



# **Proposed Goosebay Farm Project Financial Provision Assessment According to GN R1147**

## **Financial Provision Assessment -**2018

#### **Project Number:**

SHA5275

#### Prepared for:

Shango Solutions (Pty) Ltd

September 2018

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Name	Responsibility	Signature	Date
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#### **DECLARATION OF INDEPENDENCE**

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I, Sibongile Chabalala, as duly authorised representative of Digby Wells and Associates (South Africa) (Pty) Ltd., hereby confirm my independence (as well as that of Digby Wells and Associates (South Africa) (Pty) Ltd.) and declare that neither I nor Digby Wells and Associates (South Africa) (Pty) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of Goosebay Farm (Pty) Ltd and Shango Solutions (Pty) Ltd, other than fair remuneration for work performed, specifically in connection with the Proposed Goosebay Farm Project Financial Provision Assessment.

Full name:	Sibongile Chabalala
Title/ Position:	Assistant Mine Closure Consultant
Qualification(s):	BSc (Hons) Animal, Plant and Environmental Sciences
Experience (years):	1



#### **EXECUTIVE SUMMARY**

Shango Solutions (Pty) Ltd (hereinafter Shango) was appointed by Goosebay Farm (Pty) Ltd (hereinafter Goosebay Farm) to undertake Scoping and Environmental Impact Assessment (EIA) studies in support of a Mining Right application and associated environmental authorisation for the proposed Goosebay Project ("the Project").

Shango sub-contracted Digby Wells Environmental (hereinafter Digby Wells) in terms of the e Project to:

- Determine the Financial Provision;
- Develop the Final Rehabilitation, Decommissioning and Closure Plan (RCP); and
- Compile an Environmental Risk Assessment Report (ERR).

The aforementioned scope was undertaken according to the requirements encapsulated in the Financial Provision Regulations, 2015 (Government Notice Regulation [GN R] No. 1147), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended, in Government Gazette 39425.

This document serves as the financial provision for the Project to comply with GN R 1147.

A financial provision model has been compiled using Microsoft Excel which comprises:

- An input sheet, containing measurements of the infrastructure;
- A standard rate sheet; and
- A summary sheet, which summarises the costs for closure

This model calculates the cost of demolishing, removing and rehabilitating each component of the mining area infrastructure<sup>1</sup>.

This report contains the methodology and assumptions made to arrive at the financial provision estimates. The financial provision for the Project was assessed for Life of Mine (LoM). The estimated financial provision required for the rehabilitation and closure of the Project is **R 14 821 429 (LoM) Excl. VAT**.

It is recommended the financial provision estimate be updated on an annual basis as a requirement by NEMA. This will ensure that all costs become more accurate over time and will reflect current market conditions.

<sup>&</sup>lt;sup>1</sup> The infrastructure areas and other areas which will be affected by mining activities were measured from plans provided by Shango Solutions. All measured areas and infrastructure were mapped using GIS software and a reference and layout plan is attached in Appendix A.

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#### 1 Introduction

Shango Solutions (Pty) Ltd (hereinafter Shango) was appointed by Goosebay Farm (Pty) Ltd (hereinafter Goosebay Farm) to undertake Scoping and Environmental Impact Assessment (EIA) studies in support of a Mining Right application and associated environmental authorisation for the proposed Goosebay Project ("the Project"). The Project is located approximately 10 km west of Vanderbijlpark and 20 km north-east of Parys in the Parys District Municipality, in the Free State Province, South Africa.

Shango sub-contracted Digby Wells Environmental (hereinafter Digby Wells) in terms of the Project to:

- Determine the Financial Provision;
- Develop the Final Rehabilitation, Decommissioning and Closure Plan (RCP); and
- Compile an Environmental Risk Assessment Report (ERR).

The aforementioned scope was undertaken according to the requirements encapsulated in the Financial Provision Regulations, 2015 (Government Notice Regulation [GN R] No. 1147), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended, in Government Gazette 39425.

This document serves as the financial provisions for the Project to comply with GN R 1147.

#### 1.1 Terms of Reference

Shango appointed Digby Wells to complete the required Financial Provisions for the Project to promote compliance with the national South African legislative framework, specifically GN R 1147.

#### 1.2 Legislative Framework

Section 24P of the NEMA stipulates a Mining Right holder make financial provision for rehabilitation of negative environmental impacts. Furthermore, Regulation 11 of GN R 1147 requires the proponent determine the financial provision based on the actual costs for:

- Annual rehabilitation as reflected in the Annual Rehabilitation Plan (ARP)<sup>2</sup>;
- Final rehabilitation, decommissioning and closure as reflected in the Final Rehabilitation, Decommissioning and Closure plan (RDCP); and
- The remediation of residual environmental impacts including but not limited to the pumping and treatment of polluted or extraneous water, as reflected in an Environmental Risk Report (ERR).

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<sup>&</sup>lt;sup>2</sup> The Project is considered as greenfields, with no rehabilitation within the first year of development. Therefore, no ARP was compiled at this stage. The ARP will be developed and considered in future revisions of the Financial Provisions in terms of GN R 1147.



An amendment to the Financial Provision Regulations promulgated in terms of the NEMA was gazetted on 26 October 2016 by the Department of Environmental Affairs (DEA). Essentially, the only change to the Financial Provisioning Regulations is to delay the implementation date from 20 February 2017 for a further period of two years, until 20 February 2019.

In addition, proposed changes to the Financial Provision Regulations were published for public comment in Government Notice Regulations 1228 on 10 November 2017 (GN R1228). The proposed revision still requires the financial provision calculation to be based on actual costs and the supporting documentation (i.e. ARP, RCP and ERR) to be compiled. Subsequent to the promulgation of GN R 1147, GN R 1228 published on 10 November 2017, provides:

- A standardised method for forecasting the increase in the financial provision for a period of three years; and
- Differentiates between greenfields and brownfields projects and the respective requirements for each.

#### 2 Expertise of the Specialist

The specialists involved in determining the financial provision estimate for the Project was Sibongile Chabalala and Michelle van Niekerk. Their curriculum vitae are available on request.

### 3 Calculation Methodology

Digby Wells calculated the financial provisions in accordance with the legislative requirements presented in Chapter 1.2 above. A financial provision model has been compiled using Microsoft Excel which comprises:

- An input sheet, containing measurements of the infrastructure;
- A standard rate sheet; and
- A summary sheet, which summarises the costs for closure.

This model calculates the cost of demolishing, removing and rehabilitating each component of the mining area infrastructure<sup>3</sup>. For ease of reference, Table 3-1 highlights the Project areas, and the associated components and/or infrastructures.

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<sup>&</sup>lt;sup>3</sup> The infrastructure areas and other areas which will be affected by mining activities were measured from plans provided by Shango Solutions. All measured areas and infrastructure were mapped using GIS software and a reference and layout plan is attached in Appendix A



Table 3-1: Areas of the Project and associated components and infrastructure

Area	Components and/or Infrastructure				
Remaining Extent (RE) of the farm Woodlands 407;	<ul> <li>Full Extent Sand Deposit</li> <li>Full Extent Aggregate Resource</li> <li>Year 18 Central Aggregate Resource</li> </ul>				
RE of Portion 1 of the farm Woodlands 407;	<ul> <li>Plant</li> <li>Fuel Storage</li> <li>Workshop</li> <li>Pollution Control Dam</li> <li>Main Sand Deposit</li> <li>Central Aggregate Resource</li> <li>Main Sand Deposit and Final Void</li> <li>Northern Sand Deposit Final Void</li> <li>South Western Aggregate Resource Final Void</li> </ul>				
Portion 3 of the farm Woodlands 407	■ Eastern Sand Aggregate Deposit				
Linear Infrastructure	<ul> <li>Access Road</li> <li>Powerlines</li> <li>Water Supply Line</li> <li>Cut-off Trench</li> </ul>				

## 4 Assumptions

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To calculate the financial provisions, Digby Wells made and identified the following assumptions and limitations respectively:

- The calculations do not account for any value recovered from sale of plant, steel or other material;
- No due diligence was undertaken to determine whether Goosebay Farm is responsible for any other areas not specified in this report;
- The financial provision estimate is based on the latest mine layout plan received on the 17th of September 2018 saved with the name "Shapefiles";

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- Goosebay Farm will demolish all mine surface infrastructure at mine closure until such time third party agreements are in place;
- Goosebay Farm will remove portable containers before mine closure, therefore cost estimate for their removal is excluded;
- Goosebay Farm will demolish all concrete structures up to 1 m below natural ground level;
- Goosebay Farm will dispose all inert waste (i.e. building rubble) on site (used as backfill material for the opencast pit) or bury the inert waste 1 m underground during decommissioning;
- Eskom are liable / responsible for all powerlines and power supply;
- All gravel roads have an average width of 6 m;
- Goosebay Farm will remove all fences at end of life;
- The pollution control dam is lined with High-density polyethylene (HDPE);
- The total perimeter length of 1161 m of the pollution control dam walls will be breached/ dozed down at closure;
- All the final voids side slopes (Main Sand Deposit, Northern Sand Deposit and South Western Aggregate Resource final voids) have a base of 2.28 m, a height of 1 m, thus an area of 1.42 m²/m. The side slopes will be shaped down to a stable side slope angle at the end of the life of mining;
- Each of the final voids side slopes will be shaped to an 18 degrees (3:1) angle to ensure a stable side slope at the end of the life of mining;
- A storm water run-off diversion berm with a height of 0.5 m will be placed on each of the final voids;
- Sufficient material will be available on site to complete all rehabilitation actions, therefore, Digby Wells did not conduct a material balance as part of this assessment;
- Goosebay Farm will strip topsoil prior to construction and stockpiled for final rehabilitation;
- Goosebay Farm will place topsoil to a thickness of 0.3 m on the shaped and the rehabilitated areas;
- Considering the data received, 60% of the plant area footprint will be covered by double storey steel structure and 30% with a 0.3 m thick concrete slab;
- Goosebay Farm will enclose the fuel storage area with a perimeter steel fence and concrete bund wall;
- The concrete bund wall at the fuel storage area will be 1 m in height, 10 m in length, have a 5 m width, and a 0.3 m thick concrete slab;



- Goosebay Farm is planning on doing roll-over mining, therefore allowance was made only for rehabilitation of final voids at year 30 as per the mine plan/blocks;
- The concrete cut-off trench is a trapezoidal in shape with a total length of 2.2 m and concrete thickness of 0.2 m;
- Goosebay Farm will remove all temporary structures from site prior to closure;
- General surface rehabilitation must involve the shaping of the surface topography to match the surrounding landscape and 0.3 m of topsoil, where available, needs to be added to the site. During the process of shaping the landscape, drainage lines must be properly reinstated into the topography. Any heaps of excess material also need to be removed so that effective revegetation can take place;
- The Life of Mine (LoM) Plan used (Reference: Skets \_Resource distribution map 2018\_08\_15 (V9)) is assumed to be correct and up to date;
- At the end of the life of mining it is assumed that the all the open pits would have been rehabilitated concurrently; except the final void at Year 30 which will require shaping. A total area of 22.94 ha at Year 30 would require to be top soiled and vegetated;
- The topsoil stockpile footprint areas next to the final voids will be ripped and vegetated at closure;
- Water monitoring costs are included and assumed to take place quarterly at 6 surface water points and 3 groundwater points, for three years after mine closure;
- Goosebay Farm will complete vegetation monitoring and maintenance on rehabilitated areas for three years after closure;
- Digby Wells allowed for a contingency of 10% on all infrastructure costs. This
  contingency takes into account possible omissions and price fluctuations with regard
  to plant hire and fuel;
- Digby Wells included a 12% allowance for project management fees. These fees account for the costs required to manage the closure and rehabilitation phase as well as provide personnel to monitor and maintain the rehabilitated areas after closure; and
- The financial provision estimate has been calculated for end of life of mining of the proposed operation.

#### **5** Calculation Summary

The estimated financial provision required for the rehabilitation and closure of the Project is R 14 821 429 (LoM) Excl. VAT. A summary of the financial provision estimates is presented in Table 5-1. A detailed cost sheet is attached in Appendix B.



**Table 5-1: Financial Provision Summary** 

	Digby Wells Environmental
DIGBY WELLS ENVIRONMENTAL	Goosebay Farm (Pty) Ltd, Proposed Goosebay Project, SHA5275, Revision: 0
Area and Description	End of Life 2047
Infrastructure and Rehabilitation	
Area 1: Portion 3 farm Woodlands 407	R0
Area 2: Remaining Extent of Portion 1 farm Woodlands 407	R8,646,256
Area 3: Remaining Extent of farm Woodlands 407	R0
Area 4: Linear Infrastructure	R2,476,373
Sub-total	R11,122,629
Monitoring and Maintenance	
Monitoring Costs (Groundwater and Surface water 3 Years)	R622,500
Monitoring Costs (Vegetation 3 Years)	R20,593
Maintenance Costs (Vegetation 3 Years)	R608,728
Sub-total	R1,251,821
Project Management (12%)	R1,334,716
Contingency (10%)	R1,112,263
GRAND TOTAL (Excl. VAT)	R14,821,429



#### 6 Recommendations

Digby Wells recommends the following:

- Goosebay Farm must complete a topsoil balance to ensure enough material is available to rehabilitate all the disturbed areas;
- Goosebay Farm must revegetate all shaped and/or concurrently rehabilitated area to minimize erosion and to ensure stable landforms to comply to best practice rehabilitation methodologies;
- Goosebay Farm must conduct concurrent rehabilitation as planned to reduce the financial burden when the mine ceases to operate
- Goosebay Farm must update the financial provision calculations once detailed infrastructure plans are available; and
- Goosebay Farm must update the liability figures on an annual basis as a requirement by the NEMA. This will ensure that all costs become more accurate over time and will reflect current market conditions.



#### 7 References

- SLR Consulting (South Africa) (Pty) Ltd. (2016). Portion 3 of farm Woodlands 407 Mining Permit Closure Liability Update for Winners Point 117 Trading (Pty) Limited
- SLR Consulting (South Africa) (Pty) Ltd. (2016). Remaining Extent of Portion 3 of farm Woodlands 407 Mining Permit Closure Liability Update for Winners Point 117 Trading (Pty) Limited
- SLR Consulting (South Africa) (Pty) Ltd. (2016). Remaining Extent of Portion 1 of farm Woodlands 407 Mining Permit Closure Liability Update for Winners Point 117 Trading (Pty) Limited
- Skets Architects and Planning. (2017). Rehabilitation Report for Portion 3 of the Farm Woodlands 407 (MPA2). Sunward Park: Goosebay Farm (Pty) Ltd.
- Skets Architects and Planning. (2017). Rehabilitation Report for Remaining Extent of Portion 1 of the Farm Woodlands 407 (MPA1). Sunward Park: Goosebay Farm (Pty) Ltd.
- Skets Architects and Planning. (2017). Rehabilitation Report for Remaining Extent of Woodlands 407 (MPA3). Sunward Park: Goosebay Farm (Pty) Ltd.

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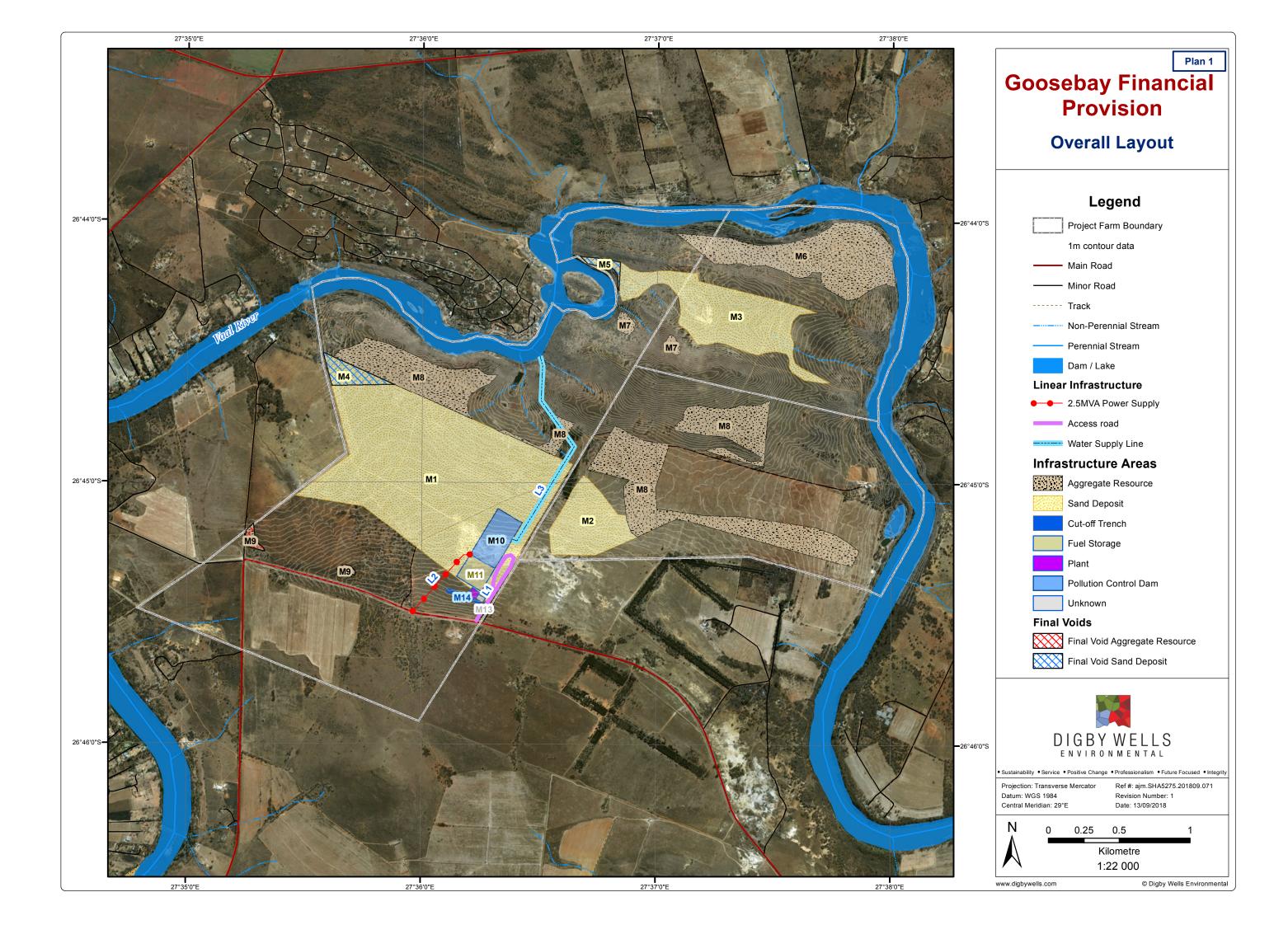


# Appendix A: Reference and Layout Plan

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# **Appendix B: Detailed Cost Sheet**



	DIGBY WELLS			Digby Wells Environmental Shango Solutions, Goosebay Projcet, SHA5272				
Map Ref.	P Aspect Name  Description		Life of Mine Assessment, Detail breakdown, September 2018  Life of Mine 2047				2047	
			Class	Quantity	Unit	Rate	Amount	Comments
Area 1		Portion 3 farm Woodlands 407  Demolish infrastructure						
		N/A						
		Demolition Total					R -	
M3	Full Extent Sand Deposit	Rehabilitation					R0.00	Assume will be rehabilitated concurrently
M6	Full Extent Aggregate Resource Yr 18 Central Aggregate Resource						R0,00	Assume will be rehabilitated concurrently  Assume will be rehabilitated concurrently
		Rehabilitation Total					R0,00	
		Area 1 Total					R -	
Area 2		Remaining Extent of Portion 1 farm Woodlands 407  Demolish infrastructure						
M12	Plant	Demolish double storey steel structure	136	2245	m²	R349,74	R785 031,52	Assume 60% of the area has steel structures
M11	Concrete slab Fuel Storage	Demolish concrete slab	107	337	m³	R314,69		Assume 30% of the footprint area has 300 mm concrete slab
	Steel fence Concrete bund wall	Remove steel fence  Demolish concrete slab	147 108	30 1131	m m³	R14,57 R440,57	R437,21 R498 412,00	Assume a 30 m perimeter steel fence Assume 300 mm concrete slab, 10 m length, 5 m breadth, and 1 m high concrete bund wall
	Workshop Concrete slab Pollution Control Dam	Demolish double storey steel structure Demolish concrete slab	136 107	1999 400	m <sup>2</sup> m <sup>3</sup>	R349,74 R314,69	R699 134,82	Assume 300 mm concrete slab
IVITO	HDPE liner	Remove HDPE liner	112	76434	m²	R7,37	R563 319,30	Assume dam is HDPE lined
		Demolition Total					R 2 778 100,74	
		Rehabilitation						
(M11+M13)	General areas	Rip soil Replace soil and spread - 300mm Revegetate areas	132 127 128	3,94 39410 3,94	ha m² Ha	R8 671,83 R23,80 R32 542,27	R34 175,67 R938 145,89 R128 249,09	
M10	Pollution Control Dam	Breach dam walls	111	3483	m³	R18,80	R65 491,90	Assume 3m3 per running m. Total PCD perimeter length= 1161
		Rip soil Replace soil and spread - 300mm	132 127	7,64 76434	ha m²	R8 671,83 R23,80	R66 282,24 R1 819 493,61	
		Revegetate areas	128	7,64	Ha	R32 542,27	R248 733,59	
M12	Plant area	Rip soil Replace soil and spread - 300mm Revegetate areas	132 127 128	0,37 3741 0,37	ha m² Ha	R8 671,83 R23,80 R32 542,27	R3 244,13 R89 053,64 R12 174,06	
M1 M8	Main Sand Deposit Central Aggregate Resource		120	0,01	110	1102 0 12,27	R0,00	Assume will be rehabilitated concurrently Assume will be rehabilitated concurrently
	Main Sand Deposit Final Void	Shape side slope at an angle of 18° (3:1)	130	896	m³	R14,76		Assume base of 2.28 m and height of 1 m, thus area of a
		Storm water runoff diversion berm	130	215	m³	R14,76		Assume a 0.5 m high, 2m base width, 1 m top width berm along
		Rip soil	132	5,14	ha	R8 671,83	R3 172,12 R44 583,72	The total lengthof the side needing a berm =286.56 m
		Replace soil and spread - 300mm Revegetate areas	127 128	51412 5,14	m² Ha	R23,80 R32 542,27	R1 223 850,71 R167 306,78	
	Main Sand Deposit Final Void Topsoil footprint	Rip soil Revegetate	132 128	1 1	ha Ha	R8 671,83 R32 542,27	R8 671,83 R32 542,27	Rip footprint area
M5	Northern Sand Deposit Final Void	Shape side slope at an angle of 18° (3:1)	130	505	m³	R14,76	R7 458,32	Assume base of 2.28 m and height of 1m, thus area of a triangle =1.42 m2. A total length of 355,86 m
		Storm water runoff diversion berm	130	141	m³	R14,76	R2 087,08	Assume a 0.5 m high, 2m base width, 1 m top width berm along the upper edge of the quarry. Thus trapezium area of 0.75 m2.
		Rip soil Replace soil and spread - 300mm	132 127	1,59 15896	ha m²	R8 671,83 R23,80	R13 785,08 R378 400,59	The total lengthof the side needing a berm =188.54 m
		Revegetate areas	128	1,59	На	R32 542,27	R51 730,50	
	Northern Sand Deposit Final Void Topsoil footprint	Rip soil Revegetate	132 128	0,5 0,5	ha Ha	R8 671,83 R32 542,27	R4 335,91 R16 271,14	
M9	South Western Aggregate Resource Final Void	Shape side slope at an angle of 18° (3:1)	130	525	m³	R14,76	R7 754,67	Assume base of 2.28 m and height of 1 m, thus area of a triangle =1.42 m2/m. A total length of 370m Assume a 0.5 m high, 2m base width, 1 m top width berm along
		Storm water runoff diversion berm  Rip soil	130 132	1,67	m³ ha	R14,76	R2 213,93 R14 443,36	the upper edge of the quarry. Thus trapezium area of 0.75 m2.  The total lengthof the side needing a berm =200m
		Replace soil and spread - 300mm Revegetate areas	127 128	16655 1,67	m <sup>2</sup> Ha	R23,80 R32 542,27	R396 468,40 R54 200,78	
	South Western Aggregate Resource Final Void Topsoil footprint	Rip soil Revegetate	132 128	0,5 0,5	ha Ha	R8 671,83 R32 542,27	R4 335,91 R16 271,14	Rip footprint area
		Rehabilitation Total					R 5 868 155,43	
Area 3		Area 2 Total  Remaining Extent of farm Woodlands 407					R 8 646 256,17	
711000		Demolish infrastructure						
		N/A						
		Demolition Total					R -	
M2	Eastern Sand Aggregate Deposit	Rehabilitation					B0.00	Assume will be concurrenlty rehabilitated
IVIZ		Rehabilitation Total					R0,00	, southo will be concurrently renabilitated
		Area 3 Total					R -	
Area 4		Linear Infrastructure  Demolish infrastructure						
L1 L2	Access road Power lines ( Power Supply)	Rehabilitate the road	134	5302	m²	R7,89	R41 819,89	Assume 6 m gravel road Assumed to be Eskom`s responsibilty
	Water supply line	Remove HDPE pipeline	116	1528	m	R273,88	R418 407,33	
M14	Cut-off trenth	Remove concrete	107	4112	m³	R314,69	R1 293 941,51	rapezoid snape total section length is 2.2m.
		Demolition Total					R 1 754 168,73	
	General area	Rehabilitation  Rip Soil	122	2,59	ha	R8 671,83	D00 400 00	
	OGNICIAI AIGA	Rip Soil Replace soil and spread - 300mm Revegetate areas	132 127 128	2,59 25861 2,59	ha m² Ha	R8 671,83 R23,80 R32 542,27	R22 426,39 R615 619,86 R84 158,22	
		Rehabilitation Total					R 722 204,46	
		Area 4 Total					R 2 476 373,18	
		GRAND TOTAL (Excl. VAT)					R 11 122 629,35	