCASEAL	***Soil stabilizer, Slurry trenching, Dry walling***	***2000***		***700 – 900***
ECCACAT	***Cat litter***	***500***		***600 – 700***
ECCAFEED	***Binder in feed pelletising***	***400***		***600 – 700***
VARIOUS	***Fruit juice and wine clarification, pottery,***	***200***		***1400 – 1700***
TOTALS		***36 000***	***6 400***	

5.2 Market for each specific products in terms of Local, Regional, or International (export)

See table 2 above

5.3 Summary of product consumers

Table 3: *Product grades produced at Cape Bentonite Mine and main customers*

Grade	***Customers***
ECCABOND N	***Local: SCAW METALS, ATLANTIS FOUNDRY, HERNIC FERROCHROME***
ECCAGEL	***Local: SAMCHEM*** ***International: HALLIBURTON***
ECCASEAL	***Local: DURA PILING, STEFFANUTTI***
ECCACAT	***Local: INTERCAN, ARLECO, SA PET***
ECCAFEED	***Local: CAMELUS VOERE, FEEDPHARM***
VARIOUS	***Local: VARIOUS***

5.4 Summary of customer specifications and details of any proposed beneficiation of the products

Grade	***Uses***	***Beneficiation***
ECCABOND N	***Binder in moulding and pelletising***	***Binding properties***
ECCAGEL	***Drilling mud***	***Viscosity properties (Suspension of materials within wells)***
ECCASEAL	***Soil stabilizer, Slurry trenching, Dry walling***	***Sealing properties***
ECCACAT	***Cat litter***	***Absorption properties***
ECCAFEED	***Binder in feed pelletising***	***Binding properties***
VARIOUS	***Fruit juice and wine clarification, pottery,***	***Filtration properties***

5.5 Summary of infrastructure requirement such as road rail way, electricity and water

Cape Bentonite is already and currently in production, therefore no new infrastructure is required.

5.6 Summary of other information applied that may influence price, e.g exchange rate, duties, barriers etc.

None

5.7 The price to be used in the cash flow forecast

-

5.8 Confirmation that a specialist market analysis is attached as an appendix which explain the assumption made and how the price was determined

Cape Bentonite has been in production for more than 40 years with an existing customer/client base, therefore no market analysis for this specific site is required.

6. REGULATION 11(1) (f): THE DETAIL WITH THE REGARD OF THE APPLICABLE TIMEFRAME AND SCHEDULING OF THE VARIOUS IMPLEMENTATION PHASES AND A TECHNICALLY JUSTIFIED ESTIMATE OF THE PERIOD REQUIRED

6.1 Time frames and scheduling of the implementation phases

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

Estimated time frame for the proposed mining of the 16.84ha area on the applicable property is ± 10years.

6.1.2 Explanation of the production build up period once production commences

-

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

-

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

-

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)

RESERVES	PRODUCTION RATE	LOM
50 000t	5 000t/year	10 years

7. REGULATION 11(1)(g)(i): THE DETAILS WITH REGARDS TO THE COSTING OF THE MINING TECHNIQUE, MINING TECHNOLOGY AND PRODUCTION RATES (excluding labour and capital)

7.1 Mine Design Map (*include a high level map indicating the basic mine design and schematic mining schedule****)***

Refer to Appendix D2

7.2 Description of the Mining method's impact on operating cost

7.2.1 Basic overview of the mining Method

Mining is conducted 'in-house' by means of excavators, front-end loaders and 15-ton dumper trucks. The mining method comprises of relatively shallow opencast quarrying. The topsoil and the overburden are removed and stockpiled separately along the perimeter of the quarry. As and when the bentonite is being mined, it is trucked to the Processing Plant at the head offices on Erf 1412, Heidelberg. Overburden is mined in 20m wide and 3-4m thick benches to expose 3m of bentonite down-dip to be mined. This process is repeated until all bentonite is mined out. Through this process the quarries depth will be a maximum of 30m deep, and no more than half of the quarry size will be open at a time. Rehabilitation takes place on an ongoing basis as mining proceeds. As the quarry advances along strike, the overburden is progressively replaced to backfill the excavation. The backfilled area is then contoured to prevent erosion, which could be caused by rain and surface water flow. Finally the topsoil is then spread over the disturbed surface area to restore the land to its previous state. The bentonite found on the mining area is emplaced as relatively thin seams of 1-4m thick. The topsoil is normally less than 30cm thick. Overburden consists of a sequence of siltstone with conglomerate lenses; the latter also form the footwall of the succession. The timing of the several phases is described on the Mine Layout Plan as attached under Appendix D2. Also refer to Appendix D5 of this MWP for typical cross section of proposed mining method.

7.2.2 Description of equipment and activities impacting on electricity cost

None

7.2.3 Description of equipment and activities impacting on fuel cost

-Excavator * 2 -15 tons Truck *4 -Dozer *1 -30 tons Truck*1 -Loader*1

7.2.4 Description of equipment and activities impacting on cost of stores and materials

-Moving equipment Maintenance -Operation Boards

7.2.5 Description of equipment and activities impacting on the cost of water

None

7.2.6 Description of equipment and activities impacting on other cost not included above

None

7.2.7 Operating cost forecast (excluding the processing plant and labour) in KZAR 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
Electricity	0	0	0	0	0	0	0	0	0	0
Fuel	1711.5	1814.19	1923.041	2038.42	2160.73	2290.37	2427.8	2573.46	2727.87	2891.54
Stores	340.4	360.824	382.4734	405.422	429.747	455.532	482.864	511.836	542.546	575.099
Water	0	0	0	0	0	0	0	0	0	0
Other (specify)	0	0	0	0	0	0	0	0	0	0
Total Cost (to be reflected in the cash flow forecast)	2051.9	2175.01	2305.515	2443.85	2590.48	2745.91	2910.66	3085.3	3270.42	3466.64

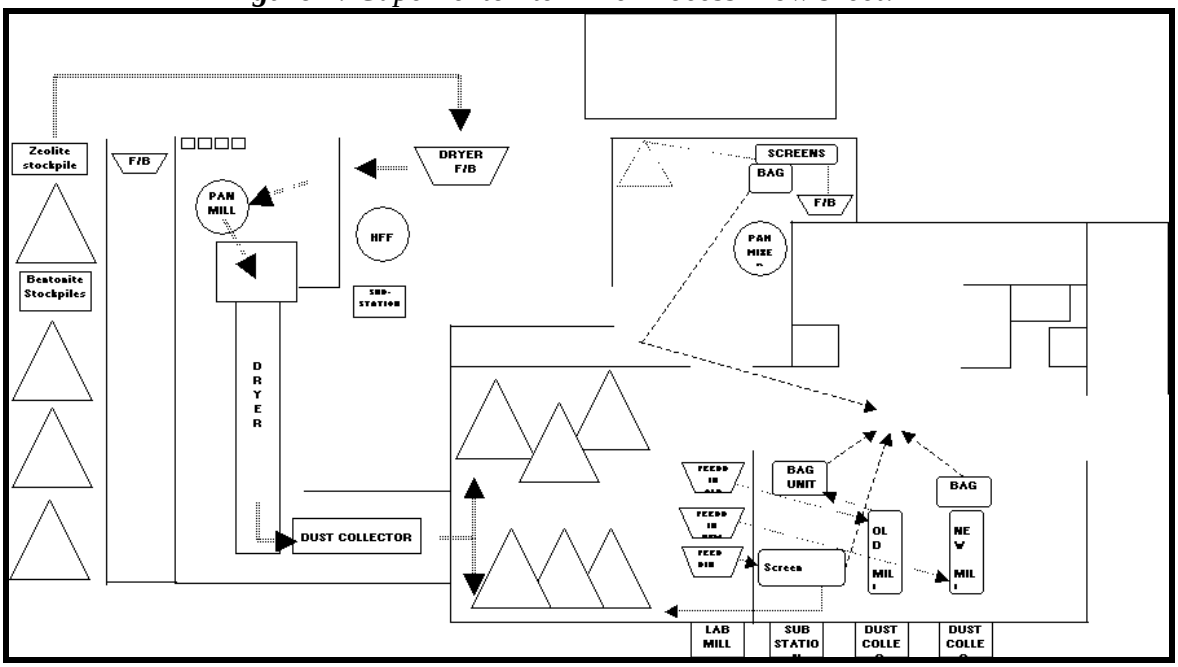
NB! The costs determined here must explain the costs used in line item 4 of the cash flow forecast required herein under Regulation 11(1) (g)(vi)

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)

***Figure 1**: Cape Bentonite Mine Process Flow sheet.*



8.1.2 Efficiency of the Process (together with an estimate of the mineral recovery rate, and the expected mass or volume of mine waste or residues together with the manner in which it would be disposed of)

No waste is created during bentonite processing. The only Mass Loss occurring is due to the decreasing of the Moisture of the Material through the dryer. Indeed, the material is around 28% moisture (average) before drying and 10% after.

8.2 Description of equipment and activities impacting on electricity cost (excluding the processing plant)

-Mills*2 -Pan Mill -Conveyor Belts (Multiples) -Screens*2 -Bag Unit -Soda Station -Drier

8.3 Description of equipment and activities impacting on fuel cost

-Front-end Loader -Fork lift

8.4 Description of equipment and activities impacting on cost of stores and materials

-Plant Maintenance

8.5 Description of equipment and activities impacting on the cost of water

None

8.6 Description of equipment and activities impacting on other cost not included above

Soda ash (improve quality of Bentonite) The Drier Burner is using coal

8.6.1 Processing Plant operating cost forecast (excluding Labour) in KZAR

COST CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
Electricity	4709	4991.54	5291.032	5608.49	5945	6301.7	6679.81	7080.59	7505.43	7955.76
Fuel	570.5	604.73	641.0138	679.475	720.243	763.458	809.265	857.821	909.29	963.848
Maintenance and repairs	510.6	541.236	573.7102	608.133	644.621	683.298	724.296	767.754	813.819	862.648
Stores and materials	0	0	0	0	0	0	0	0	0	0
Water	0	0	0	0	0	0	0	0	0	0
Soda Ash and Coal	5254	5569.24	5903.394	6257.6	6633.05	7031.04	7452.9	7900.07	8374.08	8876.52
Total Cost (to be reflected in the cash flow forecast)	11044.1	11706.7	12409.15	13153.7	13942.9	14779.5	15666.3	16606.2	17602.6	18658.8

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): DETAIL AND COSTING OF THE TECHNICAL SKILLS, EXPERTISE AND ASSOCIATE LABOUR IMPLICATIONS REQUIRED TO CONDUCT THE PROPOSE MINING OPERATIONS

9.1 Organizational structure of the mine

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

None

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

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

None

9.2 Costing of the skills categories in the mining operation to determine if technical competence has been budgeted for: Complete the following tables:

With Cape Bentonite currently producing and planning on continuing operations after the end of the mining of this particular prosed deposit, the skills required for the mining operations will be unchanged during the LOM.

MINE EMPLOYEES

Personnel of the Mine's Payroll: (Years 1 to 5)

CATEGORY	LOM	
	NO OF POSITIONS	BUDGET
Top management	***0***	**-**
Senior management	***0***	**-**
Professionally qualified and experience specialist and mid-management	***2***	**-**
Skilled technical and academically qualifies workers, junior management, supervisors, foreman and superintendent	***12***	**-**
Semi-skilled and discretionary decision making	***19***	***5000***
Non-permanent employee	***1***	**-**
TOTAL PERSONNEL EXPENDITURE	***34***	***5000***

Personnel of the Mine's Payroll: (Years 6 to 10)

CATEGORY	LOM	
	NO OF POSITIONS	BUDGET
Top management	***0***	**-**
Senior management	***0***	**-**
Professionally qualified and experience specialist and mid-management	***2***	**-**
Skilled technical and academically qualifies workers, junior management, supervisors, foreman and superintendent	***12***	**-**
Semi-skilled and discretionary decision making	***19***	***5000***
Non-permanent employee	***1***	**-**
TOTAL PERSONNEL EXPENDITURE	***34***	***5000***

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

CATEGORY	LOM	
	NO OF POSITIONS	BUDGET
Top management	***0***	**-**
Senior management	***0***	**-**
Professionally qualified and experience specialist and mid-management	***0***	**-**
Skilled technical and academically qualifies workers, junior management, supervisors, foreman and superintendent	***2***	**-**
Semi-skilled and discretionary decision making	***0***	**-**
Non-permanent employee	***0***	**-**
TOTAL PERSONNEL EXPENDITURE	***2***	**-**

SERVICE PROVIDER

CATEGORY	LOM
Breerivier Training	5000
TOTAL BUDGET (SERVICES)	**5000**

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

CATEGORY	LOM
In house skills and services	-
Skills and services provided by subcontractors	-
Skills and services provided by service providers	-
TOTAL BUDGET FOR TECHNICAL SKILLS AND COMPETENCE	-

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): DETAIL 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 estimate cost

(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.)

At a rate of R 213 184/ha, the estimate global cost for the rehabilitation of the proposed active quarries of 16.84ha will be R 3 590 018.50.

Total Proposed Rehabilitation Financial Provision for the Mining Right = R 3 590 018.50

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.)

Not applicable for this specific site

10.1.3 Summary of Environmental cost

Estimated Environmental and Rehabilitation cost

CATEGORY	COST ESTIMATE
a)Progressive total for rehabilitation	R 3 590 018.50
b) Cost to mitigate socio-economic conditions of directly affected persons	-
TOTAL COST (Transfer amount to cash flow forecast –Line 7 Year 1 only)	R 3 590 018.50

10.2 Other Regulatory Costs

CATEGORY	BUDGET
Royalties	-/Year
Mine Health and Safety regulations	
Occupational health	
Rate and taxes	
National skills fund	
Other:Specify	
TOTAL COST (Include amount into the cash flow forecast – Line 7)	

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

11. REGULATION 11(1) (g)(viii): PROVISION 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**
HUMAN RESOURCES DEVELOPMENT	R238000	R290000	R338500	R346500	R245500	R270050	R297055	R326760.05	R359436.55	R395380.05
LOCAL ECONOMIC DEVELOPMENT	0	R70000	R280000	R100000	R500000	R550000	R605000	R665500	R732050	R805255
MANAGEMENT OF DOWNSCALING	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ESTIMATED TOTALS PER YEAR	238000	360000	R688500	R521500	R405500	R820050	R902055	R992260	R1091486.55	R1200635.05

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 byproducts 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 at and applied to each year's production estimate in order to estimate revenue.

Revenue is determined by Production sales of Bentonite and Zeolite Locally and for the export. Sales prices consists of Product Sales price, Packaging (if applicable) and Transport to the Customer (depending on Inco Terms with the Customer)

12.1.2 Revenue forecast (for each year of 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).

Year	Revenue
2019	127 189 117
2020	134 820 464
2021	142 909 692
2022	151 484 274
2023	160 573 330
2024	170 207 730
2025	180 420 194
2026	191 245 405
2027	202 720 129
2028	214883337
2029	227776337
2030	241442918

12.2 Estimated Capital expenditure

12.2.1 Initial capital expenditure

Not applicable – mine already operational.

12.2.2 Ongoing Capital Expenditure

None for this specific farm/property.

12.2.3 Summary in a 10 year Tabular format

Not applicable for this specific site

12.3 Explanation and summary of other cost

Not applicable for this specific site

12.4 Summary of capital and other costs.

Not applicable for this specific site

(Note! The total amounts must be transferred to line item 9 of the cash flow forecast require 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

Life of Mine Projected Cash Flow B17-12 to F30-12 IRMS Cape Bentonite

	MZAR	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
			60%	6%	6%	6%	6%	6%	6%	6%	6%
	Sales Tons	50 078	50 078	50 078	50 078	50 078	50 078	50 078	50 078	50 078	50 0
	Revenue	100 587 179	106 622 409	113 019 754	119 800 939	126 988 996	134 608 335	142 684 835	151 245 926	160 320 681	169 939 9
	Variable Cost	(52 843 881)	(56 014 514)	(59 375 384)	(62 937 907)	(66 714 182)	(70 717 033)	(74 960 055)	(79 457 658)	(84 225 118)	(89 278 6
	Contribution Margin		47%	47%	47%	47%	47%	47%	47%	47%	
	Fixed Cost	(25 641 024)	(27 475 125)	(28 763 033)	(30 348 015)	(32 168 895)	(34 099 029)	(36 144 971)	(38 313 669)	(40 612 489)	(43 049 2
	Labour (inc Soc. Charges)	(13 794 596)	(14 622 271)	(15 499 607)	(16 429 584)	(17 415 359)	(18 460 280)	(19 567 897)	(20 741 971)	(21 986 489)	(23 305 6
	Maintenance & Repair	(336 657)	(356 856)	(378 268)	(400 964)	(425 021)	(450 523)	(477 554)	(506 207)	(536 580)	(568 7
	Taxes	(3 386 024)	(3 589 185)	(3 804 536)	(4 032 808)	(4 274 777)	(4 531 263)	(4 803 139)	(5 091 328)	(5 396 807)	(5 720 6
	Depreciation	(2 013 072)	(2 133 856)	(2 261 887)	(2 397 601)	(2 541 457)	(2 693 944)	(2 855 581)	(3 026 916)	(3 208 531)	(3 401 0
	External services	(5 004 676)	(5 304 957)	(5 623 254)	(5 960 650)	(6 318 289)	(6 697 386)	(7 099 229)	(7 525 183)	(7 976 694)	(8 455 2
	Environmental Costs	(216 000)	(216 000)	(228 960)	(242 698)	(257 259)	(272 695)	(289 057)	(306 400)	(324 784)	(344 2
	SLP	(190 000)	(510 000)	(180 000)	(50 000)	(53 000)	(56 180)	(59 551)	(63 124)	(66 911)	(70 9
	Training & Development	(700 000)	(742 000)	(786 520)	(833 711)	(883 734)	(936 758)	(992 963)	(1 052 541)	(1 115 694)	(1 182 6
	Total Cost of Production	(78 484 904)	(83 489 639)	(88 138 417)	(93 285 922)	(98 883 077)	(104 816 062)	(111 105 026)	(117 771 327)	(124 837 607)	(132 327 8
	Gross Profit / Loss	22 102 274	23 132 771	24 881 337	26 515 017	28 105 918	29 792 273	31 579 810	33 474 598	35 483 074	37 612 0
	Gross Profit Margin	22%	22%	22%	22%	22%	22%	22%	22%	22%	
	Overheads	(14 500 000)	(15 370 000)	(16 292 200)	(17 269 732)	(18 305 916)	(19 404 271)	(20 568 527)	(21 802 639)	(23 110 797)	(24 497 4
	Net Profit before Tax	7 602 274	7 762 771	8 589 137	9 245 285	9 800 002	10 388 002	11 011 283	11 671 959	12 372 277	13 114 6
	Tax	(2 128 637)	(2 173 576)	(2 404 958)	(2 588 680)	(2 744 001)	(2 908 641)	(3 083 159)	(3 268 149)	(3 464 238)	(3 672 0
	Net Profit / Loss	5 473 637	5 589 195	6 184 179	6 656 605	7 056 002	7 479 362	7 928 123	8 403 811	8 908 039	9 442 5
	Depreciation	2 013 072	2 133 856	2 261 887	2 397 601	2 541 457	2 693 944	2 855 581	3 026 916	3 208 531	3 401 0
	Capital & Change in Working Capital		500 000	500 000	500 000	500 000	500 000	500 000	500 000	500 000	500 0
	Net Cash Flow		3 955 339	4 422 291	4 759 005	5 014 545	5 285 418	5 572 543	5 876 895	6 199 509	6 541 4
	Net Present Value		58 093 954								

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

14. REGULATION 11(1)(g)(vii): DETAILS REGARDING THE APPLICANT RESOURCES OR PROPOSED MECHANISM TO FINANCE THE PROPOSED MINING OPERATION, AND DETAILS REGARING THE IMPACT OF SUCH FINANCING ARRANGEMENTS ON THE CASH FLOW FORECAST

14.1 Financing the cash flow

Imerys will be able to generate enough resources out of the Operating capital (e.g. 13)

14.2 Detail regarding the financing arrangement

NA

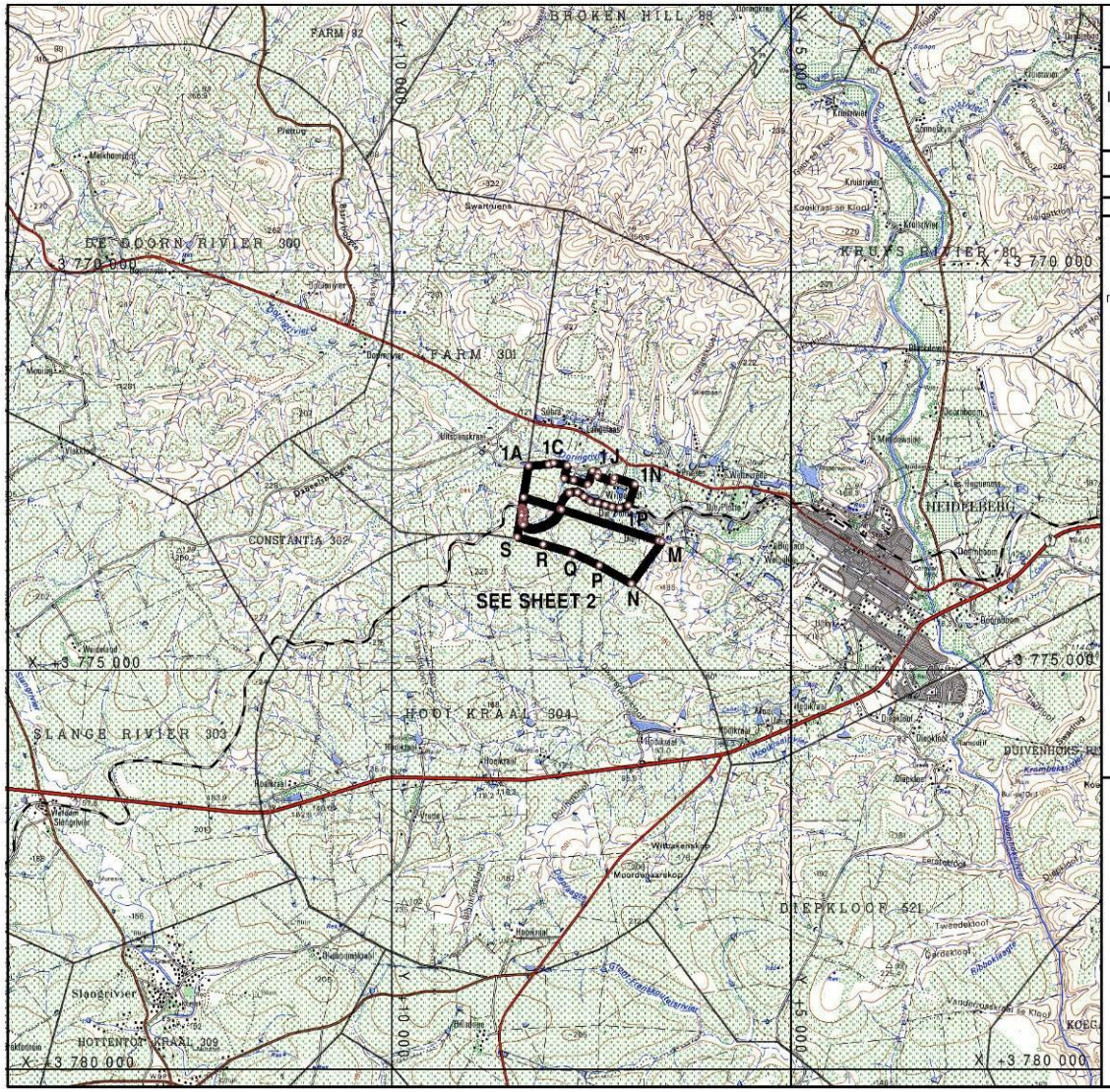
14.3 Confirmation of supporting evidence appended

See point 13

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.	
Full Names and Surname	
Identity Number	

Appendix D1: Regulation 2(2) Map



IMERY'S REFRACTORY MINERALS SOUTH AFRICA (PTY) LTD

APPLICATION FOR a MINING RIGHT.

Applicant:
IMERY'S REFRACTORY MINERALS SOUTH AFRICA (PTY) LTD
Reg.No.1973/012351/07

J.M.HATTINGH
Professional Land Surveyor:- Registration No.PLS0252D
Date: 06 SEPTEMBER 2018

MINERAL MINED : BENTONITE and ZEOLITE

CO-ORDINATE LIST WGS Hartebeesthoek 94

PORTION DESCRIPTION

The figures 1A 1B 1C 1D 1E 1F 1G 1H 1J 1K 1L 1M 1N 1P cureve 1Q curve 1R curve 1S curve 1T curve 1U curve 1V curve 1W curve 1X curve A curve 7,87m. from centre of railway line B C D E F G H J 1A and K L M N P Q R S T U V W X Y Z curve 7,87m. from centre of railway line K represents 132,7233 hectares of land being a Mining Right over

1) ERF 1199 HEIDELBERG
2) ERF 1401 HEIDELBERG and
3) ERF 2924 HEIDELBERG

Situated in the
LANGEBERG MUNICIPALITY
Administrative District
of SWELLENDAM

for which IMERY'S REFRACTORY MINERALS SOUTH AFRICA (Pty) Ltd with registration No.1973/012351/07 has applied for a Mining Right

Sketch plan prepared by
MERIDIAN SURVEYS
230 Bootes Street,
Waterkloof Ridge,
Pretoria 0027,
Tel (012) 346-1489
Fax (012) 346 1076,
E-mail:info@msurveys.co.za

T N

WG 21°

Name	Y Metres	X
FIG1		
1A	+8 285,65	+3 772 437,16
1B	+8 034,41	+3 772 418,07
1C	+7 971,42	+3 772 400,18
1D	+7 797,84	+3 772 429,33
1E	+7 842,44	+3 772 595,39
1F	+7 720,49	+3 772 615,02
1G	+7 540,57	+3 772 670,74
1H	+7 484,19	+3 772 497,36
1J	+7 407,04	+3 772 521,53
1K	+7 422,66	+3 772 571,41
1L	+7 221,95	+3 772 634,27
1M	+7 206,33	+3 772 584,40
1N	+6 948,58	+3 772 665,13
1P	+7 033,82	+3 772 934,76
1Q	+7 144,10	+3 772 961,43
1R	+7 236,39	+3 772 950,53
1S	+7 323,71	+3 772 923,17
1T	+7 415,55	+3 772 900,07
1U	+7 508,83	+3 772 879,84
1V	+7 588,59	+3 772 822,47
1W	+7 670,70	+3 772 766,96
1X	+7 772,28	+3 772 775,77
A	+7 889,48	+3 772 977,47
B	+8 338,51	+3 773 165,30
C	+8 346,60	+3 773 135,11
D	+8 343,86	+3 773 105,23
E	+8 332,39	+3 773 045,73
F	+8 336,13	+3 773 011,25
G	+8 346,56	+3 772 982,94
H	+8 368,74	+3 772 956,69
J	+8 348,58	+3 772 830,88
FIG2		
K	+7 874,10	+3 772 982,53
L	+6 653,95	+3 773 372,45
M	+6 611,16	+3 773 386,31
N	+6 994,33	+3 773 913,69
P	+7 397,05	+3 773 684,29
Q	+7 734,74	+3 773 527,24
R	+8 099,46	+3 773 421,11
S	+8 428,45	+3 773 330,60
T	+8 372,64	+3 772 980,94
U	+8 370,88	+3 773 005,05
V	+8 368,14	+3 773 028,59
W	+8 371,36	+3 773 059,58
X	+8 375,47	+3 773 120,00
Y	+8 368,54	+3 773 149,23
Z	+8 351,94	+3 773 173,58

Scale 1: 50000

REGIONAL MANAGER Date
Western Cape Region

APPLICANT Date
Head of Strategy and Corporate Services for and behalf of
IMERY'S REFRACTORY MINERALS SOUTH AFRICA (PTY) LTD

THIS PLAN COMPRISES TWO SHEETS
SHEET No.1

Appendix D2: Regulation 42 Mine Layout Map

IMERY'S REFRACTORY MINERALS SOUTH AFRICA (PTY) LTD

APPLICATION FOR a MINING RIGHT.

APPLICANT:
IMERY'S REFRACTORY MINERALS SOUTH AFRICA (PTY) LTD
Reg.No.1973/012351/07

F.W.HATTINGH
Professional Land Surveyor:- Registration No.PLS0252D
Date: 06 SEPTEMBER 2018

MINERAL MINED : BENTONITE and ZEOLITE

QUARRY

	Y WG 21°	X
Phase 1		
NN	+7 353,60	+3 773 275,33
NO	+7 323,71	+3 773 358,01
NP	+7 751,99	+3 773 465,71
NM	+7 782,17	+3 773 346,35
Phase 2		
NJ	+7 560,81	+3 773 127,77
NK	+7 433,02	+3 773 225,43
NL	+7 829,09	+3 773 283,06
NI	+7 860,96	+3 773 154,51
Phase 3		
NR	+7 077,25	+3 773 258,90
NS	+7 016,20	+3 773 307,09
NT	+7 220,50	+3 773 372,30
NQ	+7 197,64	+3 773 303,78
Phase 4		
NF	+8 005,81	+3 772 667,83
NG	+7 973,45	+3 772 784,57
NH	+8 288,75	+3 772 818,73
NE	+8 284,83	+3 772 688,53
Phase 5		
NB	+7 993,03	+3 772 478,87
NC	+7 952,94	+3 772 557,06
ND	+8 191,54	+3 772 580,18
NA	+8 213,36	+3 772 501,31
Phase 6		
NV	+8 171,82	+3 773 245,22
NW	+8 167,62	+3 773 312,10
NX	+8 342,74	+3 773 314,39
NU	+8 379,05	+3 773 252,50
Bentonite Stockpile		
NA2	+7 150,50	+3 773 234,71
NA3	+7 131,03	+3 773 274,23
NA4	+7 182,82	+3 773 289,28
NA1	+7 197,44	+3 773 247,18

The figure NA2 NA3 NA4 NA1 NA2 represents 2249 square metres of land being a Bentonite Stockpile

The figures NN NO NP NM NN, NJ NK NL NI NJ, NR NS NT NQ NR, NF NG NH NE NF, NB NC ND NA NB and NV NW NX NU NV represents 4,5963- 4,2741- 1,0525- 3,7080- 1,8725- and 1,2406 hectares of land respectively being the proposed QUARRIES

THIS PLAN COMPRISES
TWO SHEETS
SHEET No.2

REGIONAL MANAGER
Western Cape Region
Date

APPLICANT
Head of Strategy and Corporate Services for and behalf of
IMERY'S REFRACTORY MINERALS SOUTH AFRICA (PTY) LTD
Date

ERF 1401, 1199 & 2924

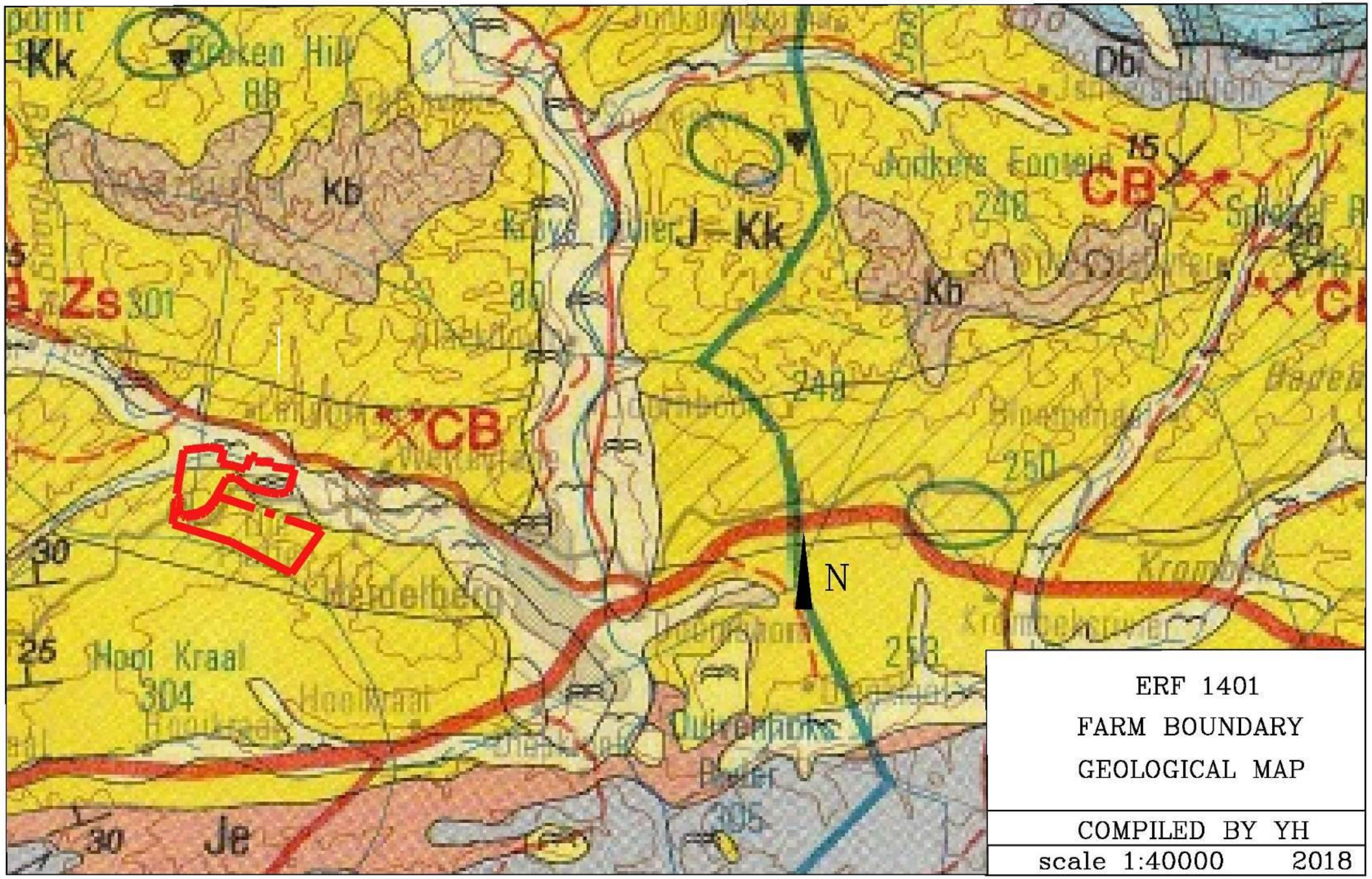
LAYOUT PLAN

2018

COMPILED BY YH & ES

scale 1:2000 AUG 2018

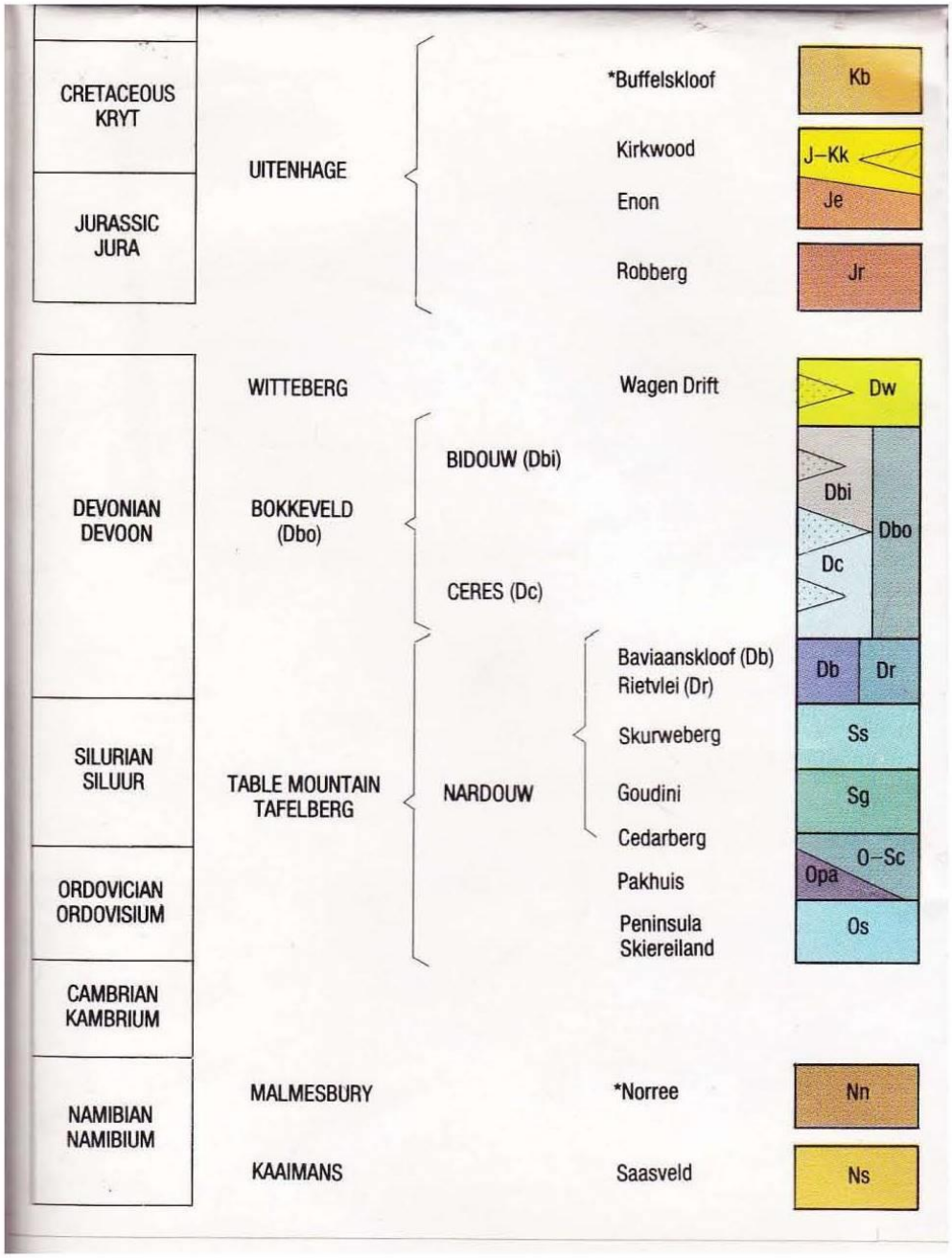
Appendix D3: Local Geology Map



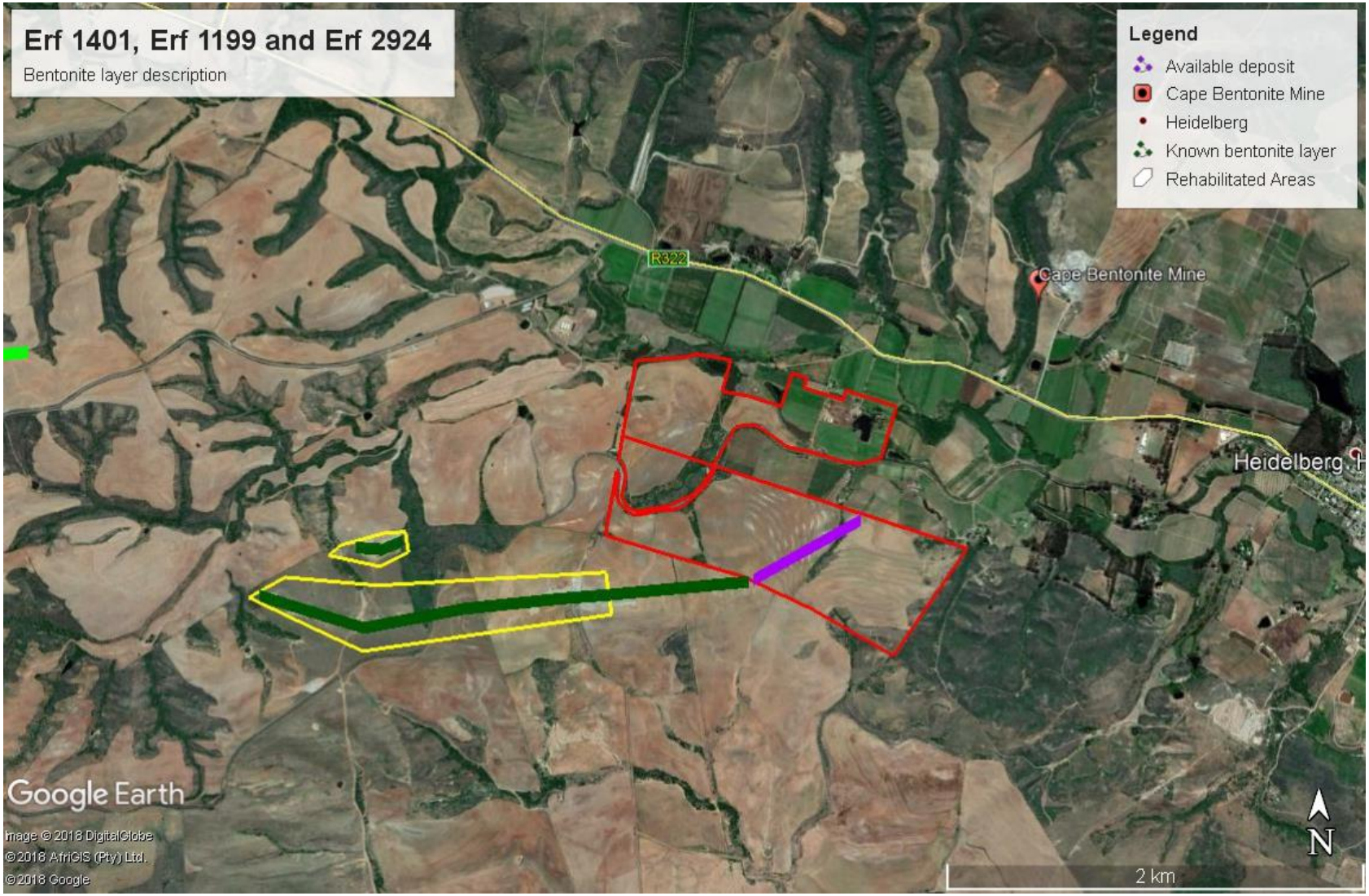
ERF 1401
FARM BOUNDARY
GEOLOGICAL MAP

COMPILED BY YH

scale 1:40000 2018


CRETACEOUS
KRYT
JURASSIC
JURA
UITENHAGE
*Buffelskloof
Kirkwood
Enon
Robberg
Kb
J–Kk
Je
Jr
DEVONIAN
DEVOON
WITTEBERG
BOKKEVELD
(Dbo)
BIDOUW (Dbi)
CERES (Dc)
Wagen Drift
Dw
Dbi
Dbo
Dc
SILURIAN
SILUUR
ORDOVICIAN
ORDOVISIUM
CAMBRIAN
KAMBRIUM
TABLE MOUNTAIN
TAFELBERG
NARDOUW
Baviaanskloof (Db)
Rietvlei (Dr)
Skurweberg
Goudini
Cedarberg
Pakhuis
Peninsula
Skiereiland
Db
Dr
Ss
Sg
O–Sc
Opa
Os
NAMIBIAN
NAMIBIUM
MALMESBURY
KAAIMANS
*Norree
Saasveld
Nn
Ns

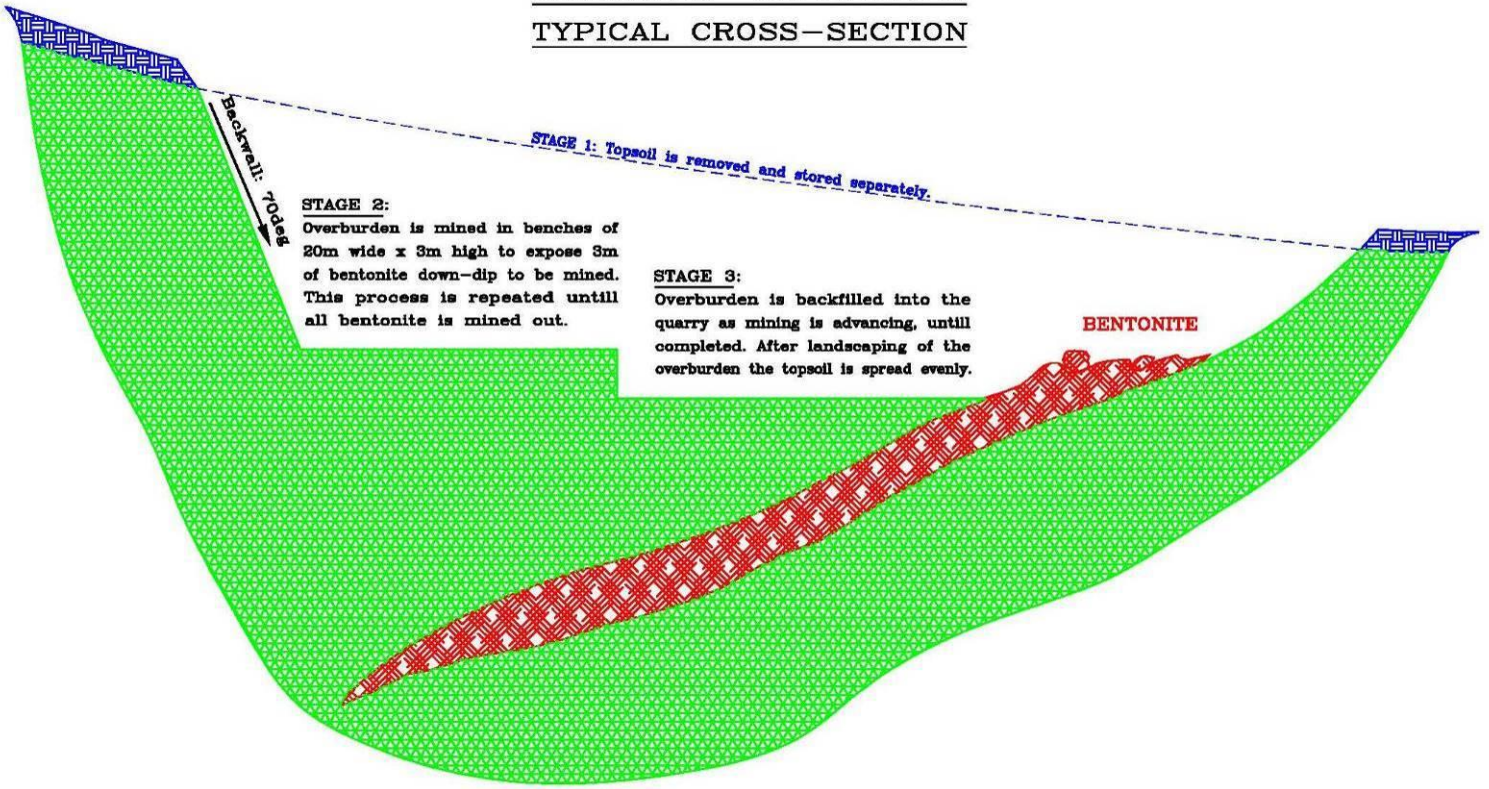
Appendix D4: Deposit Maps


Erf 1401, Erf 1199 and Erf 2924
Bentonite layer description
Legend
Available deposit
Cape Bentonite Mine
Heidelberg
Known bentonite layer
Rehabilitated Areas
R322
Cape Bentonite Mine
Heidelberg
Google Earth
Image © 2016 DigitalGlobe
© 2016 AfriGIS (Pty) Ltd.
© 2016 Google
N
2 km

Appendix D5: Proposed Mining Method Illustration

MINING METHOD

TYPICAL CROSS–SECTION



Appendix D6: Financial and Technical Competence Report

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT:

FINANCIAL AND TECHNICAL COMPETENCE REPORT

SUBMITTED FOR A MINING PERMIT APPLICATION

AS REQUIRED IN TERMS OF ITEM B OF FORM F, ANNEXURE I OF THE REGULATIONS FOR THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (ACT 28 of 2002), AND IN ACCORDANCE WITH THE STANDARD DIRECTIVE FOR THE COMPILATION THEREOF AS PUBLISHED ON THE OFFICIAL WEBSITE OF THE DEPARTMENT OF MINERAL RESOURCES.

STANDARD DIRECTIVE

All applicants for mining permits are herewith, in terms of the provisions of Section 29 (a) of the Mineral and Petroleum Resources Development Act, directed to submit a report strictly in accordance with the following format, and as informed by the guideline posted on the Departments Official Website, together with an application for a mining permit.

1. TECHNICAL COMPETENCE

1.1 Complete the table below regarding the technical competence forecast.

TABLE 1

TECHNICAL COMPETENCE COST FORECAST											
SKILLS CATEGORY			STATE THE ESTIMATED QUARTERLY EXPENDITURE ON EACH EMPLOYMENT CATEGORY, SUBCONTRACTOR, OR SERVICE PROVIDER AS SHOWN BELOW								
List all the job categories that will be employed on the mine, from the mine manager to the unskilled labourers, including those of subcontractors and service providers.	**State the qualifications required for each job category**	**State Part time or Full time**	**Qtr1 (R'000)**	**Qtr2 (R0'00)**	**Qtr3 (R'000)**	**Qtr4 (R'000)**	**Qtr5 (R'000)**	**Qtr6 (R'000)**	**Qtr7 (R'000)**	**Qtr8 (R'000)**	**TOTAL FOR TWO YEARS**
MINE MANAGER	Diploma in production/ operations	Full time									
SITE ADMINISTRATOR	Diploma	Full time									
PRODUCTION GEOLOGIST	Degree	Full time									
PRODUCTION MANAGER	Degree	Full time									
ELECTRICIAN	Relevant Electrical Qualification	Full time									
DIESEL MECHANIC	Diesel mechanic qualification	Full time									
PROCESS CONTROLLER	Matric	Full time									
PROCESS ATTENDANT	Matric	Full time									
PLANT OPERATOR	Matric	Full time									
TOTAL ESTIMATED EXPENDITURE	**KZAR**		3 039	3 138	3 246	2 923	3 039	3 138	3 246	2 923	**24 692**

NOTE ! If any person (including the applicant) provides services in any job or skills category at a reduced rate or free of charge, then such person's Curriculum Vitae (CV) must be attached as documentary proof of the technical ability available to the applicant.

2. ABILITY TO MANAGE AND REHABILITATE RELEVANT ENVIRONMENTAL IMPACTS

TABLE 2 Environmental cost estimate.

ACTIVITY Mark with X which activities are applicable		POTENTIAL IMPACT	MITIGATION MEASURE	STATE QUARTERLY COST OF MITIGATION MEASURES IN THE AVAILABLE SPACE BELOW, IN RANDS	STATE THE ESTIMATED REHABILITATION COST RELATED TO THE ACTIVITY IN THE AVAILABLE SPACE BELOW, IN RANDS
Excavating	X	Surface disturbance	Rehabilitation	R540 000	R2 160 000 (this correspond to the rehabilitation cost for the whole Operation not for the area we are applying for now)
		Dust	Dust control measures	NA	NA
		Noise	Noise control measures	NA	NA
		Contaminated Drainage	Storm water system	NA	NA
Blasting		Fly Rock	Access control measures	NA	NA
Stockpiles	X	Surface disturbance	Rehabilitation	NA	NA
		Dust	Dust Control Measures	NA	NA
		Contaminated Drainage	Storm water system	NA	NA
Discard dumps or dams		Surface Disturbance	Rehabilitation	NA	NA
		Dust	Dust control Measures	NA	NA
		Contaminated Drainage	Storm water system	NA	NA
Loading, hauling and transport	X	Noise	Noise control measures	NA	NA
		Dust	Dust control Measures	NA	NA
Water supply dams and boreholes.		Surface disturbance	Rehabilitation	NA	NA
Accommodation, offices, ablution, stores, workshops etc.		Surface disturbance	Rehabilitation	NA	NA
Processing Plant		Noise	Noise control measures	NA	NA
		Dust	Dust control Measures	NA	NA
		Contaminated Drainage	Storm water system	NA	NA
		Surface disturbance	Rehabilitation	NA	NA
			TOTAL	R540 000	R2 160 000

3. FINANCIAL COMPETENCE

TABLE 3.1 : Financial implications of the project

CASH FLOW FORECAST (Complete the quarterly information and totals as specified by the "ITEM" column below)									
ITEM	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**	**Quarter 5**	**Quarter 6**	**Quarter 7**	**Quarter 8**	**TOTAL**
PRODUCTION The mass or volume of the product to be produced in each quarter, either in tons, m^3, grams, carats, etc., whichever is applicable.	8 194	8 471	8 855	6 500	8 194	8 471	8 855	6 500	64 040
ITEM	**Quarter 1 R'000**	**Quarter 2 R'000**	**Quarter 3 R'000**	**Quarter 4 R'000**	**Quarter 5 R'000**	**Quarter 6 R'000**	**Quarter 7 R'000**	**Quarter 8 R'000**	**TOTAL R'000**
PRICE The expected price that will be received for the abovementioned product	3 000 R/t	3 000 R/t	3 000 R/t	3 000 R/t	3 000 R/t	3 000 R/t	3 000 R/t	3 000 R/t	3 000 R/t
REVENUE The mass or volume of production multiplied by the price	24 582	25 413	26 565	19 500	24 582	25 413	26 565	19 500	192 120
OPERATING COST Estimated quarterly operating cost (as shown in table 4.2 herein) of stores, materials, electricity, water, fuel and other (Excluding labour and environmental cost)	-18 765	-19 129	-20 278	-14 885	-18 765	-19 129	-20 278	-14 885	-146 114
TECHNICAL COMPETENCE COST TO BE PROVIDED FOR Estimated quarterly cost shown in table 1 above, i.e. salaries, wages, labour, service providers, subcontractors, etc.	-3 039	-3 138	-3 248	-2 923	-3 039	-3 138	-3 248	-2 923	-24 692
ENVIRONMENTAL COST Estimated quarterly cost shown in table 2 above and divide the total rehabilitation cost among the quarters. The total of the environmental cost must equal all the quarterly environmental costs and the total rehabilitation cost combined.	-303	-303	-303	-303	-303	-303	-303	-303	-2 424
CAPITAL AND OTHER The cost (as shown in table 4.1 herein) of land, machinery, the plant, buildings and infrastructure and any other costs. ***Cape Bentonite is already producing for more than 50 years. It is financed on working cost.***	NA	NA	NA	NA	NA	NA	NA	NA	NA
WORKING PROFIT / LOSS The revenue minus all the costs listed above	2 475	2 843	2 736	1 389	2 475	2 843	2 736	1 389	21 664

NOTE! If the total is a working loss, then it means that the mineral optimally in a period of two years.

applicant cannot provide for the technical ability or mine the

TABLE 3.2– FINANCING THE PROJECT

CATEGORY	AMOUNT	SUPPORTING INFORMATION
State the amount required to fund the project	NA	Cape Bentonite is already producing for more than 50 years. It is financed on working cost.
State the amount the applicant has available to fund the project	NA	Cape Bentonite is already producing for more than 50 years. It is financed on working cost.
State the outstanding amount required to fund the project	NA	Cape Bentonite is already producing for more than 50 years. It is financed on working cost.

CATEGORY	DESCRIPTION	SUPPORTING INFORMATION
State how the outstanding amount will be financed, e.g. Loan, investor, etc.	NA	

NOTE ! If the applicant does not have sufficient financial resources readily available (or cannot provide) for the working losses, and for the operating, technical competence and working cost of the first quarter stated in the cash flow forecast above, it cannot be concluded that the applicant has or can provide for the necessary financial resources to carry out the mining activities and to mitigate and rehabilitate relevant environmental impacts.

4. SUPPORTING INFORMATION

TABLE 4.1- CAPITAL COST ESTIMATE: Complete the information required in the table below

COST CATEGORY	QUARTERLY RENTAL WHERE APPLICABLE R'000	OUTRIGHT PURCHASE AMOUNT
Land	Cape Bentonite is already producing for more than 50 years. It is financed on working cost.	
Buildings and infrastructure		
Processing plant		
Machinery		
Other (specify)		
TOTAL (to be reflected in the cash flow forecast in table 3.1 above)	NA	NA

TABLE 4.2- OPERATING COSTS: Complete the information below:-

COST CATEGORY		Quarterly cost R'000
Fuel (average over 2 years period)		750
Electricity (average over 2 years period)		817
Water		0
Stores and materials (average over 2 years period)		1 020
Other (specify) Average over 2 years period	Soda Ash and Coal	1 440
TOTAL QUARTERLY COST (must be reflected in the cash flow forecast in table 3.1 above) *This is an average over the 2 years period*		4 027

TABLE 4.3– BACKGROUND TO OPERATING COSTS: Complete the information below:-

CATEGORY	REQUIREMENT	COMPLETE THIS COLUMN
MINERAL	State the mineral to be mined	Bentonite
FUEL	State volume or tonnage of earth to be excavated per quarter **This is an average over the 2 years period**	180 000t
	State number of excavators to be used	2
	State number of loaders to be used	2
	State number of trucks to be used	5
ELECTRICITY	State volume or tonnage of material to be processed in the plant **This is an average over the 2 years period**	8 005t
	List plant or equipment that requires electricity	-2 Mills; -1 Pan Mill; -10 conveyors; -1 Noodler; -1 Cutter;
WATER	State volume of water to be used	0
	Where will the water be obtained?	**NA**
OTHER	Describe other operating costs to be incurred, if applicable	-Soda Ash (Additive required in Bentonite process) -Coal (To run drier)

. **IDENTIFICATION OF THE REPORT**

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report and appendices comprise the details and documentary proof of the Financial and Technical ability required to be submitted with this application in terms of form F, annexure I of the MPRDA Regulations.	
Full Names and Surname	XOLISA MYINJELWA :
Identity Number	6907055952089

.....END.....