mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

FOR PUBLIC REVIEW

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING IN CASES OF ALLUVIAL DIAMOND PROSPECTING.

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT:	Witkop Fluorspar (Pty) Ltd
TEL NO.:	+27 (0) 21 880 1170/ +27 (0) 82 310 9612
E-MAIL:	jaco@sakg.co.za
FAX NO.:	+27(0) 21 880 1172
POSTAL ADDRESS:	PO Box 688, Stellenbosch
PHYSICAL ADDRESS:	2nd Floor, A-Block, Octo Place, Electron Avenue, Technopark, Stellenbosch
FILE REFERENCE NUMBER SAMRAD:	NC30/5/1/2/3/2/1 (10136) MR

DISTRIBUTION LIST

AGENCY, ORGANISATION, PERSON	DETAILS	COPIES
Department of Mineral Resources, Springbok	Draft for Review and Comment	1 x hard copy 1 x electronic copy uploaded via SAMRAD
Department of Economic Development, Environment and Tourism, Kimberley	Draft for Review and Comment	1 x hard copy
Department of Water Affairs and Sanitation, Northern Cape	Draft for Review and Comment	1 x hard copy
Department of Water Affairs and Sanitation, Western Cape	Draft for Review and Comment	1 x hard copy
Hantam Local Municipality, Calvinia	Draft for Review and Comment	1 x hard copy
Matzikama Local Municipality, Vredendal	Draft for Review and Comment	1 x hard copy
Namaqwa District Municipality	Draft for Review and Comment	1 x hard copy
South African Heritage Resources Agency	Draft for Review and Comment	Electronic copy submitted via SAHRIS
Loeriesfontein Public Library	Draft for Public Review	1 x hard copy
www.cabangaenvironmental.co.za	Draft for Public Review	Electronic copy for public access

DISCLAIMER

This report has been prepared by Cabanga with all reasonable skill, care and diligence within the terms of the contract with the client, and taking into account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and any other in respect of any matters outside the scope of the project.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such parties rely on the report at their own risk

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment (EIA) and an Environmental Management Programme report (EMPr) in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3) (b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the Competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the Competent Authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE SCOPING PROCESS

The objective of the scoping process is to, through a consultative process—

a) Identify the relevant policies and legislation relevant to the activity;
b) Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
c) Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
e) Identify the key issues to be addressed in the assessment phase;
f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
g) Identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

TABLE OF CONTENTS:

LIST OF TABLES:

LIST OF FIGURES:

LIST OF PLANS:

LIST OF APPENDICES:

LIST OF ACRONYMS:

ACRONYM:	DESCRIPTION:
AEL	Air Emissions License in terms of NEM:AQA
ASTM	American Standard for Testing and Materials (followed by protocol number)
BA	Basic Assessment (process or report)
BID	Background Information Documents
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983) as amended
CBD	Central Business District
COP	Codes of Practice
DMR	Department of Mineral Resources
DWS	Department of Water Affairs and Sanitation
EA	Environmental Authorisation in terms of NEMA
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act (Act 73 of 1989) as amended
EIA	Environmental Impact Assessment (process or report)
EIA Regs.	Environmental Impact Assessment Regulation published under NEMA
EIS	Ecological Importance and Sensitivity
EMF	Environmental Management Framework
EMPr	Environmental Management Programme Report
GDP	Gross Domestic Product
GIS	Geographical Information Systems
GN	General Notice (issued under an Act, providing notice or information)
GNR	General Notice Regulation (issued under an Act, providing instruction)
I&AP	Interested and Affected Parties
IAIA SA	International Association of Impact Assessment South Africa
IDP	Integrated Development Plan
IWUL	Integrated Water Use Licence
IWULA	Integrated Water Use Licence Application
IWWMP	Integrated Water and Waste Management Plan
LED	Local Economic Development
MHSA	Mine Health and Safety Act (Act 29 of 1996) as amended
MPRDA	Mineral and Petroleum Resources Development Act (Act 28 of 2002) as amended

ACRONYM:	DESCRIPTION:
MR	Mining Right in terms of the MPRDA
MRA	Mining Right Application in terms of the MPRDA
NAEIS	National Atmospheric Emissions Inventory System
NEA	National Energy Act, Act 34 of 2008
NEM:AQA	National Environmental Management: Air Quality Act (act 59 of 2008) as amended
NEM:BA	National Environmental Management: Biodiversity Act (Act 10 of 2004) as amended
NEM:PAA	National Environmental Management: Protected Areas Act (Act 57 of 2003) as amended
NEM:WA	National Environmental Management: Waste Act (Act 39 of 2004) as amended
NEMA	National Environmental Management Act (Act 107 of 1998) as amended
NFEPA	National Freshwater Ecology Priority Areas
NHRA	National Heritage Resources Act (Act No. 25 of 1999) as amended
NPAES	National Protected Area Expansion Strategy
NWA	National Water Act (Act 35 of 1998) as amended
PES	Present Ecological State (usually followed by category A-F)
PM10/5/2.5	Particulate Matter up to 10/5/2.5 micrometres
PPP	Public Participation Process
RoD	Record of Decision (for specific application)
RoM	Run of mine (mineral extracted but not yet processed)
RWQO	Resource Water Quality Objectives
S&EIR	Scoping and Environmental Impact Reporting process
S&LP	Social and Labour Plan
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resource Agency
SAMRAD	South African Mineral Resources Administration System
SANBI	South African National Biodiversity Institute
SANS	South African National Standard (followed by standard number)
SASS5	South African Scoring System version 5 (in terms of aquatic invertebrate assessments)
SAWIS	South African Waste Information System
SDP	Spatial Development Plan

ACRONYM:	DESCRIPTION:
SEMA	Specific Environmental Management Acts
SOP	Standard Operating Procedure
SPLUMA	Spatial Planning and Land Use Management Act (Act No.16 of 2013)
Stats SA	Statistics South Africa
WMA	Water Management Area
WML	Waste Management Licence in terms of NEM:WA

1 INTRODUCTION

Witkop Fluorspar (Pty) Ltd intends to develop Gypsum mine over the farm Kanakies 332 and as such has submitted an application for a Mining Right (MR) in terms of the Minerals and Petroleum Resources Development Act, Act No. 28 of 2002 (MPRDA).

An application for Environmental Authorisation (EA) was submitted simultaneously, as per the requirements of the National Environmental Management Act, Act No. 107 of 1998 (NEMA) and the NEM: Waste Act, Act No. 59 of 2008 (NEM:WA); read with the requirements of the MPRDA. Please refer to Appendix 1 for a copy of the relevant Acceptance Letters.

South African Law requires that the environmental and social impacts associated with mining activities be assessed to identify any potential negative and / or positive consequences as result thereof. Following which measures must be proposed to avoid or minimise these impacts.

As the application relates to mining activities, a full Scoping and Environmental Impact Report (S&EIR) is required as well as an Environmental Management Plan (EMP) report.

This report constitutes the Scoping Report and is the first phase in the environmental assessment process. The purpose of the Scoping Report is to identify key environmental issues for further investigation during the Environmental Impact Assessment (EIA) phase of the project; and to outline the plan of study / terms of reference for the preparation of the EIA and EMPr.

2 CONTACT PERSON AND CORRESPONDENCE ADDRESS

2.1 Details of the Applicant

Applicant Name:	Witkop Fluorspar Mine (Pty) Ltd
Registration No.:	1972/006392/07
Contact Person:	Dr Johannes J.C.Erasmus, Group Technical Manager
Telephone:	082 310 9612
Fax:	086 010 3516
E-mail:	jaco@sakg.co.za
Postal Address:	PO Box 688, Stellenbosch, 7599
Physical Address:	2nd Floor, A-Block, Octo Place, Electron Avenue, Technopark, Stellenbosch

2.2 Details of the EAP who prepared the report

Cabanga Environmental has been appointed by Witkop as the independent Environmental Assessment Practitioners (EAP), responsible for the completing the environmental authorisation process for the proposed project. The contact particulars of the EAP are indicated below.

EAP:	Cabanga Environmental (*t/a Cabanga Concepts cc*)
Telephone:	+ 27 11 794 7534
Fax:	+ 27 11 794 6946
E-mail:	info@cabangaenvironmental.co.za
Postal Address:	Postnet Suite 470, Private Bag x3, Northriding, 2162
Physical Address:	Units 5 & 6 Beyers Office Park, Bosbok Road, Randpark Ridge

2.3 Expertise and Experience of the EAP

Name:	Role:	Qualification:	Experience:
M.Venter	EAP	Cert.Sci.Nat BSc. (Hons) Geography	7 years
J.Barrett	Project Manager	BSc. in Environmental Management & Botany Certificate in Project Management	10 years
K.van Rooyen	Project Leader	Pr.Sci.Nat MSc. in Geography, specialising in the environment & coal discard dump	29 years
M.Swart, KookGIS	GIS Specialist	Pr.Sci.Nat, Pr.GISc MSc Geography	23 years

All of the above have worked on mineral and environmental applications under the MPRDA, NEMA, NEM:WA and NEM:AQA for various mines and industries. Please refer to Appendix 2 for copies of the relevant Curriculum Vitae.

3 PROJECT DESCRIPTION

3.1 Description of the property

Table 1: Affected Properties

Farm Name:	Kanakies 332
Application area (Ha)	7456.6974 ha
Magisterial district:	Calvinia
Distance and direction from nearest town	The project area is situated in Northern Cape, 45km west-south-west of the town of Loeriesfontein and 40km north-north-west of the town of Nieuwoudtville.
21 digit Surveyor General Code for each farm portion	C01500000000033200000

3.2 Land tenure & use of adjacent land

The mining right area (MRA) is currently zoned for agricultural purposes, and is utilised for grazing. The property is bisected by the Transnet Freight railway line which links Sishen Iron Ore to the Port of Saldanha. Existing infrastructure on site includes a small rail siding, power lines, sub-station, cellular (MTN) tower, farmsteads and associated infrastructures. Please refer to Appendix 3 for photographs of the project area.

The table below details the surface right ownership for the proposed MRA.

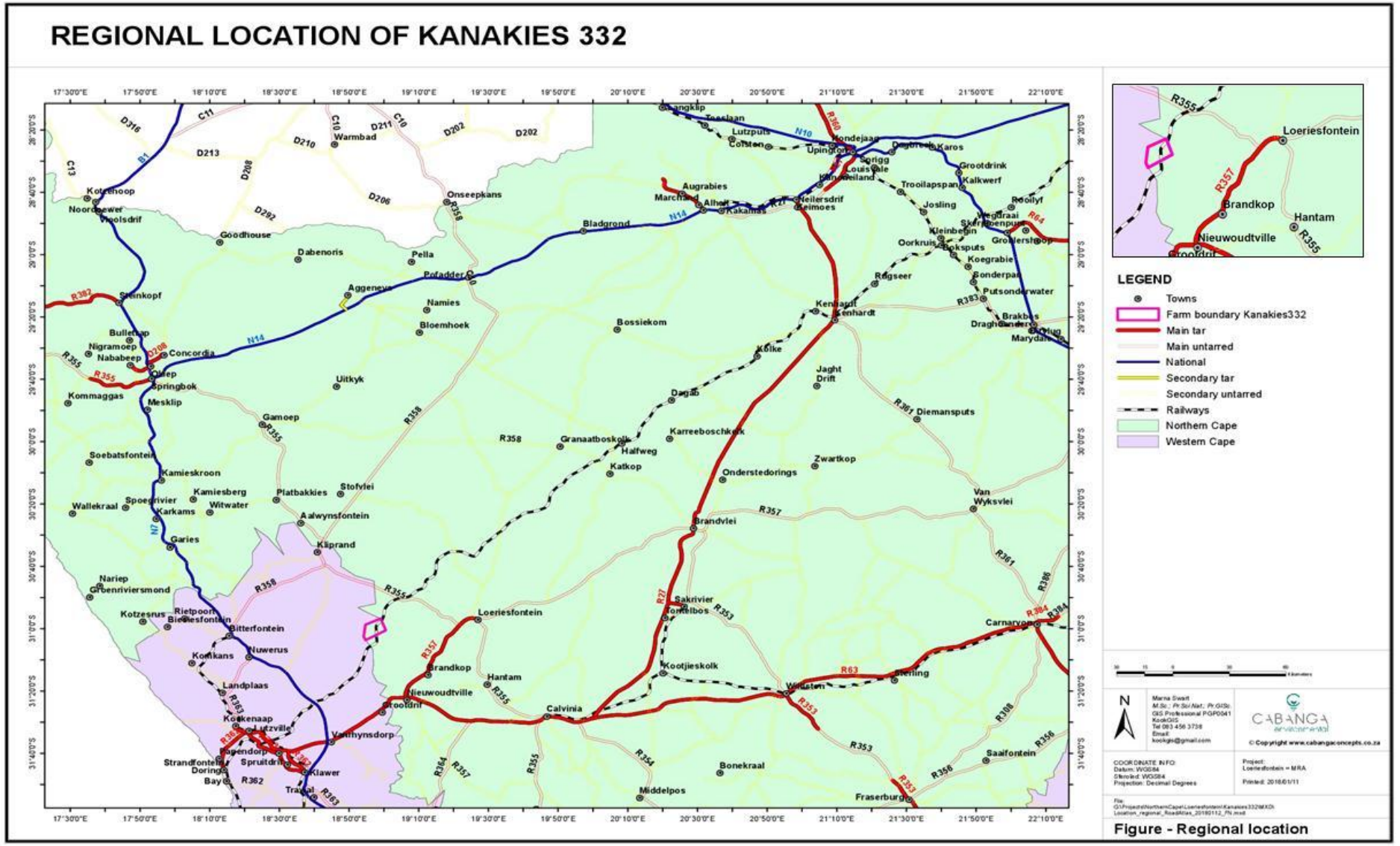
Table 2: Affected Properties

Property	Portion	Deed of Transfer	Extent - Ha	Registered Owner(s)	Share Owned
Kanakies 332	0 (RE)	TT37913/2016	7,456.6974 Ha	PPC Cement SA (Pty) Ltd	100%

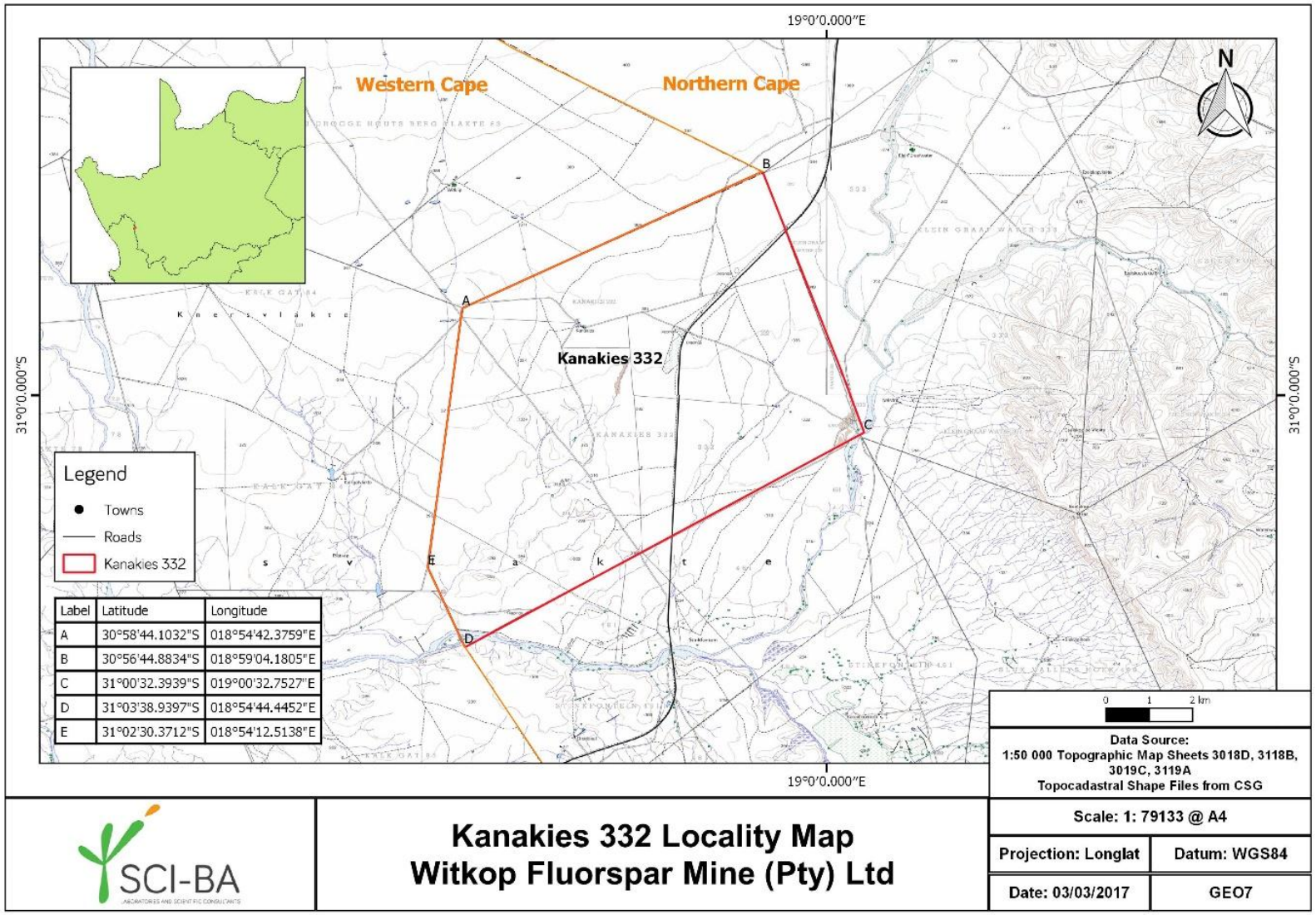
3.3 Location of site

The project area is situated in Northern Cape Province, on the border with the Western Cape. It falls within the Hantam Local Municipality of the Namaqwa District Municipality; and is situated approximately 45km west-south-west of the town of Loeriesfontein.

The regional and local settings are depicted in Plans - 2 below. Please refer to Appendix 4 for copies of the plans in A3 Format.



Plan 1: Regional Setting



Plan 2: Local Setting

3.4 Description of the proposed overall activity

This section outlines the relevant listed activities applicable to the project (Section 3.4.1) and gives a detailed project description (Section 3.4.2) of the activities associated with the proposed operation.

3.4.1 Listed activities to be undertaken

The Department of Environmental Affairs have published three notices listing activities for which environmental authorisation is required in terms of Section 24(2) and 24D of NEMA prior to commencement.

Furthermore, a list of waste management activities that have or are likely to have, a detrimental effect on the environment were published in terms of section 19(2) of the NEM:WA (GN 921 of 29 November 2013). No person may commence, undertake or conduct a listed waste management activity unless a waste management license (WML) is issued in respect of that activity.

The Department of Mineral Resources (DMR) is the Competent Authority for mineral related activities in terms of both NEMA and NEM:WA. As such an integrated application has been submitted as per the One Environmental System.

Table 3 details the main and ancillary activities associated with the proposed project, and identifies the applicable listed activities in terms of NEMA and NEM:WA for which authorisation is being sought.

.

Table 3: Listed and specified activities

NAME OF ACTIVITY	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
Administrative and ablution facilities, change house and conservancy tanks	0.2 Ha	-	-	-
Maintenance Shed	0.3 Ha	-	-	-
Vehicle Park & Fuel Storage	0.6 Ha	10	Listing Notice 3	-
Water supply via borehole & storage within Jojo tanks	81m3 abstracted / day and stored within 2,500 litre tank	-	-	-
Vegetation clearance and topsoil stripping	700 Ha	19, 27, 30 15 12	Listing Notice 1 Listing Notice 2 Listing Notice 3	-
Surface trench mining	700 Ha	19 17	Listing Notice 1 Listing Notice 2	-
Backfilling and rehabilitation	700 Ha	22	Listing Notice 1	Category A: 14 Category B: 7, 11
RoM Stockpile (moves with active mine area)	0.5 Ha	6	Listing Notice 2	Category B: 7, 10,11
Mobile Crushing & Screening Plant	0.6 Ha	-	-	-
Stockpile yard	2.1 Ha	6	Listing Notice 2	Category B: 7, 10, 11
Access & haul roads	5 Ha (10km length X 5m wide)	4	Listing Notice 3	-
Transportation of product via existing siding	<10 Ha	-	-	-
Waste generation & storage	Within administrative area	-	-	-

3.4.2 Description of the activities to be undertaken

This application relates to the surface mining of the industrial mineral, Gypsum. Gypsum is typically used in the agricultural and construction industries (plasterboard, Portland cement, plaster etc.).

Of the overall MRA, approximately 689 Ha will be earmarked for mining, whilst a further 9Ha will be affected by surface infrastructure.

The deposit consists of two layers of gypsum i.e. a powder layer and nodular crystalline (clay) layer of gypsum. The deposit will be harvested by means of simple roll-over trench mining and the depth of trenching will vary between 1.4 and 2.5m. The first step involves removing the overburden layer of between 0.2 and 0.7m, followed by the selective removal of the powder layer of approximately 0.4 meter and subsequently by removal of the crystal-containing clay layer of between 0.9 and 1.3m. The powder will be screened to remove foreign materials and is expected to be recovered by a minimum margin of at least 40% by volume harvested, inclusive of waste generated during screening, which should be less than 2% combined from dust generated and foreign objects removed during screening. The clay layer will be roll-crushed and screened by means of high frequency technology alongside the trench to concentrate the average gypsum composition from between 40 and 50 percent to between 80 and 90%. The harvesting recovery margin is estimated at 65% by volume extracted whilst the efficiency of the high frequency screening process is expected to be no less than 37%, calculating to an overall 76% mean loss by volume of material harvested.

The overall theoretical recovery per hectare will thus be as follows:

- Powder layer at +60% purity: 0.2m x 10 000m2 x 1ton/m3 x 40% = 800 t/ha
- Powder layer at +80% purity: 0.2m x 10 000m2 x 1ton/m3 x 40% = 800 t/ha
- Crystal layer at +80% purity: 1.1m x 10 000m2 x 1ton/m3 x 24% = 2 640 t/ha

The combined recovery per hectare therefor equals 1 800 ton of Agricultural material and 7 300 ton of Industrial material. However, since the demand for higher purity gypsum in the more sophisticated agricultural industry is on a sharp incline, the volume between the two supply lines can be balanced on demand. Materials shall therefore be either sold from stockpile or blended to optimise quality as directed by the order book at any specific time.

Currently it is expected that the Gypsum will be railed to market.

Table 4: Summary details of project

ITEM	DETAIL
Type of mineral	Gypsum
Mining method	Surface trench mining
Depth of mining	1.4 - 2.5 m
Life of mine	30 years +

3.4.3 Associated activities, infrastructure and services

The infrastructure area in relation to the mine area is indicated in Plan 3 below. The anticipated infrastructure for the operations includes:

Table 5: Proposed Infrastructure

SURFACE INFRASTRUCTURE:	DESCRIPTION
Access and security control	• Internal haul and access roads • Access will be via the existing Transnet service road off the R355 • Security • Weighbridge (in the event product is trucked) • Fencing
Mine Area	• Soil berms • Stockpiles • Mobile crushing and screening plant • Ablution facilities (portable toilets) • Clean and dirty water trenches, water management sumps and silt traps • Hard park area
Infrastructure Area	• Vehicle park area • Workshop and store • Fuel storage • Container offices and laboratory • Ablution facilities linked to conservancy tanks • Jojo tank • Stockpile Yard • Generators • Lighting • Clean and dirty water trenches, water management sumps and silt traps
Siding Area	• Stockpile and loading area • Clean and dirty water trenches, water management sumps and silt traps • Ablution facilities (portable toilets)

3.4.3.1 Power supply:

All mining and ancillary services will be undertaken using diesel driven machinery.

Equipment, lighting and wall sockets at the infrastructure area will be powered by solar panels and/or diesel generator (10kVa) where necessary.

3.4.3.2 Water supply

Water requirements on site will be limited to that of potable/domestic use, and dust suppression. The total average water demand is expected to be 81m^3/day.

At this stage it is anticipated that water will be sourced from the existing borehole (windmill) located on site. Water will be pumped and stored in a jojo tank, to be located at the infrastructure area.

3.4.3.3 Waste management:

General and hazardous waste will be generated on site:

- General waste includes office and domestic waste; construction and building waste; scrap metal and old tyres.
- Hazardous waste includes used hydrocarbons, oily rags and sewage.

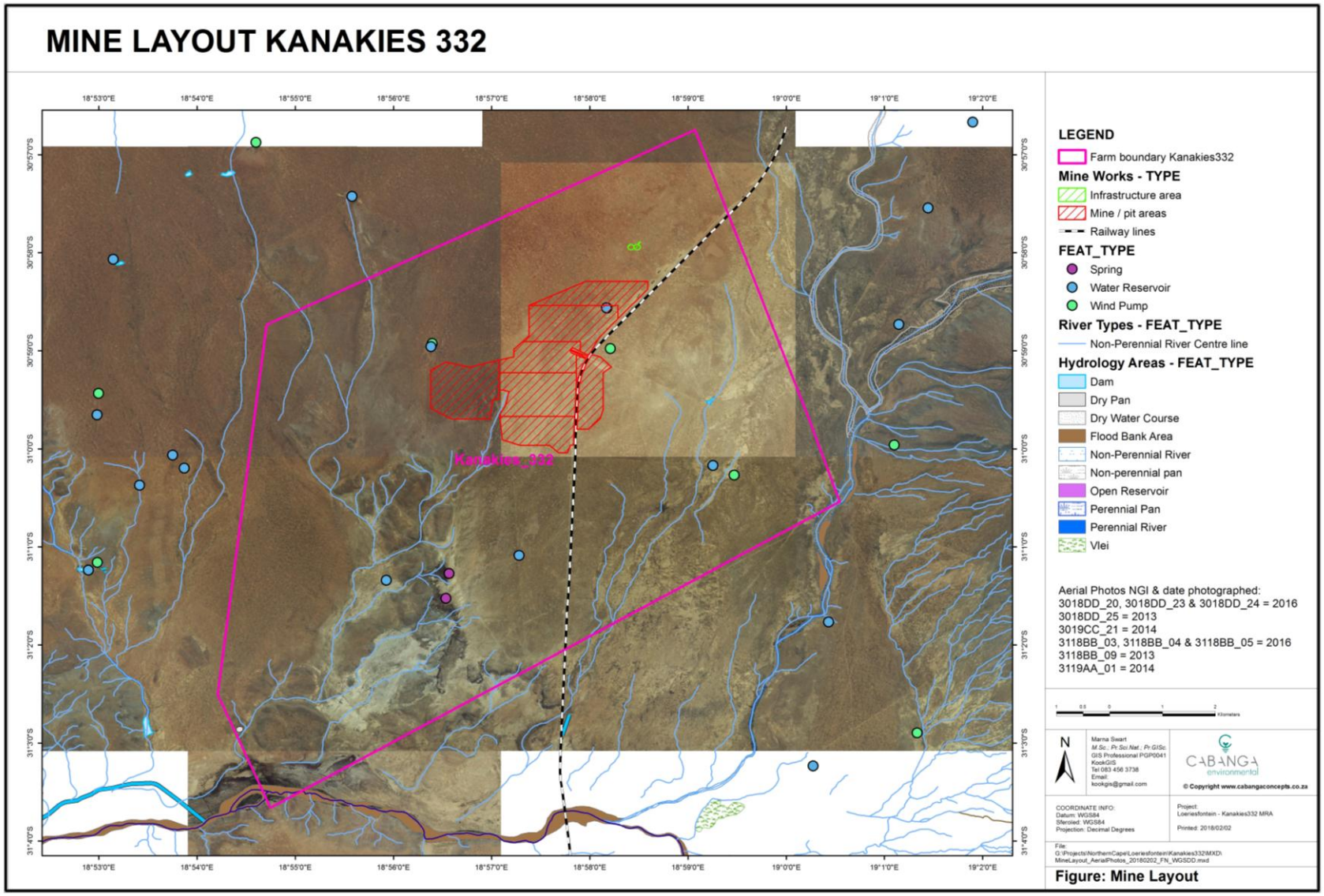
No landfill site will be constructed on site. All waste will be separated and stored as per the relevant Norms and Standards where applicable. Waste will be recycled and sold/given to interested parties as far as possible. Waste for disposal will be collected by a reputable contractor for transport to a suitably licensed facility. Waste safety disposal certificates will need to be obtained from disposal contractors and waste manifest will be maintained on site.

Sewage will be collected within conservancy tanks to be emptied by honey sucker for treatment at a suitably licensed facility.

3.4.3.4 Employment requirements

It is anticipated that the project will employ 14 permanent staff members and more workers will be employed as service providers, as and when required. Certain skills will be required whereby employment will be sourced from Loeriesfontein and Nieuwoudtville, if the necessary skills are not found in the town then the radius will increased for the mine to find the suitable skills needed

.



Plan 3: Infrastructure Area in relation to the Mine Area

4 POLICY AND LEGISLATIVE CONTEXT

Table 6 outlines the applicable legislation and guidelines that are considered to be applicable to the proposed project; and which were considered at the time of compiling this report

Table 6: Applicable legislation and guidelines

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
The Constitution of South Africa, 1996 (Act 108 of 1996) • Everyone has the right to an environment that is not harmful to their health or well-being; to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecological sustainable development and use of natural resources while promoting justifiable economic and social development. • Every person has a right to information held by the State and to information held by other people that are required in the exercise or protection of a right. • Everyone has the right to just and procedurally fair administrative action.	• Alternatives are assessed in Section 7.1, whilst Section10 outlines the impacts anticipated. • Section 8 and Appendix 5. • Section 8 and Appendix 5	• The EIA EMP report will assess the impacts of the project in detail with specialist input. • The Scoping Report will be made available for public review and comment for a period of 30 days (minimum). • The Appeal Process will be described to I&APs through the RoD notification process.
• The Minerals and Petroleum Resources Development Act (MPRDA), Act No. 28 of and its Regulations (GNR527, 23 April 2004 as amended by: GNR R1288 dated 29 October 2004; GNR1203 dated 30 November 2006; and GNR349 dated 18 April 2011).	• Acceptance letter included as Appendix 1.	• An application for a mining right was submitted to, and accepted by, the DMR in terms of the MPRDA. • Submission of information has been on the prescribed forms, and submitted via the SAMRAD portal where applicable.
• National Environmental Management Act	• Table 3 identifies the	• Witkop has submitted an application for EA. The

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
(NEMA), Act 107 of 1998 as amended and its associated regulations: (GNR982 – EIA Regulations; NEMA Regulation GNR983 – Listing Notice 1; NEMA Regulation GNR984 – Listing Notice 2; and NEMA Regulation GNR985 – Listing Notice 3 as amended in 2017).	applicable listed activities.	application is subject to a Scoping and EIA process. • This report has been compiled to meeting the requirements of the Scoping Phase.
• NEMA: Public Participation Guidelines (GNR807) and updated in 2017.	• Section 8 and Appendix 5.	• The Guidelines were considered and followed during the Public Participation Process (PPP).
• NEMA Regulations pertaining to the financial provision for prospecting, exploration, mining or production activities (GNR1147 –20 November 2015).	• To be addressed in the EIA EMP report.	• The EIA will include an assessment on the Financial Provision in accordance with the relevant Regulations. The necessary guarantees must be secured accordingly.
• NEMA Guideline on Need and Desirability (2017).	• Section 5.	• The Guideline was considered during the compilation of the Scoping Report.
• National Environmental Management: Waste Act (NEM:WA), Act 59 of 2008 as amended and its associated regulations. The regulations and various addendums pertaining to scheduled waste activities (GNR921, November 2013).	• Table 3 identifies the applicable Waste Management Activities. • Management measures within this report have considered the Regulations pertaining to the planning and management of residue stockpiles and/or deposits (GNR 632, July 2015).	• Witkop has submitted an application for EA. The application is subject to a Scoping and EIA process. • The mine will need to register and report on SAWIS in accordance with GNR625, August 2012.
• Norms and standards for the storage of waste on site as per GNR926, November	• Management measures proposed within this report	• Waste volumes generated on site will be minimal, and is not expected to trigger Category C.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
2013.	(Section 10.4) have considered the Norms and Standards, where necessary.	The EIA EMP will consider the norms and standards for storage, where relevant.
• National Environmental Management: Air Quality Act (NEM:AQA), Act 39 of 2004 as amended and its Regulations pertaining to listed activities (GNR893, 22 November 2013 as amended).	• No listed activities applicable to the operations thus no AEL is required.	• All mines and quarries are classified as Group C emitters, and must register and report on NAEIS annually.
• NEM:WA National Dust Control Regulations (GNR827, November 2013)	• Management measures have been proposed to minimise dust generation on site (Section 10.4).	• An air quality study (including dispersion modelling) is currently underway as per the plan of study for the EIA. • A dust fallout monitoring programme will be outlined in the EMP. Monitoring data will be compared to the Regulations to ensure dust fallout is within acceptable limits.
• National Water Act (NWA), Act 36 of 1998 as amended and its associated regulations.	• Management measures proposed within this report (Section 10.4) have considered the NWA, where necessary.	• To date the DWS has been notified of the acceptance of the Mining Right Application as required by the Regulations regarding the procedural .requirements for water use license applications. • The necessary water use license application will be submitted to the DWS in the near future.
• GNR704 of the NWA, Regulations on the use of water for mining and related activities aimed at the protection of water resources..	• Management measures proposed within this report (Section 10.4) have considered GN704, where applicable.	• All mine infrastructure and activities will be located outside the 1:100year floodline or 100m horizontal distance, whichever is greater. • A surface water study (hydrological assessment) is currently being undertaken as per the plan of study for the EIA.
• National Environmental Management:	• Table 3 identifies the applicable listed activities.	• Regulations utilised to determine the need for any listed scheduled activities under Listing Notice 3. The

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
Biodiversity Act (NEM:BA), Act 10 OF 2004 as amended and its regulations, including various regulations pertaining to protected species and to alien and invasive species.		MRA has been classed as a CBA2 and Ecological Support Area. • A Fauna and Flora study is currently being undertaken as per the plan of study for the EIA. • Should any protected, endangered or threatened species be identified within the area earmarked for development the necessary permits will be obtained
• National Forest Act, Act 84 of 1998	• The Baseline Environment is discussed under Section 9.	• A Fauna and Flora study is currently being undertaken as per the plan of study for the EIA. • Should any protected, endangered or threatened species be identified within the area earmarked for development the necessary permits will be obtained.
• National Environmental Management: Protected Areas Act (NEMPAA), Act 57 of 2003 as amended and its associated regulations.	• The Baseline Environment is discussed under Section 9.	• Formally protected areas refer to areas protected either by national or provincial legislation whereas informally protected areas refers to privately owned reserves. • The Kalk Gat Private Nature Reserve is situated adjacent to the proposed MRA.
• National Heritage Resources Act (NHRA), Act No. 25 of 1999	• The Baseline Environment is discussed under Section 9.	• A Phase I Heritage Impact Assessment is currently being undertaken as per the plan of study for the EIA. • SAHRA has been consulted as a Regulatory Authority for the project.
• Spatial Planning and Land Use Management Act (SPLUMA), Act No. 16 of 2013, Promulgated 1 July 2015	• Section 3.2 describes the current land use and zoning.	• The applicant will need to rezone the property for mining and quarrying.
• Hazardous Substances Act, Act No. 15 of 1973	• Management measures proposed within this report (Section 10.4) have considered the Act, where	• Hazardous substances on site will be limited to hydrocarbons.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
	applicable.	
• South African National Standard: SANS 10234:2008 - Globally Harmonized System of classification and labelling of chemicals (GHS).	• Management measures proposed within this report (Section 10.4) have considered the Standards, where applicable.	• Material Safety Data Sheets (MSDS) will be kept on site, where applicable.
• South African National Standard: SANS 10228:2006 - The identification and classification of dangerous goods for transport	• Management measures proposed within this report (Section 10.4) have considered the Standards, where applicable.	• The transportation and storage of dangerous good will be limited to hydrocarbons.
• Mine Health and Safety Act, Act 29 of 1996 (MHSA) and associated Regulations	• Management measures proposed within this report (Section 10.4) have considered the Regulations, where applicable.	• Although not directly addressed in the EMP report, protecting the environment contributes to a safe working environment.
• Explosives Act, Act 15 of 2003	• n/a	• No explosives will be used on site.

5 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

The Need and Desirability of the project has been assessed as per the DEA Guideline on Need and Desirability (2017) for Scoping. It is important to note that this section will be updated in the EIA Phase with input from the various specialists, as more information becomes available.

Table 7: Needs and Desirability Assessment

QUESTION	RESPONSE
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area)?	
1.1. How were the following ecological integrity considerations taken into account? 1.1.1. Threatened Ecosystems, 1.1.2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, 1.1.3. Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"), 1.1.4. Conservation targets, 1.1.5. Ecological drivers of the ecosystem, 1.1.6. Environmental Management Framework, 1.1.7. Spatial Development Framework, and 1.1.8. Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	The baseline environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The EIA will assess the impacts of the project in greater detail, with specialist input. Terrestrial and Freshwater Ecology Studies are currently underway as per the plan of study and will be presented in the EIA. The specialist studies will identify all ecologically sensitive areas; areas to be avoided and their applicable buffers; as well as make any recommendations with regards to mitigation so as to maintain the ecological integrity of the area.
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive Impacts?	
1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be voided Altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	
1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether; what measures were explored to minimise, reuse and/or recycle the	Waste generation on site will be minimal. General waste will include office and domestic waste; scrap metal and old tyres. Hazardous waste will be limited to used

QUESTION	RESPONSE
waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	hydrocarbons, oily rags and sewage. No landfill site will be constructed on site. All waste will be separated and stored as per the relevant Norms and Standards where applicable. Waste will be recycled and sold/given to interested parties as far as possible. Waste for disposal will be collected by a reputable contractor for transport to a suitably licensed facility. Sewage will be collected within conservancy tanks to be emptied by honey sucker for treatment at a suitably licensed facility.
1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The baseline environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The EIA will assess the impacts of the project in greater detail with specialist input. A Visual Impact Assessment and Phase I Heritage Impact Assessment is currently underway as per the plan of study and will be presented in the EIA. The specialist studies will identify all sensitive areas; areas to be avoided and their applicable buffers; as well as make any recommendations with regards to mitigation so as to maintain the sense of place and cultural history of the area.
1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The baseline environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The EIA will assess the impacts of the project in greater detail with specialist input. All mining and ancillary services will be undertaken using diesel driven machinery. Equipment. Lighting and wall sockets at the infrastructure area will powered by solar panels (renewable energy) and/or diesel generator (10kVa) where necessary. As such the project will not put any additional strain on the National Grid. Waste and water will be recycled as far as possible, this will be incorporated into the EMP.
1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? 1.7.1. Does the proposed development	

QUESTION	RESPONSE
exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life), 1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources of the proposed development alternative?), 1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?	
1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts? 1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 1.8.2. What is the level of risk associated with the limits of current knowledge? 1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	The precautionary approach has been adopted for the impact assessment i.e. the worst-case scenario has been assumed before mitigation. It is currently assumed that product will be railed to market using the existing rail Siding, onsite. It must be noted however, that no agreement has been reached with Transnet to date and thus the possibility of hauling product from site cannot be ruled out. Knowledge gaps, uncertainties and assumptions with regards to the various environmental aspects will be detailed in the EIA EMP report.
1.9. How will the ecological impacts resulting from this development impact on people's environmental right in terms following: 1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	The baseline environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The EIA will assess the impacts of the project in greater detail with specialist input.
1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological	The baseline socio-economic environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project.

QUESTION	RESPONSE
impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	The EIA will assess the impacts of the project in greater detail, and will consider the IDP and SDF.
1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets /considerations of the area?	The baseline environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The local EMF will be considered when assessing the impacts in the EIA phase.
1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Section 7 describes the alternatives considered for the project.
1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	The baseline environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project, including cumulative impacts.
2.1 What is the socio-economic context of the area based on, amongst other considerations, the following considerations? 2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area, 2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.). 2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.). 2.1.4. Municipal Economic Development Strategy ("LED Strategy").	The baseline socio-economic environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The EIA will assess the impacts of the project in greater detail, and will consider the IDP, LED and SDF. This information will largely be sourced from the Social and Labour Plan.
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? 2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	
2.3. How will this development address the specific physical, psychological, developmental, cultural	Social development and community upliftment will be undertaken as per the Social and Labour

QUESTION	RESPONSE
and social needs and interests of the relevant communities?	Plan.
2.4. Will the development result in equitable (intra and inter-generational) impact distribution, in the short- and long term? Will the impact be socially and economically sustainable in the short- and long-term?	The life of mine is estimated at 30 + years.
2.5. In terms of location, describe how the placement of the proposed development will: 2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other, 2.5.2. reduce the need for transport of people and goods, 2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport), 2.5.4. compliment other uses in the area, 2.5.5. be in line with the planning for the area, 2.5.6. for urban related development, make use of underutilised land available within the urban edge, 2.5.7. optimise the use of existing resources and Infrastructure, 2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), 2.5.9. discourage "urban sprawl" and contribute to compaction/densification, 2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, 2.5.11. encourage environmentally sustainable land development practices and processes 2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.), 2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential), 2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-	Farming is the main contributor to the local economy, namely sheep, wool, Lucerne and rooibos tea. Limited mining is undertaken in the area. The proposed project will provide permanent employment for approximately 14 people. Employment will be sourced locally as far as practical in line with the Social and Labour. Existing infrastructure such as the rail line, borehole and access/service road will be utilised as far as possible. At this stage it is anticipated that product Gypsum will be railed to market using the existing Transnet Siding and rail line which links to site to the Saldanha Port. Access to site will be via the existing Transnet Service Road, located off the R355. Sufficient accommodation is available in town, as no employees will be housed on site.

QUESTION	RESPONSE
cultural and cultural-historic characteristics and sensitivities of the area, and 2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	
2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts? 2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? 2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	The precautionary approach has been adopted for the impact assessment i.e. the worst-case scenario has been assumed before mitigation. It is currently assumed that product will be railed to market using the existing rail Siding, onsite. It must be noted however, that no agreement has been reached with Transnet to date and thus the possibility of hauling product from site cannot be ruled out. Knowledge gaps, uncertainties and assumptions with regards to the various environmental aspects will be detailed in the EIA EMP report.
2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: 2.7.1. Negative impacts: e.g. health (e.g. HIVAids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	The baseline socio-economic environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The EIA will assess the impacts of the project in greater detail.
2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	The baseline socio-economic environment has been discussed briefly under Section 9, whist Section 10 discusses the preliminary impacts associated with the project. The EIA will assess the impacts of the project in greater detail, and will consider the IDP and SDF. Section 7 describes the alternatives considered for the project.
2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development (located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best	

QUESTION	RESPONSE
practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	
2.13. What measures were taken to: 2.13.1. ensure the participation of all interested and affected parties, 2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, 2.13.3. ensure participation by vulnerable and disadvantaged persons, 2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means, 2.13.5. ensure openness and transparency, and access to information in terms of the process, 2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, 2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein was promoted.	Section 8 and Appendix 5 outlines the public participation proposed (PPP) for the project. Potential interested and affected parties (I&APs) were notified by means of advertisements, notices, posters and background information documents. Following which an introductory public meeting (open day) was held to introduce the project to I&APs and outline the environmental process. At the meeting the I&APs were afforded the opportunity to discuss the Social and Labour Plan (S&LP), job opportunities and service requirements with the relevant consultants and applicant. Opportunity to review and comment on all environmental documents will be provided as per the EIA Regulations.
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	The EIA process will take cognisance of all interests, needs and values of all interested and affected parties during the PPP.

QUESTION	RESPONSE
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	Job specific induction and training will be provided during the various phases of the mine, thus ensuring all personnel are aware of the potential environmental and health impacts associated with their job. Further to this, all personnel will be made aware of their right to refuse work which may be harmful to their health and/or the environment.
2.16. Describe how the development will impact on job creation in terms of, amongst other aspects: 2.16.1. the number of temporary versus permanent jobs that will be created, 2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), 2.16.3. the distance from where labourers will have to travel, 2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), 2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	The proposed project will provide permanent employment for approximately 14 people. Additional jobs will be created indirectly through procurement from service providers i.e. construction activities, waste management etc. Employment will be sourced locally as far as practical. The nearest towns are Loeriesfontein and Nieuwoudtville. Thus it is expected that mine personnel will need to travel between 40-45km per day. Skills required include drivers, operators, and laboratory technicians.
2.17. What measures were taken to ensure: 2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, 2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	Section 8 and Appendix 5 outlines the public participation proposed (PPP) for the project. Various organs of state and other relevant stakeholders were identified as I&APs and notified of the project via e-mail, fax, post or telephone. Copies of the relevant environmental reports will be circulated to the Department of Environmental Affairs, the Department of Water Affairs, the South African Heritage Resources Agency, the Local and District Municipality for comment and review.
2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	The Scoping, EIA and EMP will be compiled in terms of the various Environmental Legislation and applicable Guidelines (see Section Table 6), with the aim of avoiding and/or minimising all impacts on the environment.
2.19. Are the mitigation measures proposed realistic and what long term environmental legacy and managed burden will be left?	The preliminary management measures are outlined in Section10.4. These management measures are realistic, and typical for an operation of this type and scale. Long term impacts will be better understood on completion of the EIA, with specialist input.
2.20. What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising	The polluter pays principle will be incorporated into the EMP.

QUESTION	RESPONSE
further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	
2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	The various specialist studies are currently underway as per the plan of study for the EIA. Following which the impacts can be assessed in detail and recommendations on layout alternatives proposed.
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	The potential cumulative impacts resulting from the proposed project can only be objectively determined at the end of the EIA Process

6 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

It is anticipated that construction activities will take six (6) months, the life of mine is expected to be in excess of thirty (30) years. Decommissioning and closure activities are estimated at one (1) year.

Thus the Environmental Authorisation (EA) and Waste Management License (WML) are being sought for a period of thirty two (32) years.

7 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE

7.1 Details of alternatives considered

7.1.1 Property / Location Alternatives

Not applicable. Properties are delimited by the properties available for prospecting and/or mining (i.e. not held by another company); and the geology of the area.

7.1.2 Type of activity to be undertaken

The MRA has low agricultural potential and is currently utilised for grazing (sheep). The property is bisected by the Transnet Freight railway line which links Sishen Iron Ore to the Port of Saldanha. Existing infrastructure on site includes a small rail siding, power lines, sub-station, farmsteads and associated infrastructures. The quality of both the powder and crystalline gypsum makes it economically viable to transport it to Western Cape, Limpopo, Gauteng and the North West. Transportation through rail is a possibility by means of the existing rail siding.

Development in the area is limited and the unemployment rate is high. So although mining is expected to have greater impact on the environment in terms of land use, it will have a greater positive contribution to socio-economics in the area through the implementation of the S&LP and through limited employment. Further to this it must be noted, that of the overall mining right area of 7,456.6974 ha, only 700 ha will be affected by the proposed mining operations. Thus it is expected that the remainder of the property can continue to be utilised for agricultural purposes.

7.1.3 The design or layout of the activity

Alternatives for the mining layout are limited by the extent of the gypsum resource. The type of mining to be conducted (surface trench mining) is further limited by the shallow depth of the resource.

The surface infrastructure in relation to the mine area is indicated in Plan 3. The infrastructure has been placed based on a high level analysis of the area, to avoid existing farmstead, water resources and other sensitive areas as far as possible. The infrastructure area was also sited based on accessibility to the Transnet rail line and siding, so as to reduce hauling distances.

It must be stressed that the final location of the infrastructure may shift slightly dependant on the findings of the various specialist studies and input from Interested and Affected Parties (I&APs).

7.1.4 The technology to be used in the activity

Kanakies will be mined via surface trench mining, with concurrent roll over rehabilitation. The following equipment will be utilised:

- A CAT 633E Scraper or similar;
- A Wirtgen 2200SM or similar surface miner;
- A 40 ton/hr mobile roller crusher combined with an Astec mobile high-frequency screen engineered to provide efficient sizing;
- A CAT 950GC wheel loader;
- A CAT250B articulated dump truck;
- A Volvo 250 kVA diesel generator and a household 10 kVA diesel generator;
- A 120 kW tractor with roller for on-stockpile crushing if and when required; and
- At least 2 Toyota Hilux 2.8D 4-wheel-drive LCV's.

In all other instances, best practices as utilised in the industry have been selected and, where applicable, SANS standards and legislative requirements will be followed in design, construction and management of infrastructure and activities on site. Technological alternatives have therefore not been further assessed. It is envisaged at this stage that no permanent structures will be constructed; only mobile offices and mobile equipment will be placed on site.

7.1.5 The operational aspects of the activity

In all instances, common practices as utilised in the industry have been selected. Operational alternatives have not been considered further.

7.1.6 The option of not implementing the activity

The no-go option will result in the protection of the environment *in situ* and the continued use of the land for grazing (agriculture) purposes. Not mining the area will result in the sterilisation of the Gypsum reserves; and the contribution to socio-economics in the area through the implementation of the S&LP and employment will not be realised.

8 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

The table below highlights the requirements for public participation as per NEMA. Please refer to Appendix 5 for the comprehensive public participation process (PPP) report.

The public participation process (PPP) aims to involve the authorities and I&APs in the project process, and determines their needs, expectations and perceptions which in turn ensures a complete and comprehensive environmental study. An open and transparent process has and will be followed at all times and will be based on reciprocal dissemination of information.

Table 8: NEMA minimum PPP requirements

Legal and Regulatory Requirement: NEMA Regulation 982, Section 41 – Public participation process	
1	This regulation only applies in instances where adherence to the provisions of this regulation is specifically required
Noted	
2	The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation b:
NEMA PPP Guidelines have been followed.	
a	fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of:
i	the site where the activity to which the application or proposed application relates is or is to be undertaken
ii	An alternative site
Notices were compiled in English and Afrikaans and erected (30-31st January 2018) on the site boundary fence as well as other public locations, namely: • Agrimark; • Central Traders; • Die Vis Winkel; • Gravity's Trading Shop; • Hantam Local Municipality; • Public Library; • Post Office; • Smartiebox 2; and • The Spar. These posters informed the public of the proposed activities, invited (I&APs) to attend the scoping phase public meeting and requested people to register as I&APs for the project. Copies of the Posters and photographic evidence thereof have been included in the relevant Annexure of the PPP Report attached as Appendix 5.	
b	giving written notice, in any of the manners provided for in section 47D of the Act, to:
i	the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

Legal and Regulatory Requirement: NEMA Regulation 982, Section 41 – Public participation process	
ii	owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
iii	the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
iv	the municipality which has jurisdiction in the area;
v	any organ of state having jurisdiction in respect of any aspect of the activity; and
vi	any other party as required by the Competent Authority.

A comprehensive database / I&AP register was compiled, this included various stakeholders, authorities, land owners, land users and associations within the area.

Background Information Documents (BIDs) detailing the project were compiled in English and Afrikaans. These were hand delivered to land owners / users and adjacent land owners / users on the 30-31st January 2018.

In addition, copies were distributed to all I&APs on the database via e-mail, post and fax. Persons who did not have access to a computer, fax machine or postal service were notified via hand delivered documents where possible, and/or SMS.

The purpose of the BID was to:

- Invite members of the public to register as I&APs;
- Introduce the proposed project, and inform the public on the application / environmental process and their involvement;
- Provide information on the proposed impacts the development may have on the environment which will be investigated further;
- Initiate a process of public consultation to record perceptions and issues; and
- Invite I&APs to attend the Scoping Phase Public Meeting.

A copy of the BID and proof of delivery thereof is attached in the relevant Annexure of the PPP Report included as Appendix 5.

c	Placing an advertisement in:
i	One local newspaper; or
ii	Any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations.
d	placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii)

Advertisements were placed in one (1) local newspaper, in both English and Afrikaans:

- Noordwester, publication date 2nd February 2018.

Copies of the Adverts are attached in the relevant Annexure of the PPP Report included as Appendix 5.

e	Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to- (i) illiteracy; (ii) disability; or (iii) any other disadvantage.

Legal and Regulatory Requirement: NEMA Regulation 982, Section 41 – Public participation process	
No issues in information dissemination have been noted to date. Any additional requirements made by the authorities will be applied during the PPP process.	
3	A notice, notice board or advertisement referred to in sub regulation (2) must –
a	Give details of the application which is subject to public participation
b	State -
i	whether basic assessment or S&EIR procedures are being applied to the application
ii	Whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation
iii	The nature and location of the activity to which the application relates
iv	Where further information on the application or activity can be obtained
v	The manner in which and the person to whom representations in respect of the application may be made
These aspects are addressed in the BIDs, Notices and Adverts. Please see the relevant annexures in the PPP Report included as Appendix 5.	
4	A notice board referred to in sub regulation (2) must -
a	be of a size at least 60cm by 42 cm
b	Display the required information in lettering and in a format as may be determined by the Competent Authority
Notices were A2 in size (42 x 60 cm).	
5	Where public participation is conducted in terms of this regulation for an application or proposed application, sub regulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that : -
a	such process has been preceded by a public participation process which included compliance with sub regulation (2)(a), (b), (c) and (d); and
b	written notice is given to registered interested and affected parties regarding where the: -
i	revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b) may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due;
ii	revised environmental impact report or EMPr as contemplated in regulation 23(1)(b) may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due; or
iii	environmental impact report and EMPr as contemplated in regulation 21(2)(d) may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due;
Noted. No deviation required.	
6	When complying with this regulation, the person conducting the public participation process must ensure that:
a	Information containing all the relevant facts in respect of the application is made available to potential interested and affected parties; and

Legal and Regulatory Requirement: NEMA Regulation 982, Section 41 – Public participation process	
b	Participation by potential interested and affected parties is facilitated in such a manner that all potential interested and affected parties are provided with a reasonable opportunity to comment on the application.
Noted. All environmental reports will be made available for public review for a minimum of 30 days.	
7	Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.
The PPP has been combined for all the authorisations required from the DMR in terms of the MPRDA, NEMA and NEM:WA. The notices have also included information on the water use license application process through the DWS under the NWA.	

This section outlines the PPP initiated to date, and completed as part of the Scoping Phase of the project:

8.1 I&AP Consultation

As summarised in Table 8 above, I&APs for the project were identified using information from similar projects in the past, as well as from information and responses received from the press advertisements, notices and the BID's sent out.

The I&APs include a broad database of immediately affected landowners, adjacent landowners, land users, communities, local authorities, ward councillors and other interest groups. A copy of the I&AP register and proof of notification (BIDs, notices, advertisements etc.) is included in the PPP report, attached as Appendix 5.

All comments, questions and/or concerns received in response to the various notices to date, have been summarised in the issues and response table below (Table 9).

The Scoping Phase Public Meeting was held on 9th February 2018 at the Loeriesfontein Public Hall. The purpose of the meeting was to introduce the project to I&APs and explain the environmental authorisation process. All registered I&APs were notified of the meeting's date through the BIDs, posters and adverts. In addition, a reminder SMS was sent to all registered I&APs prior to the meeting. Copies of the minutes and associated presentation are attached under Appendix 5.

Further to this all registered I&APs have been notified of the Scoping Report's availability for review and comment. The report will be made available for a minimum period of thirty (30) days at the following locations:

- Online at www.cabangaenvironmental.co.za; and
- The Loeriesfontein Public Library.

All comments and / or issues raised during the review period will be included in the final Scoping Report for submission to the DMR.

8.2 Authorities Consultation

The lead authority for the applications in terms of the MPRDA, NEMA and NEM:WA is the Department of Mineral Resources (DMR). The Department of Water Affairs and Sanitation (DWS) is the lead authority with regards to the water use license application.

Other local and Regional authorities were identified and included in the I&AP register, and notified of the proposed project by means of the BID.

In addition, copies of the draft Scoping Report will be circulated to the following authorities for review and comment:

- DMR;
- DWS;
- Department of Economic Development, Environmental & Tourism;
- Hantam Local Municipality;
- Namakwa District Municipality; and
- South African Heritage Resource Agency (SAHRA).

Comments (where received) have been included in the I&AP issues and response table below.

The Land Claims Commissioner was contacted to determine whether any land claims have been registered over the affected properties. The response from the Department indicates that there are currently no land claims on Kanakies 332 Portion 0 (RE).

8.3 Summary of issues raised by I&APs

Table 9 below summarises the issues raised by the various I&APs and authorities to date, and the EAP's response/feedback thereto.

Table 9: PPP Issues & Response Table

Interested and Affected Parties	Date Comments Received		Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
AFFECTED PARTY					
Landowner/s	**X**				
No comments received to date					
Lawful occupier/s of the land	**X**				
Riaan Vd Merwe (RvdM)	X	9- Feb- 18- Public Meeting	Will there be any permanent structures on the land? The main concern is safety, it is mainly elderly people living on these farms and we worry about farm attacks. We will also worry about theft in the area if a mine opens.	Container offices will be utilized. No permanent structures will be constructed on site. Safety is a valid concern and we will make note of it.	Consultation to continue throughout the process.
No comments received to date					
Landowners or lawful occupiers on adjacent properties	**X**				
No comments received to date					
Municipal Councillor	**X**				
No comments received to date					
Municipality	**X**				
No comments received to date					
Organs of state (Responsible for	**X**				

Interested and Affected Parties	Date Comments Received	Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc.				
No comments received to date				
Communities	**X**			
No comments received to date				
Dept. Land Affairs	**X**			
Ryan Oliver- Department of Land Restitution Support	X	23-Jan-18- Email	No land claims appear on our database in respect of the property. Please note however: - Some claimants referred to properties they claim dispossession of rights in land against using historical property descriptions which may not match current property description, - Some claimants provided the geographic descriptions of the land they claim without mentioning the particular actual property description they claim dispossession of rights in land against.	Noted.	Finalised.
Traditional Leaders	**X**			
No comments received to date				
Dept. Environmental Affairs	**X**			

Interested and Affected Parties	Date Comments Received	Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
No comments received to date				
Other Competent Authorities affected	**X**			
J. Janse- Spatial Planning (Northern Cape)Prov. Dept. Cooperative Governance Human Settlement and Traditional Affairs	X	29- Jan- 18- I&AP Registration Document	Concerned about wear and tear on roads. Municipality will be affected.	The possibility of railing product from site, using the existing rail siding is currently being investigated. A transport impact assessment is being undertaken as per the plan of study for the EIA.	Consultation to continue throughout the process.
Danita Hohne- Department of Water Affairs and Sanitation	X	2- Feb- 18- Email	A geohydrological study would need to be done, as the area has not had rain in 7 years. The area is mainly depleted of its groundwater resources. Also included in the study must be a hydrocensus of about 5km around the property and pump test must be conducted by a specialist with Pr. Status. Pump test must be undertaken for 24hours. Please note that the application for a water use licence would fall mainly on the Western Cape. Nieuwoudtville, Calvinia and Loeriesfontein all fall under the Berg Olifants CMA and therefore applications should be made to them and not the Orange CMA in Upington.	A geohydrological study will be undertaken as per the plan of study for the EIA. This will include a hydrocensus. Mining activities will be undertaken at a depth of approximately 1.4 – 2.5m, thus it is not expected that the groundwater table will be intersected by mining activities. Water use will be limited that of potable/domestic water and dust suppression. This is currently estimated at 81m^3 / day and will be sourced from a borehole on site. The necessary water use license applications will be made to the Berg Olifants CMA.	Consultation to continue throughout the process.
Natasha Higgit-	X	19- Feb- 18-	As the proposed development is	A Phase I Heritage Impact	Consultation to continue throughout

Interested and Affected Parties	Date Comments Received	Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
SAHRA	Email	undergoing an EA Application process in terms of the National Environmental Management Act, No 107 of 1998 (NEMA), NEMA Environmental Impact Assessment (EIA) Regulations for activities that trigger the Mineral and Petroleum Resources Development Act, No 28 of 2002 (MPRDA)(As amended), it is incumbent on the developer to ensure that a Heritage Impact Assessment (HIA) is done as per section 38(3) and 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA). This must include an archaeological component, palaeontological component and any other applicable heritage components. The HIA must be conducted as part of the EA Application in terms of NEMA and the NEMA EIA Regulations. The Archaeological Impact Assessment (AIA)must comply with the SAHRA 2007 Minimum Standards: Archaeological and Palaeontological Component of Impact Assessments. A Palaeontological Desktop Assessment must be undertaken to assess whether or not the development will impact upon palaeontological resources as the area is located within unknown palaeontological sensitivity (see www.palaeontologicalsociety.co.za for qualified palaeontologists). The PIA must	Assessment will be undertaken as per the plan of study for the EIA. This will include a desktop Palaeontological study. All environmental reports will be made available to the SAHRA for review and comment timeously.	the process.

Interested and Affected Parties	Date Comments Received		Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
			comply with the SAHRA 2012 Minimum Standards: Palaeontological Component of Heritage Impact Assessments. Any other heritage resources as defined in section 3 of the NHRA that may be impacted, such as maritime archaeology, built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed. The Scoping Report with all appendices, EIA report with all appendices must be submitted to SAHRA at the start of every Public Review period so that SAHRA comments may be incorporated as part of the Final reports.		
Linda Njemla- Department of Mineral Resources	X	13- March- 18- Email	Acknowledgment of Environmental Authorisation application lodged on 9th March 2018. 44 days within receipt of letter to submit scoping report and subjected to at least 30 days of public participation. Final Scoping Report due on 26th April 2018. This is not inclusive of public holidays. Acknowledgment of your application does not grant you permission to commence with Prospecting activities.	Noted.	Consultation to continue throughout the process.

Interested and Affected Parties	Date Comments Received		Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
OTHER AFFECTED PARTIES	**X**				
No comments received to date					
INTERESTED PARTIES	**X**				
I&AP (*name not stated*)	X	9- Feb- 18- Public Meeting	The site is not located on Calvinia Road and the direction of the site from Loeriesfontein is incorrect.	Calvinia Rd refers to the Registration Division of the Land with the Deeds office, and not the physical address.	Finalised.
Karel Nevil (KN)	X	9- Feb- 18- Public Meeting	What is the process and how will the locals get jobs for this project?	CV's and business profiles can be forwarded to MTS Holdings. These will be considered should the mine's application be successful.	Consultation to continue throughout the process.
Richard Mollat (RM)	X	9- Feb- 18- Public Meeting	What type of waste will the mine create? Will there be hazardous waste? If the whole process takes 300 days this means that smaller companies are able to get their registration and affairs ready; so that they can be used by the mine. Will your business need to be on a database?	The mine will generate general waste as well as limited amounts of hazardous waste. Used hydrocarbons and oil rags etc. are considered hazardous waste. No disposal will take place on site. Waste will need to be removed by a contractor for disposal at a licensed facility. CV's and business profiles can be forwarded to MTS Holdings for inclusion in a database. These will be considered should the mine's application be successful. Employment and procurement will be sourced from Loeriesfontein as far	Consultation to continue throughout the process.

Interested and Affected Parties	Date Comments Received		Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
				as possible.	
Richard Mollat (RM)	X	9- Feb- 18- I&AP Form	Interested in work in the project. Water will be sourced from Loeriesfontein and there is already a deficit in water.	CV's and business profiles can be forwarded to MTS Holdings. These will be considered should the mine's application be successful. Water use will be limited that of potable/domestic water and dust suppression. This is currently estimated at 81m3 / day and will be sourced from a borehole on site. The necessary water use license applications will be made to the Berg Olifants CMA. Further to this the necessary geohydrological investigations will be undertaken as per the plan of study for the EIA.	Consultation to continue throughout the process.
Linda Adonis (LA)	X	9- Feb- 18- Public Meeting	If there are protected plants in the area they need to relocate within Loeriesfontein and not in other areas. The mine needs to make provisions for medicals before and after so that we do not get sick from the mine and then the mine says that they didn't make the workers sick. This needs to be kept on record as dust could impact our health. We have an issue with other companies coming in and not giving the locals employment, people are sourced from outside the area. Murray	This is required in terms of the Health and Safety Laws. Medicals will be undertaken prior to personnel starting work on the mine; this will also need to be undertaken annually thereafter. Exit medicals are also required by law when leaving a mine. In terms of dust, an air quality study will be undertaken and dust fallout monitoring will be proposed for the mine going forward. These results can be requested by the public. Witkop Fluorspar is a small company,	Consultation to continue throughout the process.

Interested and Affected Parties	Date Comments Received		Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
			& Roberts came in and did that. We weren't given opportunities. We in general would like to know what skills are needed to work at a mine as we do not have mines in the area.	and the proposed mine will have limited job opportunities as discussed in the presentation. The company endeavours to employ locals as far as possible.	
Johanna Basson (JB)	X	9- Feb- 18- Public Meeting	Impact studies are undertaken for projects, and the companies are considered compliant but people still get sick.	On-going monitoring is important to ensure compliance with the relevant standards and to ensure mitigation is efficient. Samples will need to be analysed by accredited laboratories and compared to relevant Standards. This is then submitted to the various Authorities. The public is allowed to request monitoring data. The health effects of mining gypsum are much lower compared to coal and uranium. Precautions taken are the same with all the mines regardless of mineral.	Consultation to continue throughout the process.
Isak Nel (IN)		9- Feb- 18- Public Meeting	The locals have many skills and need to be considered. How will they handle people who need jobs?	CV's and business profiles can be forwarded to MTS Holdings for inclusion in a database. These will be considered should the mine's application be successful.	Consultation to continue throughout the process.

Interested and Affected Parties	Date Comments Received		Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
				MTS Holdings is responsible for the compilation of the Social and Labour Plan which will outline the procurement and employment policies of the project.	
I&AP (*name not stated*)	X	9- Feb- 18- Public Meeting	How long will the mine be open for?	The estimated life of mine is roughly thirty (30) years.	Consultation to continue throughout the process.
I&AP (*name not stated*)	X	9- Feb- 18- Public Meeting	The mine will only create 14 permanent jobs? That is not a lot.	That is correct; it is a very small project. CV's and business profiles can be forwarded to MTS Holdings for inclusion in a database. These will be considered should the mine's application be successful.	Consultation to continue throughout the process.
I&AP *(name not stated)*	X		You will mine the gypsum, take it away and sell it somewhere else. That profit goes to another area. 14 permanent jobs are not a lot of jobs.	There is no market for gypsum in this area. The processing will occur at the mine not in other towns or provinces. Although only 14 permanent jobs will be created there is still a knock on effect by using contractors and services. Gypsum is sold for R10/ton, thus it is not as profitable as other mines. This needs to be kept in mind when putting the project into perspective.	Consultation to continue throughout the process.
Beaucannith	X	9- Feb- 18-	Project will have a good impact.	CV's and business profiles can be	Consultation to continue throughout

Interested and Affected Parties	Date Comments Received		Issues raised	EAP's response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
Swartz (BS)		I&AP Document	Have a recycling company, interested in tenders.	forwarded to MTS Holdings. These will be considered should the mine's application be successful. MTS Holdings is responsible for the compilation of the Social and Labour Plan which will outline the procurement and employment policies of the project.	the process.
David Okhuis (DO)	X	9- Feb- 18- I&AP Document	There will be a positive impact on the poor youth that have interests in mining. The project will create work, socio-economic development, enterprise development as well as the development of black empowered businesses. To obtain historical background information on Kanakies contact: Mr Kenneth Ulambano, Department of Land Affairs. Kimberley, Northern Cape. Tel: 053 807 5700	CV's and business profiles can be forwarded to MTS Holdings. These will be considered should the mine's application be successful. MTS Holdings is responsible for the compilation of the Social and Labour Plan which will outline the procurement and employment policies of the project. Noted, the Department of Land Affairs will be consulted.	Consultation to continue throughout the process.

9 BASELINE ENVIRONMENT

9.1 Geology

This section has been extracted from the Mine Works Programme (Witkop Fluorspar, February 2018).

The area is well known to be underlain by quaternary alluvium, comprising calcareous and gypsiferous soils, followed by quaternary gravels, silts and sands.

These formations are believed to unconformably overlie the Besonderheid Formation of the Knersvlakte Subgroup, Vanrhynsdorp Group in the study area. The Besonderheid Formation comprises of green shale, siltstone, sandstone, gritstone and conglomerates, interbedded with shale, limestone and chert in the south east. It is believed that the ancient Doringrivier and its tributaries eroded the Besonderheid Formation and may have accumulated gypsiferous sediments in the paleochannels and topographic low points within the study area.

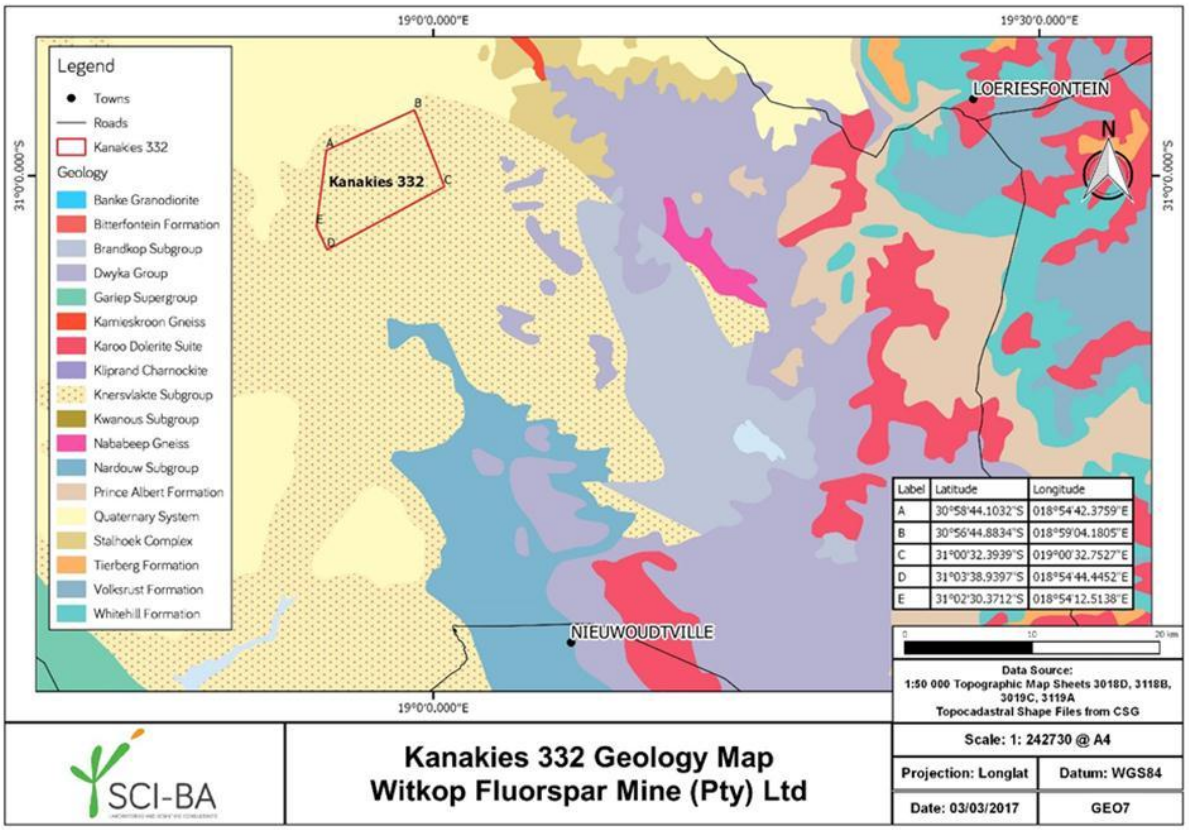


Figure 1: Regional Geology

The targeted Gypsum deposit covers approximately 700 Ha and is situated on a large flat lying sandy terrace at the north-eastern end of the Knersvlakte, close to the confluence of the Krom and Doring rivers. The gypsum layer is between 1.3 and 1.7 metres thick and is covered with a layer of sandy soil of 0.3 to 0.7 metres thick. The main contaminant in the gypsum layer is silica sand mixed with clay.

The deposit can be divided into two generally horizontal overlapping seams of gypsum, namely:

- 0.4 m thick seam of gypsum powder occurring in the southern portion of the deposit and overlying;
- 0.9 m to 1.3 m thick main gypsum seam, which occurs throughout the entire deposit, but which decreases in quality with increasing depth.

Figure 2 below illustrates the vertical distribution of the mineral encountered in the deposit and indeed by means of a stratigraphic column.

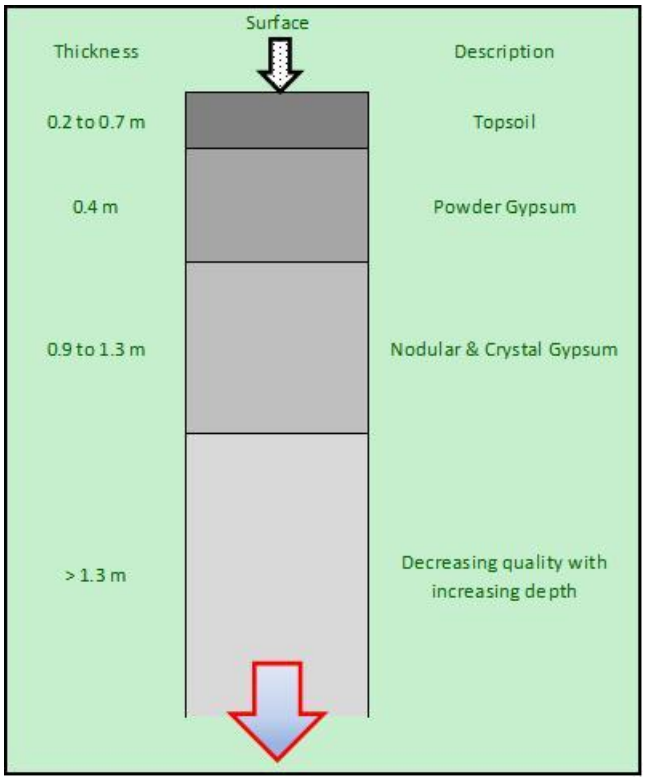


Figure 2: Stratigraphic Column

9.2 Landscape Characteristics

The project area can be described as arid and flat.

9.3 Climate

The area is characterised by typical semi-arid conditions with warm summers, and cold winters. Temperature fluctuations vary from 35˚C in Summer to sub-zero temperatures in Winter (Hantam IDP, 2010/2011).

According to the Water resources of South Africa, 2005 Study (WR2005), the mean annual precipitation (MAP) for the project area is estimated at 133mm per annum whilst the mean annual evaporation (MAE) is 1,760mm (lake evaporation) resulting in a negative climatic water balance for the area.

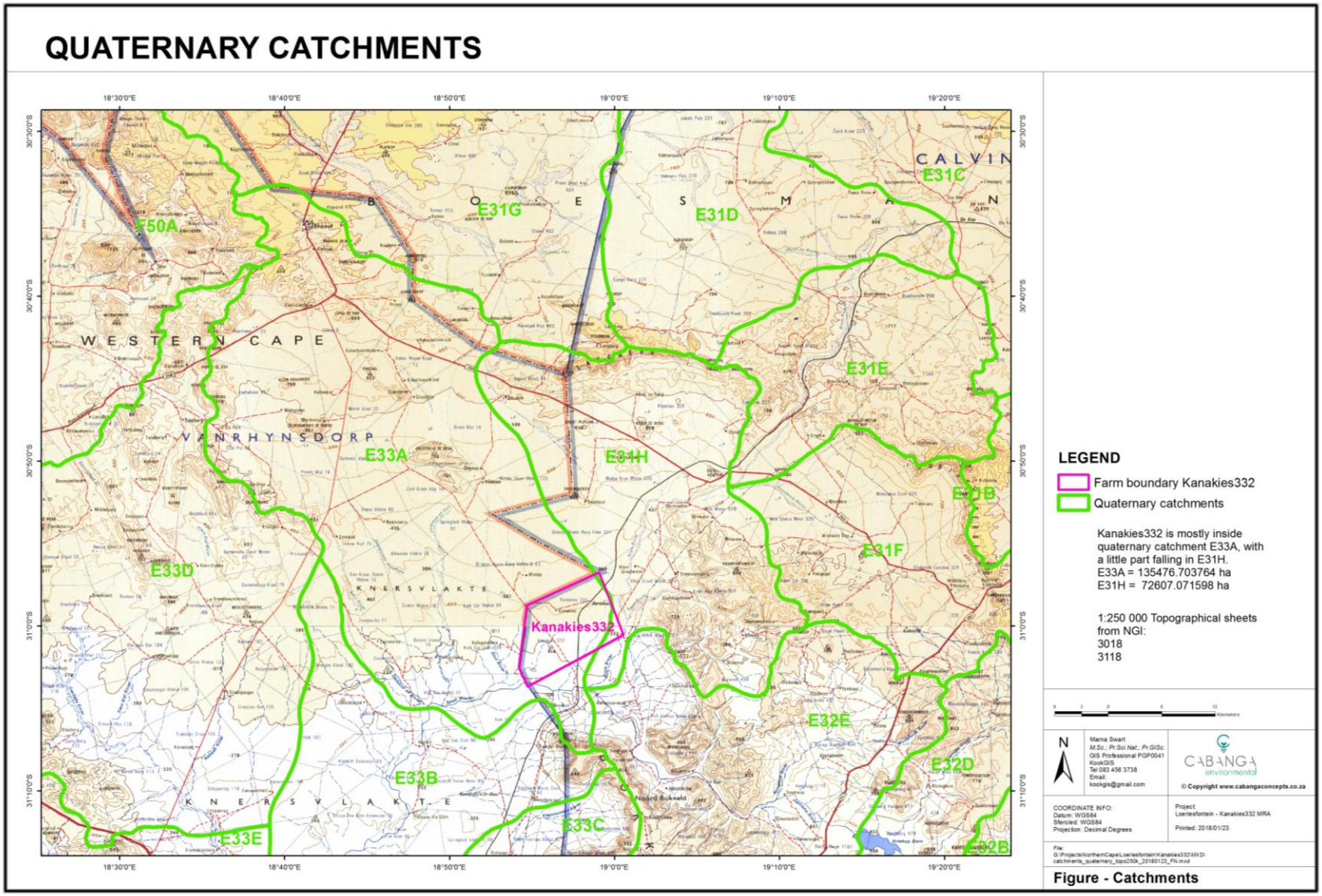
9.4 Water Resources

The project area falls within the Olifants/Doorn Water Management Area (WMA), specifically the quaternary catchment E33A (Plan 4). The major rivers within the WMA include the Olifants, Dooring, Krom, Sand and Sout Rivers. According to the WR2005 study, the mean annual runoff for the E33A quaternary catchment is 0.9 million m^3.

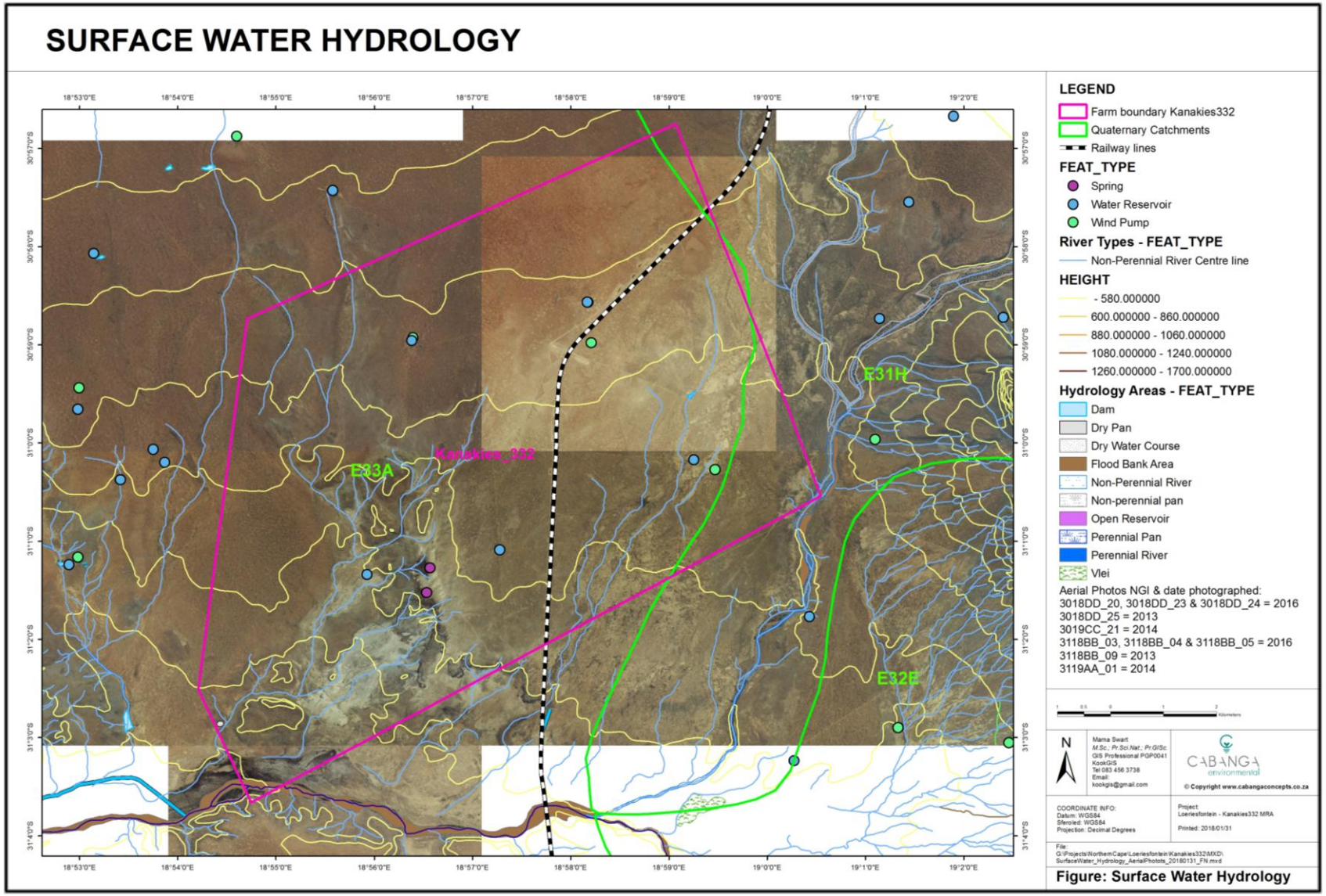
Runoff from the project area drains south into the Krom River and Dooring River, which runs along the southern and eastern boundary of the MRA (Plan 5).

Plan 6 below depicts the site in relation to National Freshwater Ecosystem Priority Areas (NFEPA). The Sout and Krom Rivers are both listed as non-FEPA drainages. There are some non-FEPA wetlands within the MRA however, these are outside of the proposed mine and infrastructure areas.

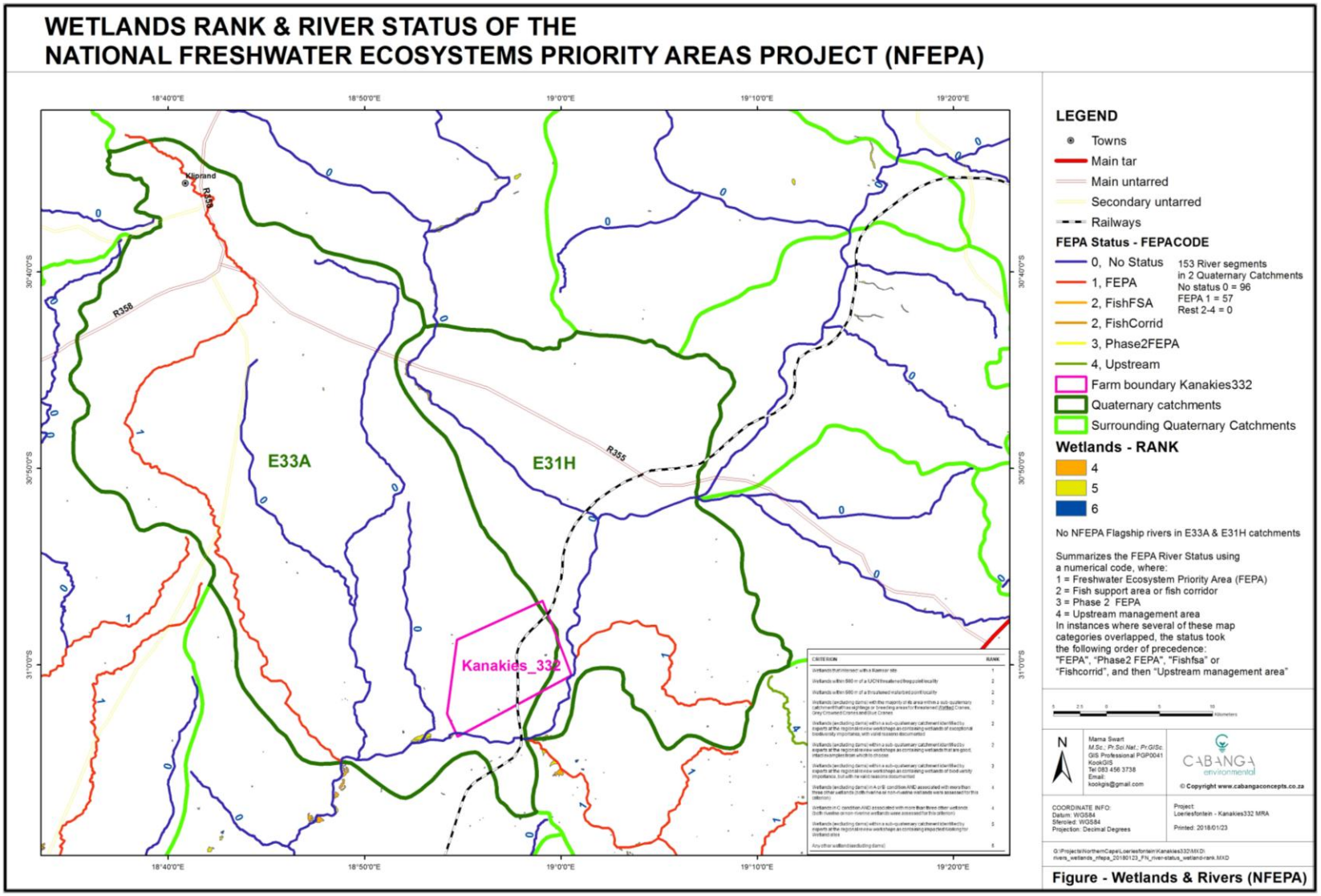
According to the DWS the project area falls under a critical area (Groundwater Resources in the Northern Cape Province, DWS: 2008) whereby the groundwater resources are being depleted due to abstraction.



Plan 4: Quaternary Catchments



Plan 5: Site hydrology



Plan 6: NFEPA Wetlands and Rivers

9.5 Soils, Land Use and Capability

The study area is dominated by soils of the Glenrosa and Mispah soil form. The soils have developed from bands of weathering rock found close to the soil surface. Both soil forms have a shallow effective soil depth ranging between 300-450 mm. Agricultural potential is low due to a distinct lack of rooting depth, and thus the project area is only suited for small stock grazing.

9.6 Biodiversity (TBC, 2017)

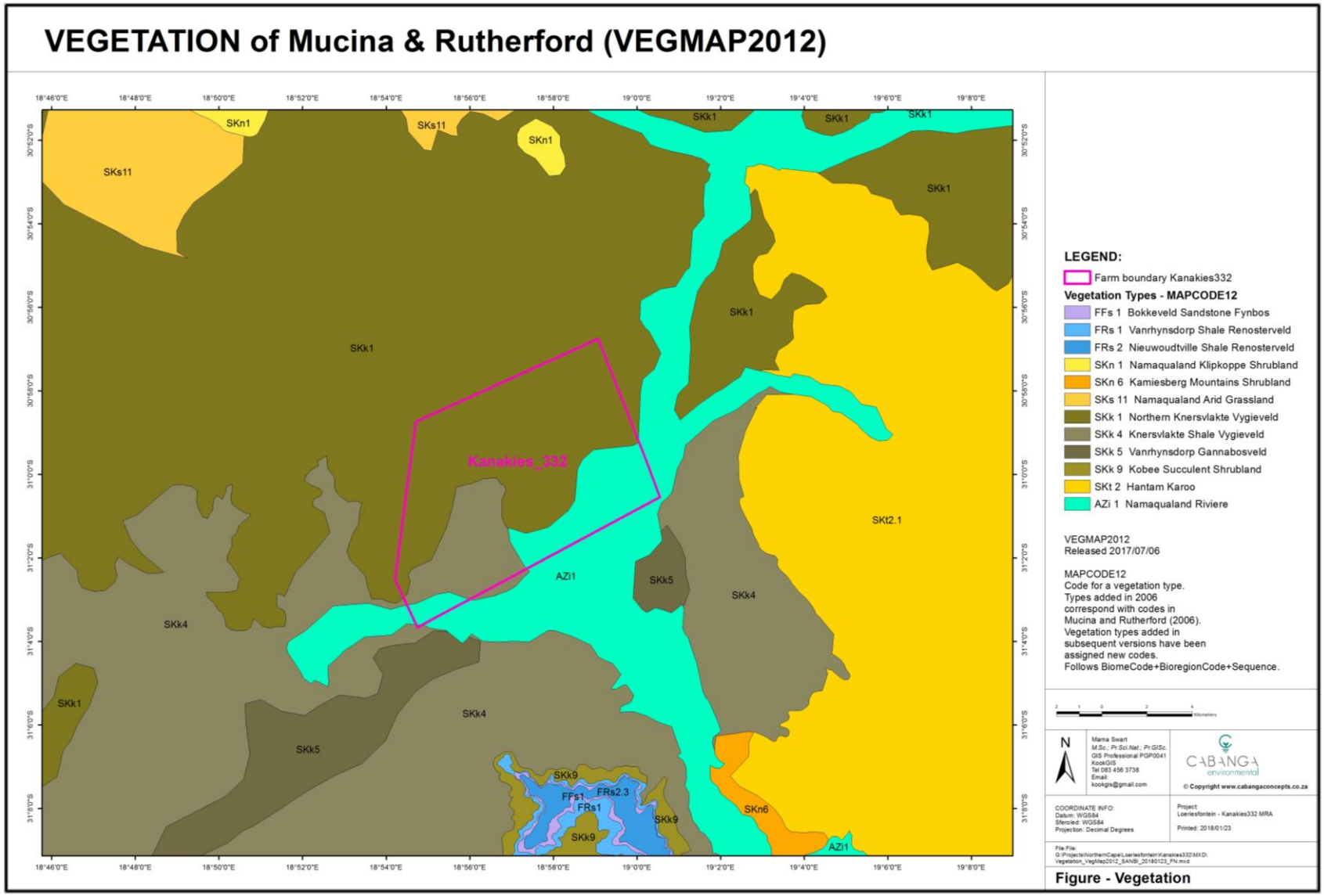
This section is largely extracted from the Kanakies Biodiversity Assessment for Prospecting (TBC, 2017); attached as Appendix 6.

The project area is located in the Succulent Karoo biome of the Northern Cape Province. The Succulent Karoo biome is one of 25 internationally recognised biodiversity hotspots, and is the world's only arid hotspot. According to the Succulent Karoo Ecosystem Programme (SKEP), the project area is not situated in an area with high plant or animal endemism or sensitivity. The area has however been identified as a very important area in terms of insect sensitivity, with endemic species present.

Vegetation types within the project area include Northern Knersvlakte Vygieveld (SKk 1), Knersvlakte Shale Vygieveld (SKk4); and Namaqualand Riviere (Azi 1), see Plan 7 below.

The Biodiversity Company undertook a desktop investigation and preliminary site survey in March 2017 (Appendix 6). The findings of the study concluded that a number of vulnerable, rare and/or threatened plant species are likely to occur on site. At the time of the site survey vegetation cover was sparse and biodiversity was low, this was likely as a result of the on-going drought, and no species of conversation concern was recorded. However during a recent site visits in 2018, *Hoodia* species were identified.

A number of avian (bird) and mammal species of conservation concern are expected to occur in the project area however, none were recorded on site at the time of the preliminary site survey. This is likely as a result of the short duration of the site visit. One (1) endangered bird species namely *Neotis ludwigii* (Ludwig's bustard) was recorded just outside the town of Loeriesfontein.



Plan 7: Vegetation Type

9.7 Cultural and Heritage

An Archaeological Impact Assessment was conducted by the Department of Archaeology, University of Cape Town in 2010 (Webley, 2010) for the Transnet sub-station and associated Loops.

According to Webley, 2010 there is no published literature for the area and information has to be gleaned from sites in excess of 40km where Middle Stone Age scatters have been recorded along the Sout River. The Bokkesveldberge are expected to contain many rock art sites, however the only published accounts are from the Koebee River some 100km to the south of the MRA.

The Onder-Bokkeveld was part of the northern frontier of the Cape Colony, and by the 1770's the area was completely settled by white colonists and the indigenous peoples were subjugated and worked on stock farms. The farm Kanakies was first surveyed in 1874. Prior to that it was Crown Lands.

Archaeological and cultural remains are expected to occur (Webley, 2010).

9.8 Socio-economic

The information below is largely extracted from http://www.hantam.gov.za/ and http://www.statssa.gov.za/?page_id=993&id=hantam-municipality.

The proposed mining right area falls within the Hantam Local Municipality of the Namaqwa District Municipality. The Hantam Municipality covers approximately 36,128km² and includes Calvinia (the centre) as well as Brandvlei, Loeriesfontein, Middelpos and Nieuwoudtville. Farming is the main contributor to the economy, namely sheep, wool, Lucerne as well as rooibos tea.

According to Census 2011, Hantam Municipality has a total population of 21 578, with a growth rate of 0.59% (2001-2011). Approximately 82.2% of the population are coloured, 12.1% are white, 4.4% are black African, and 0.7% consists of Indian/Asian. The remainder of the population (0.6%) is made up by other groups. The predominant spoken language is Afrikaans, followed by English and isiXhosa.

Of those aged 20 years and older, 18.8% completed Grade 12, 19.7% have some primary education, 8,4% completed primary education, 30,6% completed some secondary education, 8,1% have some higher education and only 14,4% had no schooling. The unemployment rate for the Municipality is 11,8%.

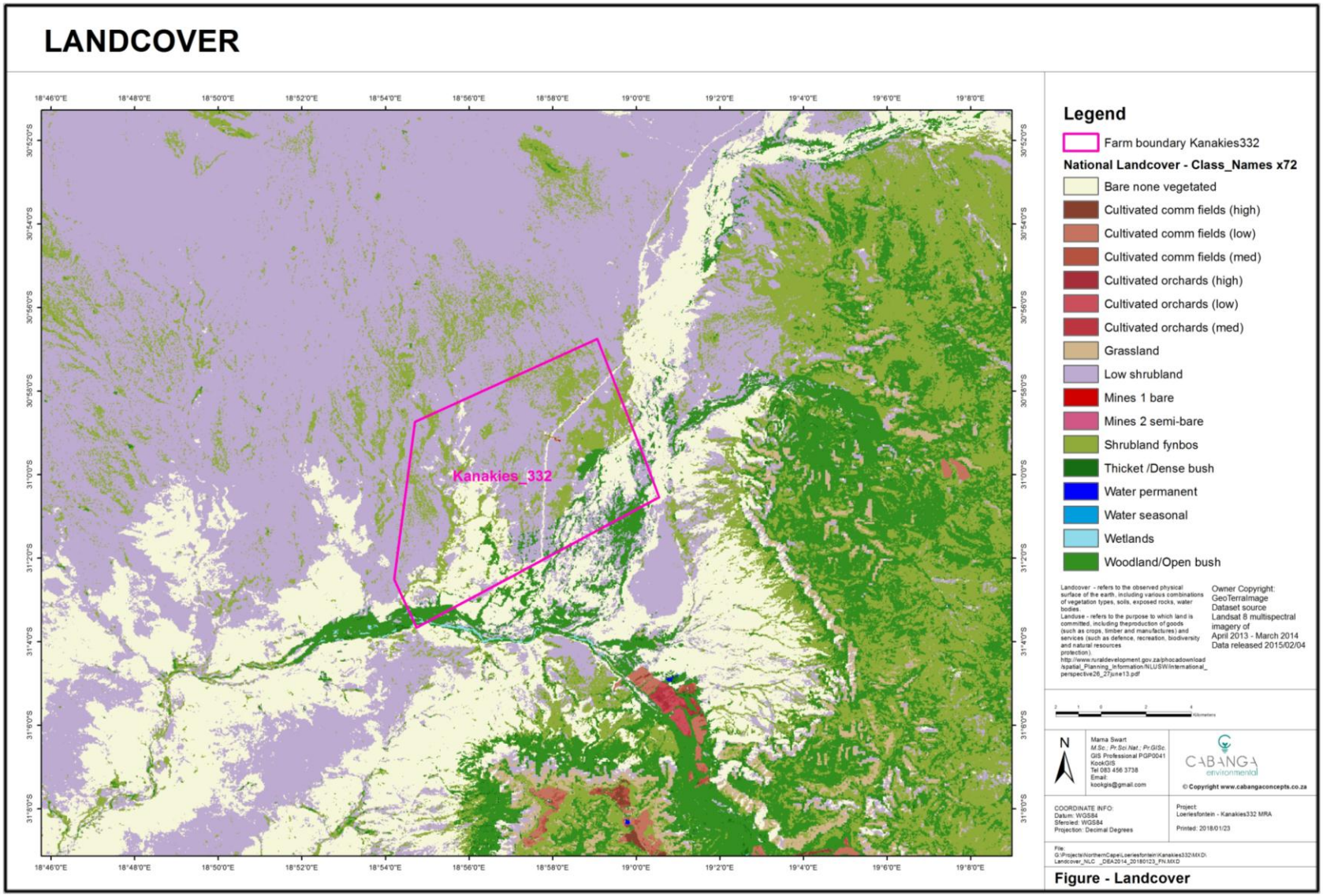
There are 6 340 households in the municipality, with an average household size of 3.2 persons per household. Of the households, 59.8% have access to piped (tap) water inside the dwelling/institution, 35.9% have access to piped (tap) water inside the yard and 76.9% have access to electricity for lighting.

9.9 Description of Current Land Use

Land use within the study area is limited to grazing; this is mainly as a result of the shallow soil depth, erratic rainfall and high temperatures in summer. Agricultural potential is low within the study area and supplementation of feed is necessary to sustain livestock within the area.

Existing infrastructure on site includes a rail siding and rail lines, sub-station and power transmission lines, telephone lines and cellular (MTN) tower, farmsteads, borehole, farm access/service roads.

The Land Cover can be considered largely natural, as depicted in Plan 8 below.



Plan 8: Land Cover (DEA, 2014)

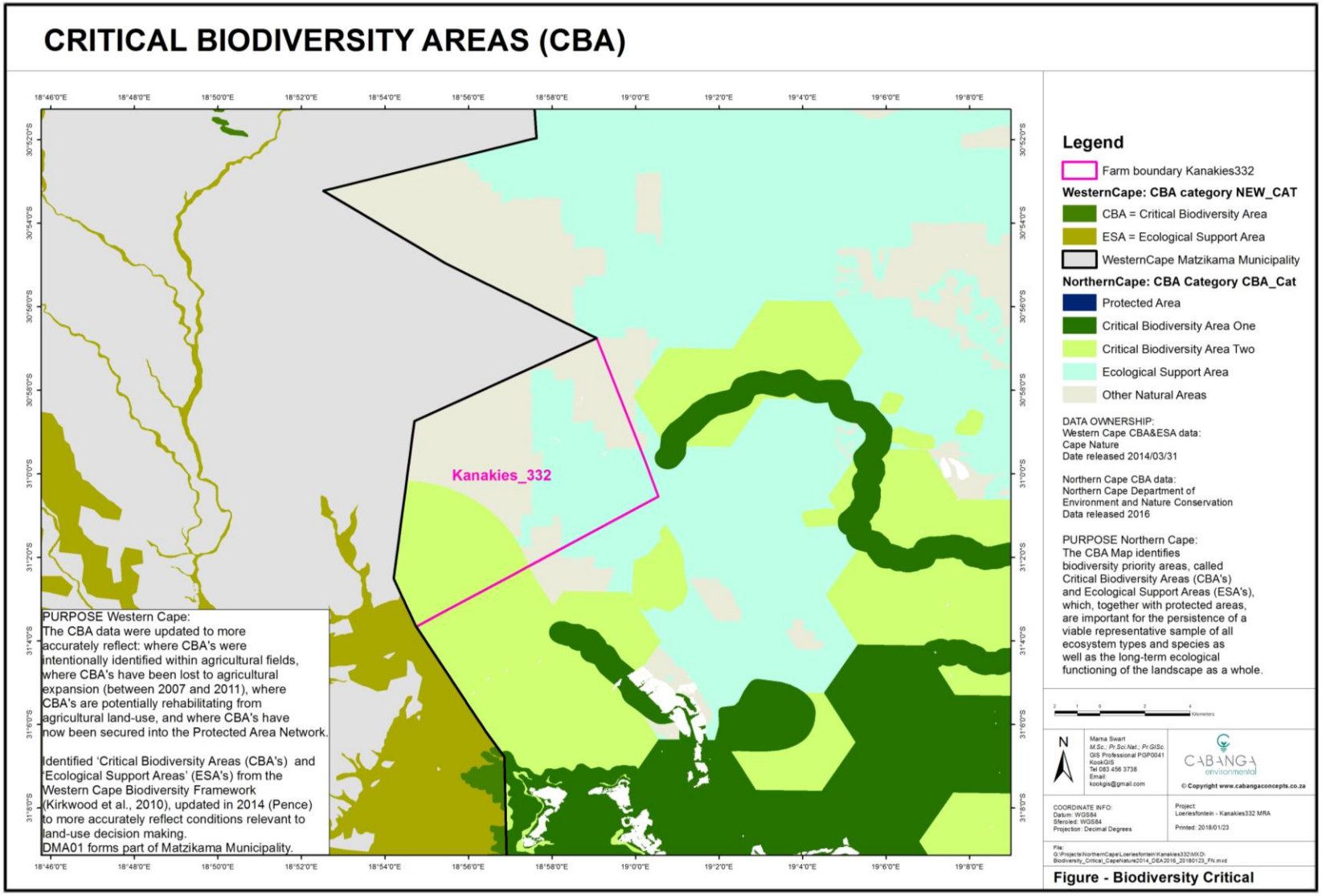
9.10 Description of specific environmental features and infrastructure on site

The project area has been assessed for biodiversity importance at a local, district and provincial scales in the past decade. The plans have mapped areas within the region that have biodiversity importance and must be managed accordingly. These areas have been mapped from a combination of spatial layers resulting in importance as well as from expert opinion and include Critical Biodiversity Areas (CBA's) and Ecological Support Areas (ESA's). These areas must be protected to safeguard their role in maintaining critical ecosystem services.

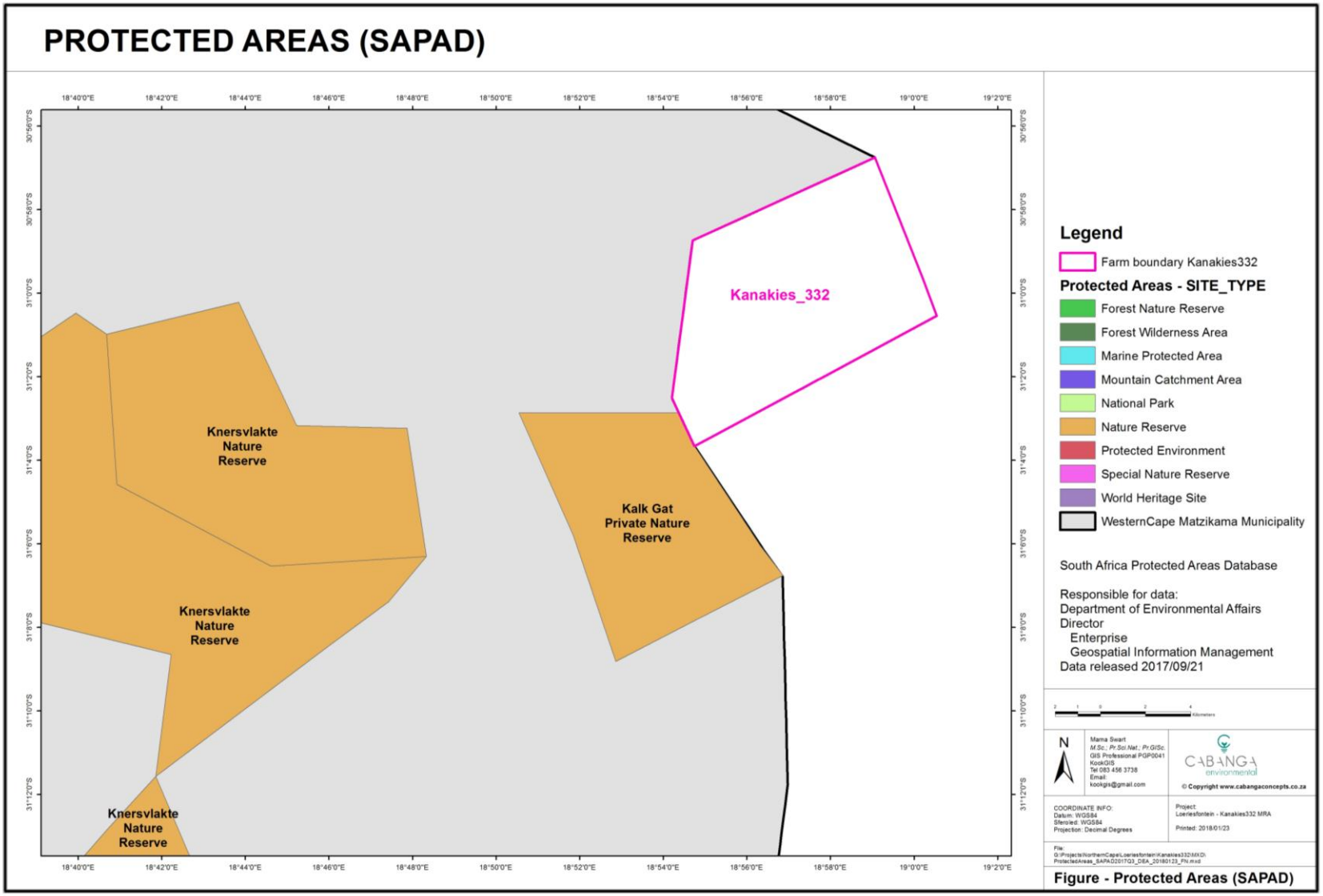
The Northern Cape Critical Biodiversity Areas was published in 2016 by the Northern Cape Department of Environment and Nature Conservation, which updates and replaces all older systematic biodiversity plans and associated products for the province, such as the Namakwa District Biodiversity Sector Plan (NDBSP, 2008) and the Cape Fine Scale Biodiversity Planning project (Ralston et al., 2009).

As depicted in Plan 9 below, a portion of the MRA has been declared CBA2 (terrestrial) and ESA (terrestrial). The project does not overlap any aquatic CBA or ESAs.

The nearest protected area is Kalk Gat Private Nature Reserve, situated adjacent to the proposed MRA.



Plan 9: Terrestrial Critical Biodiversity Areas



Plan 10: Protected Areas

10 IMPACT ASSESSMENT

10.1 List of impacts identified

The proposed project is anticipated to impact on a range of biophysical and socio-economic aspects of the environment. Potential impacts identified for the project are summarised in the table below.

These impacts will be investigated further during the EIA phase of the project, and will be updated in the EIA EMPr based on the findings of the various specialist studies and input from I&APs.

Table 10: High level impact assessment

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
Aspect: Topography												
All infrastructure areas, development footprints and associated activities	Excavation and creation of infrastructure foundations will alter the topographical nature of the site and associated drainage.	Construction Operational Decommissioning	Neg	1	1	3	3	8	5	40	Y	-
Quarrying / Mining	Altered topographical nature and associated drainage.	Construction, Operation,	Neg	2	1	3	3	9	5	45	Y	-
All material stockpile areas	Stockpiles will change the topographical nature of the area.	Construction, Operation, Decommissioning	Neg	3	1	3	3	10	5	50	Y	-
Rehabilitation of all disturbed areas (infrastructure and mining areas)	Eradication of stockpiles, filling and shaping of trenches and replacement of material and profiling.	Operation, Decommissioning, Closure	Pos	4	1	5	1	11	4	44	N	-
Aspect: Soil and Land Capability												
All infrastructure areas, development footprints and associated activities	Loss in grazing potential, loss of soil and deterioration of soil characteristics.	Construction, Operation, Decommissioning, Closure	Neg	3	1	3	3	10	5	50	Y	High
Soil stripping and stockpiling	Loss of fertile topsoil layer and loss through erosion.	Construction, Operation, Decommissioning	Neg	3	1	3	3	10	4	40	Y	Low
Soil stripping and stockpiling	Compaction and alteration of physical characteristics of soil.	Construction, Operation, Decommissioning	Neg	3	1	3	3	10	4	40	Y	Low

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
Waste generation and storage	Potential contamination of soil with indiscriminately dumped waste.	Construction, Operation	Neg	3	1	2	1	7	4	28	Y	Mod
Stores, workshops, washbays, hard park and fuel Storage	Potential hydrocarbon contamination of soils. Potential contamination of soil with indiscriminate use of contaminating materials (cement, oil, chemicals, etc.).	Construction, Operation	Neg	3	1	2	3	9	4	36	Y	Low
Ablutions and associated conversancy tanks	Potential contamination of soil with sewage.	Construction, Operation, Decommissioning	Neg	2	1	3	3	9	3	27	Y	Low
Rehabilitation of all disturbed areas (infrastructure and mining areas)	Soil replacement and amelioration.	Operation, Decommissioning, Closure	Pos	4	2	1	3	10	4	40	N	-
Aspect: Surface Water and Associated Wetlands and Aquatic Ecosystems												
All infrastructure areas, development footprints and associated activities	Increased runoff and associated potential silt-loading and contamination of downstream water bodies	Construction, Operation, Decommissioning	Neg	4	3	3	3	13	4	52	Y	Mod
All infrastructure areas, development footprints and associated activities	Downstream water quantity of catchment reduced.	Construction, Operation, Decommissioning	Neg	3	3	3	3	12	5	60	N	Mod

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
All material stockpiles	Increased runoff and associated potential silt-loading of downstream water bodies	Construction, Operation, Decommissioning	Neg	3	3	3	3	12	4	48	Y	Mod
Material handling, stockpiling, screening and processing	Dust generation which can settle in water bodies, silt increase	Construction, Operation	Neg	5	3	3	1	12	3	36	Y	Mod
Waste generation and storage	Potential contamination of surface water with indiscriminately dumped waste.	Construction, Operation, Decommissioning	Neg	3	3	3	3	12	3	36	Y	Mod
Stores, workshops, washbays, hard park and fuel storage	Potential hydrocarbon contamination of surface water. Potential contamination of surface water with indiscriminate use of contaminating materials (cement, chemicals, etc.).	Construction, Operation	Neg	4	3	3	3	13	4	52	Y	Mod
Ablutions and associated conservancy tank	Potential contamination of surface water bodies with sewage.	Construction, Operation	Neg	5	3	3	1	12	4	48	Y	Low
Rehabilitation of all disturbed areas (Infrastructure and mining areas))	Free drainage restored to area. Poor drainage if area is not adequately rehabilitated.	Operation Decommissioning, Closure	Pos	4	1	5	1	11	4	44	N	-
Aspect: Groundwater												

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
All infrastructure areas, development footprints and associated activities	Increased risk of contamination through seepage from any contaminating surface material.	Construction, Operation	Neg	2	2	4	3	11	2	22	Y	High
Water supply	Cracks in tanks and pipelines could result in water wastage	Construction Operation	Neg	3	2	2	3	10	2	20	Y	High
Abstraction of water from borehole	Borehole yield reduction	Construction Operation	Neg	5	3	5	5	18	3	54	N	High
Aspect: Flora and Fauna												
All infrastructure areas, development footprints and associated activities	Alien invasive establishment and bush encroachment.	Construction, Operation, Decommissioning, Closure	Neg	3	1	4	1	9	4	36	Y	Mod
All infrastructure areas, development footprints and associated activities	Loss of biodiversity through vegetation clearance.	Construction	Neg	5	2	3	5	15	2	30	Y	Mod
All infrastructure areas, development footprints and associated activities	Destruction of protected species.	Construction	Neg	5	2	5	5	17	2	34	Y	High
All infrastructure areas, development footprints and associated activities	Alienation of, and disturbance to, animals and loss of roost and foraging sites for birds and bats.	Construction, Operation, Decommissioning	Neg	3	2	3	1	9	4	36	Y	Low

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
Lighting	Hindrance to nocturnal animals, including nocturnal birds and bats.	Construction, Operation	Neg	3	2	3	1	9	5	45	Y	Low
Waste generation and storage	Potential harm to flora and fauna through littering and waste toxins.	Construction, Operation, Decommissioning	Neg	3	1	3	3	10	3	30	Y	Low
Stores, workshops, washbays, fuel storage and hard park	Potential hydrocarbon contamination will be source of toxin to flora and fauna.	Construction, Operation	Neg	4	1	3	3	11	2	22	Y	Low
Rehabilitation of all disturbed areas (infrastructure and mining areas)	Lack of functional vegetation due to poor rehabilitation.	Operation, Decommissioning, Closure	Neg	3	1	5	1	10	4	40	N	-
Rehabilitation of all disturbed areas (infrastructure and mining areas)	Seeding and vegetative cover and plant community succession. Influx of Animals to the area once vegetation establishes.	Decommissioning, Closure	Pos	4	1	5	1	11	4	44	N	-
Aspect: Air Quality												
All infrastructure areas, development footprints and associated activities	Emissions into the atmosphere through use of diesel powered equipment, machinery and vehicles.	Construction, Operation, Decommissioning	Neg	2	2	3	1	8	5	40	Y	Low

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
All infrastructure areas, development footprints and associated activities	Dust generation and particulate matter.	Construction, Operational Decommissioning	Neg	5	2	3	1	11	5	55	Y	Mod
Material handling, stockpiling, screening and processing	Dust generation.	Operational	Neg	5	2	1	3	11	5	55	Y	Mod
Rehabilitation of all disturbed areas (infrastructure areas and surface trenches)	Dust generation associated with material handling.	Operation, Decommissioning	Neg	4	2	2	1	9	5	45	N	Mod
Aspect: Noise												
All infrastructure areas, development footprints and associated activities. All activities on site.	Increased noise levels.	Construction, Operation, Decommissioning	Neg	2	2	3	1	8	5	40	Y	-
Aspect: Archaeological/Cultural Sites												
Quarrying / Mining	Loss of and disturbance to archaeological / heritage sites.	Construction	Neg	4	1	5	5	15	2	30	Y	High
All infrastructure areas, development footprints and associated activities. All activities on site.	Loss of and disturbance to archaeological / heritage sites.	Construction	Neg	4	1	5	5	15	2	30	N	High

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
Aspect: Visual Aesthetic												
All infrastructure areas, development footprints and associated activities	Deterioration in visual aesthetics.	Construction, Operation, Decommissioning	Neg	5	1	3	3	12	5	60	Y	-
Lighting	Increased visibility of the site.	Construction, Operation	Neg	3	2	3	1	9	5	45	Y	-
Waste generation and storage	Deterioration in visual aesthetics.	Construction, Operation	Neg	3	1	3	3	10	3	30	Y	-
Rehabilitation of all disturbed areas (infrastructure areas and surface trenches)	Improved visual aesthetic.	Operation, Decommissioning, Closure	Pos	4	1	5	1	11	4	44	N	-
Aspect: Land Use												
All infrastructure areas, development footprints and associated activities	Change in land use to mining/quarrying.	Construction, Operation, Decommissioning	Neg	3	1	4	3	11	5	55	N	-
Aspect: Traffic and Safety												
Transport via rail	Less traffic, less road incidences and road integrity does not decrease	Construction, Operation	Pos	5	2	3	4	14	5	48	Y	
Access and hauling	Increased potential for road incidences. Road degradation.	Construction, Operation, Decommissioning	Neg	5	3	3	5	16	3	48	Y	-

Activity	Impact	Applicable Mine Phase	STATUS	Magnitude	Extent	Duration	Reversibility	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	Mitigation	Degree of loss of resource
Aspect: Socio-economic, Health and Safety												
All footprints and All activities	Social ills - Disease	Construction, Operation, Decommissioning	Neg	4	4	5	5	18	3	54	Y	-
All footprints and All activities	Property damage	Construction, Operation	Neg	4	1	3	3	11	3	33	N	-
All footprints and All activities	Employment opportunities	Construction, Operation, Decommissioning	Pos	4	3	3	3	13	4	52	N	-
All footprints and All activities	Local / Regional business	Construction, Operation, Decommissioning	Pos	4	3	3	3	13	4	52	N	-
All footprints and All activities	Sense of Place	Construction, Operation	Neg	5	1	3	3	12	5	60	Y	-
Aspect: Additional I&AP Issues not addressed in the above aspects												
All activities	Increase in crime in the neighbouring farm areas and towns	Construction, Operation, Decommissioning	Neg	3	2	4	3	12	5	60	Y	-

10.2 Methodology used in determining the significance of environmental impacts

Impact assessment methods were developed to: (1) identify the potential impacts of a proposed development on the social and natural environment; (2) predict the probability of these impacts and (3) evaluate the significance of the potential impacts.

The methodology used by Cabanga to assess the impacts identified in Table 10 above, are as follows:

The status of the impact		
Status		Description
Positive:		a benefit to the holistic environment
Negative:		a cost to the holistic environment
Neutral:		no cost or benefit
The magnitude (severe or beneficial) of the impact		
Score	Severe/beneficial effect	Description
1	Slight	Little effect – negligible disturbance/benefit
2	Slight to moderate	Effects observable – environmental impacts reversible with time
3	Moderate	Effects observable – impacts reversible with rehabilitation
4	Moderate to high	Extensive effects – irreversible alteration to the environment
5	High	Extensive permanent effects with irreversible alteration
The extent of the impact		
Score	Extent	Description
1	Site specific	Within the site boundary
2	Local	Affects immediate surrounding areas
3	Regional	Extends substantially beyond the site boundary
4	Provincial	Extends to almost entire province or larger region
5	National	Affects country or possibly world
The duration of the impact		
Score	Duration	Description
1	Short term	Less than 2 years
2	Short to medium term	2 – 5 years
3	Medium term	6 – 25 years
4	Long term	26 – 45 years
5	Permanent	46 years or more
The reversibility of the impact		
Score	Reversibility	Description
1	Completely reversible	Reverses with minimal rehabilitation and negligible residual affects
3	Reversible	Requires mitigation and rehabilitation to ensure reversibility
5	Irreversible	Cannot be rehabilitated completely/rehabilitation not viable

The Consequence		= Magnitude + Spatial Scale + Duration + Reversibility.
The probability of the impact		
Score	Rating	Description
1	Unlikely	Less than 15% sure of an impact occurring
2	Possible	Between 15% and 40% sure of an impact occurring
3	Probable	Between 40% and 60% sure that the impact will occur
4	Highly Probable	Between 60% and 85% sure that the impact will occur
5	Definite	Over 85% sure that the impact will occur
The Significance		= Consequence x Probability.
Score out of 100		Significance
1 to 20		Low
21 to 40		Moderate to Low
41 to 60		Moderate
61 to 80		Moderate to high
81 to 100		High
Is mitigation possible?		Yes or no?
Degree of loss of resource		
Low		Where the resource will recover

Note: this is a high level assessment, and impacts have been rated prior to any mitigation measures being proposed.

10.3 The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected

Table 10 assesses the positive and negative impacts of the proposed activity in line with the methodology detailed in Section 10.2.

10.4 The possible mitigation measures that could be applied and the level of risk

10.4 below indicates the preliminary mitigation measures. These will be further detailed in the EIA / EMP report.

10.5 The Outcome of the Site Selection Matrix and Final Layout Plan

Alternatives for the mining layout are limited by the extent of the gypsum resource. The type of mining to be conducted (surface trench mining) is further limited by the shallow depth of the resource.

The surface infrastructure in relation to the mine area is indicated in Plan 3. The infrastructure has been placed based on a high level analysis of the area, to avoid existing farmsteads, water resources and other sensitive areas as far as possible so as to minimise the environmental impacts associated with the project. The infrastructure area was also sited based on accessibility to the Transnet rail line and siding, so as to reduce hauling distances.

Table 10 assesses the positive and negative impacts of the proposed activity in line with the methodology detailed in Section 10.2. It must be stressed that the final location of the infrastructure may shift slightly dependant on the findings of the various specialist studies and input from I&APs.

10.6 Motivation where no alternative sites were considered

No property / site alternatives were considered for this project. Properties are delimited by the properties available for prospecting and/or mining (i.e. not held by another company); and the geology of the area.

10.7 Statement motivating the preferred site

The preferred site layout is depicted in Plan 3 (please also refer to Appendix 4 for copies in A3 format). The overall mine and infrastructure layout has taken into account the environmental sensitivity of the site, and infrastructure has been placed to avoid or minimise environmental impacts as far as possible. The final mine plan and infrastructure layout plan will be adjusted according to the outcome of the various specialist studies.

11 PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

11.1 Description of alternatives to be considered including the option of not going ahead with the activity

The site layout, as indicated in Plan 3, is currently the preferred alternative. However, the location of the infrastructure may shift slightly dependant on the findings of the specialist studies and input from I&APs. This will be dependent on the presence and extent of sensitive features on site and legal options regarding the preservation or destruction of such sites or features. This will be finalised in the EIA and EMPr phase and reported within the EIA and EMPr.

The Final EIA and EMPr will include the following assessment:

- A final layout discussing any changes in proposed layout or processes as reported in the Scoping Report due to the findings of the specialist studies.
- The "no-go" alternative has been briefly stipulated within the Scoping Report and will be elaborated where relevant regarding any changes in layout or activities.

11.2 Description of aspects to be assessed as part of the environmental impact assessment process

The following aspects will be assessed within the EIA EMPr:

- Biophysical:
    - Soils, land use and land capability;
    - Terrestrial Ecology;
    - Freshwater Ecology;
    - Surface water;
    - Groundwater;
    - Air Quality;
- Cultural Heritage;
- Visual Environment;
- Social Impacts;
- Traffic and Safety; and
- Closure and Rehabilitation.

The final impact table will incorporate additional impacts identified by I&APs and by specialists and include proposed mitigation measures, a post mitigation significance assessment, and monitoring and inspection details that need to be implemented to reduce probability or severity of the impact and to ensure mitigation measures are appropriate.

11.3 Description of aspects to be assessed by specialists

A team of specialist Scientists have been appointed to undertake the specialist studies detailed in Table 11. These studies will investigate the baseline environment, potential impacts and provide management measures where applicable.

Table 11: Specialist studies to be undertaken

Specialist Study	Conducted by:
Groundwater	Future Flow Groundwater and Project Management Solutions
Surface water	SD Hydrological Services
Terrestrial Ecology (Fauna & Flora)	Scientific Terrestrial Services
Freshwater Ecology	Scientific Aquatic Services
Soils, Land Use and Land Capability	Scientific Terrestrial Services
Visual Impact Assessment and Viewshed Modelling	Scientific Terrestrial Services
Archaeological and Cultural Assessment	Archaetnos Culture and Cultural Resource Consultants
Desktop Palaeontological Assessment	Prof. M. Bamford
Air Quality Assessment (and dispersion modelling)	Rayten Engineering Solutions
Traffic/Transport Assessment	Sturgeon Consulting

11.4 Proposed methodology of assessing the environmental aspects including the proposed method of assessing alternatives

The following section outlines the methodology proposed for the various specialist studies.

All specialist studies as mentioned in Table 11 will have an in depth report that will be discussed and included in the EIA and EMPr in the appendices.

11.4.1 Groundwater

A detailed Geohydrological Assessment will be undertaken by a SACNASP registered Geohydrologist. Available information and reports will be reviewed and a preliminary site visit undertaken following which a conceptual groundwater flow model will be constructed.

Additional site work will be performed to further characterise the baseline groundwater environment including a hydrocensus of surrounding land users, geophysical investigations using magnetic methods, and the installation and monitoring of 4 boreholes within the MRA (drilled to a depth of 15 – 20m). Data that will be collected include: water strike depths, yields, and geology (lithology, fracturing, intrusives etc.).

Aquifer tests will be performed on the newly drilled boreholes in order to determine parameters such as transmissivity and storativity of the aquifer within the mining area. These parameters will be incorporated into the analytical flow and contaminant transport calculations, which will be used to quantify the impacts on the surrounding aquifers due to the proposed operational activities. Pumping tests are seen as the most reliable method to obtain aquifer parameters over a relative large area and with a limited number of boreholes.

It is proposed to pump the boreholes for 24 hours if the yields are sustainable, followed by recovery test measurements.

Groundwater Chemical Analysis: Groundwater samples will be collected to characterise the current groundwater quality in the area. Samples will be collected from selected hydrocensus points (4) and the newly drilled monitoring boreholes (4).

Rock samples will be collected from the overburden, upper powder layer and the hard gypsum layer material that will be quarried for geochemical characterisation. The samples will be collected from the boreholes drilled during the groundwater drilling program. Material from different boreholes will be mixed together to obtain two (2) composite samples that represent the geological conditions across the mining right area. The results from the characterisation will be used to:

- Classify the waste according to Regulations 634, 635, and 636 as required in the National Environmental Management: Waste Act of 2008;
- Classify the waste material according to SANS10234 as required in the National Environmental Management: Waste Act of 2008;
- Determine the acid-mine-drainage forming potential of the material as required from industry best practices; and
- Determine the long-term quality of seepage from any surface stockpiles, as well as the quarry areas as required in the National Environmental Management: Waste Act of 2008. These concentrations will be used in the contaminant impact assessment as source or starting concentrations of potential pollutants.

Not all elements and chemical substances specified in Regulation 635 are necessarily applicable to the material, and therefore not all the analyses mentioned in Regulation 635 will be performed.

Analytical calculations will be used to calculate the impacts on the surrounding environment, including:

- Calculation of groundwater inflow volumes into the quarry area over the life of mine;
- Calculation of drawdown in groundwater levels around the quarry area due to dewatering and the associated impacts on surrounding groundwater users;
- Impacts on surface water bodies due to reduced baseflow contribution due to dewatering;
- Calculation of the extent of the contaminant plume and the potential impacts on surrounding aquifers as well as nearby surface water bodies.

11.4.2 Surface water

Desktop surface water (hydrology) assessment will be undertaken by a SACNASP registered hydrological specialist.

Climate data and reports, topographical information, floodline survey data and background information will be gathered to gain an understanding of the hydrological characteristics of the area. Floodlines will be delineated using HEC RAS and Arc GIS.

A storm water management plan will then be compiled for the operations to delineate clean and dirty water areas, calculate peak flow and provide conceptual sizing for water management facilities in line with GN704 of the NWA.

11.4.3 Terrestrial Ecology

11.4.3.1 Floral

The proposed methodology includes both a desktop review and a field work component. A desktop review of distribution lists (including Red Data species and protected species according to the Northern Cape Nature Conservation Act and available literature will be conducted to guide the field work component. The vegetation type for the study area will be defined according to sources such as Mucina and Rutherford (2006). Extensive consideration will also be given to determining the ecological importance and sensitivity (EISC) of the study area according to the Biodiversity GIS (BGIS) database. The SANBI and PRECIS databases for the QDS will also be consulted and will serve as the reference data to which the field survey will be compared to.

The assessment will include a detailed assessment of the proposed development site as well as the surrounding zone of influence. Results will be compared to a suitable reference site if the proposed areas are already significantly disturbed. The field assessment will identify:

- Various habitat types;
- A description of each habitat type based on conservation importance and present ecological state;
- Floral species associated with each habitat component
- Focus on sensitive habitat types, the ecological importance of flora species and impacts associated to them in order to fulfil the requirements of the study;
- Vegetation communities will be identified and mapped;
- Species lists and dominant species associated with each vegetation community will be compiled;
- Focus will also be given to identifying areas of severe alien and invader encroachment and Category 1, 2 and 3 species in terms of GNR 598: National Environmental Management Biodiversity Act: (Act No. 10 of 2014) will be identified and listed;
- Medicinal plant species will also be identified;
- Veld condition will be identified through transects employing the Step-Point method and quantitatively assessed according to a pre-defined veld condition index and will also be compared to the typical vegetation for the vegetation type of the area according to Mucina & Rutherford (2006);
- Sensitive areas will be mapped where detail will be given of the ecological aspect of concern in each sensitivity zone; and
- Specific focus will also be given to establishing the presence of RDL and protected plants as listed within the IUCN List, Northern Cape Nature Conservation Act and the TOPS list of NEMBA.

Based on the findings a detailed baseline study and impact assessment on all identified significant risks will take place; and

Recommendations on management and mitigation measures (including opportunities and constraints) with regards to the construction and operation of the proposed mining activities in order to manage and mitigate impacts on the floral assemblage of the area.

11.4.3.2 Faunal

The faunal assemblage will be determined using the following methods

- Extensive consideration will be given to determining the ecological importance and sensitivity (EISC) of the study area according to the relevant conservation databases. The relevant databases for the QDS will also be consulted and will serve as the reference data to which field surveys will be compared to;
- Visual observations of actually occurring species;
- Identification of evidence of occurrence, e.g. call spoor, droppings etc.;
- Nocturnal studies to identify nocturnal animals in the area will take place by means of Sherman Traps and Camera Traps, if deemed suitable;
- The reports produced will include sensitive habitat types (which will be mapped) and impacts from habitat disturbance, faunal assemblages at risk and an assessment of impacts on migratory routes;
- An assessment of cumulative impacts on faunal assemblages in the region will also be made, with specific emphasis on avifauna;
- The RDL POC assessment will also be considered in order to quantify the importance of the study area in terms of RDL faunal conservation;
- Based on the findings a detailed baseline study and impact assessment on all identified significant risks will take place; and

Recommendations on management and mitigation measures (including opportunities and constraints) with regards to the construction and operation of the proposed mining activities in order to manage and mitigate impacts on the faunal assemblage of the area.

11.4.4 Freshwater Ecology

A detailed desktop assessment will be undertaken in which all available background information will be reviewed. All Southern African national databases will be reviewed and searched to define the environmental sensitivities of the greater study area (7500 ha). As part of the desktop studies all freshwater features will be mapped based on desktop delineation methods within 500m of the mining area (700 ha). The findings of the desktop studies will then be used to refine and focus the field work assessments. Further detail on field assessment methods are presented in the sections below.

A site assessment will be undertaken of the freshwater resource(s) within the immediate zone of influence of the proposed development, and the following will be undertaken:

- A detailed desktop study will be undertaken highlighting the EIS and PES based on databases such as the NFEPA database (2011) and the BGIS website;
- Delineation of the freshwater resources within the zone of influence of the proposed development will take place according to "DWAF, 2008: A practical Guideline Procedure for the Identification and Delineation of Wetlands and Riparian Zones". Aspects such as soil morphological characteristics, vegetation types and wetness will be used to delineate the wetland temporary zone according to the guidelines;
- All freshwater features identified will be mapped using a handheld GPS and the use of ARC GIS 10.1 software;
- A freshwater resource classification assessment will be done according the Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland systems (Ollis et al., 2013);

- Applicable buffer zones and/or zones of regulation according to relevant legislation or provincial guidelines will then be delineated around the freshwater resource(s). In addition, the WRC's "Preliminary Guidelines for the Determination of Buffer Zones for Wetlands, Rivers and Estuaries" tool will be applied to derive a scientifically relevant buffer. The applicable buffer maps will be provided;
- A brief statement of the findings of the site assessment will be provided, as well as all maps and data from national and provincial databases that have bearing on the wetland PES and EIS.
- The wetland services provided by the resources within the zone of influence of the proposed development will be assessed according to the method of Kotze et al (2009) in which services to the ecology of the site will be defined and services to the people of the area will be defined;
- The wetland PES will be assessed according to indices such as the Wet-Health / Index of Habitat Integrity as advocated by Macfarlane et al., (2008) and DWA (2007), respectively as applicable;
- The wetland EIS will be determined based on the method described by Rountree & Kotze, (2013;
- Based on the findings during the freshwater assessment, and based on the project plan and proposed layout plan as provided by the proponent, a detailed impact assessment on all identified significant risks will take place including cumulative impacts on freshwater assemblages in the region; and
- Recommendations on management and mitigation measures (including opportunities and constraints) with regards to the development and operation of the proposed development in order to improve manage and mitigate impacts on the freshwater ecology of the area will be provided. All results will be compiled into a comprehensive specialist impact assessment report.

11.4.5 Soils, Land Use and Land Capability

The desktop assessment will entail the following aspects:

- Undertake a desktop reconnaissance survey within the greater study area using digital satellite imagery;
- Review and interpret existing Soil Maps, and/or relevant database(s) where available;
- Review historic and current land uses in the vicinity of the project site (700 ha); and
- Identify selected points of interest (POIs) to be assessed and verified in detail during the field assessment.

Field assessment data will include physical description of dominant soil types within the project site, and the identified soils will be classified according to the Taxonomic Soil Classification System for South Africa (Soil Classification Working Group, 1991). Soil observations will be made by means of a standard hand auger method, and the assessment will entail the following:

- Conduct a field survey to verify spatial distribution of various soil types within the mining area;
- Evaluate soil properties under prevailing (undisturbed) conditions; including texture, depth, colour, physical structure, and landscape position;
- Classify the identified soils into Soil Forms according to the South African Soil Classification system;

- Identify restrictive soil properties on Land Use and Land Capability under prevailing conditions
- Group soils with relatively similar limitations and within uniform terrain units into ecotopes (map units) and compile a soil type map depicting the distribution of the various soil types within the study area;
- Specialist baseline reporting will be conducted [in terms of the Performance Standards on Environmental and Social Sustainability (2012)] to inform the Environmental Impact Assessment Report;
- Assess the significance of the anticipated impacts of the proposed activities on Soil, Land Use and Land Capability; and
- Provide recommended mitigation measures to be implemented in order to offset the identified impacts.

11.4.6 Visual Impact Assessment

The visual impact assessment (VIA) will focus on the aesthetic integrity of the area and the potential visual impact that the proposed project poses to the visual characteristics of the area and potential sensitive receptors located in the region.

The Visual Impact Assessment (VIA) will be conducted in line with the following documents relating to South African VIA guidelines and methodology in South Africa, in addition to the use of other applicable reference material:

- Oberholzer, B., 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No. ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
- The Institute of Environmental Management and Assessment (IEMA)/ Landscape Institute (2013) Guidelines for Landscape and Visual Impact Assessment. 3rd Edition.

The Category of Development and Level of Assessment will be determined as outlined by Oberholzer (2005) and will include:

- Identification of issues raised in scoping phase;
- Field assessment;
- Description of the receiving environment and the proposed project;
- Establishment of Receptor Site areas, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Inclusion of potential lighting impacts at night;
- Description of alternatives, mitigation measures and monitoring programmes; and
- 3D modelling and simulations, with and without mitigation

11.4.7 Archaeological and Cultural Heritage Assessment

The methodology for the study will include a survey of literature followed by a field survey. The study will be conducted according to generally accepted practices, by a registered archaeologist. The objectives of the site survey will be to located and identify possible objects, sites and features of cultural significance in the area of the proposed development.

If required, the location/position of any site will be determined by means of a handheld Global Positioning System (GPS), while photographs will be taken where needed. The site

survey will be undertaken via off-road vehicle and on foot so as to cover as much of the project area as possible. Certain factors, such as accessibility, density of vegetation, etc. may however influence the coverage.

All sites, objects features and structures identified will be documented according to the general minimum standards accepted by the archaeological profession.

11.4.8 Desktop Palaeontological Assessment

In order to determine the likelihood of fossils occurring in the affected area geological maps, literature, palaeontological databases and published and unpublished records will be consulted. This will be undertaken by a registered Palaeontologist.

11.4.9 Air Quality Assessment and Dispersion Modelling

- Baseline air quality assessment:
    - Meteorological assessment. MM5 meteorological data will be purchased for input into the model;
    - Identification of existing emission sources surrounding the site;
    - Characterisation of ambient air quality using available air quality monitoring data (if available);
    - A description of the study site including surrounding sensitive receptors, surrounding land use and topography;
    - Review of the current legislative and regulatory air quality requirements. This will include an assessment if any of the listed activities in terms of Section 21 of the NEMAQA (No. 39 of 2004) are triggered.
- Emissions inventory:
    - An emissions inventory for criteria air pollutants and TSP will be developed for the Gypsum quarry operations;
    - A detailed literature review of emissions from all activities on site will be conducted (client to assist in the provision of this information). Where information is not available on emission rates, USEPA or NPI emission factors will be used;
    - The following information will need to be supplied by the Client:
    - Particulate emission rates – If this is not available, emission factors will be applied;
    - Facility design and detailed layout, including process flow diagram and stack description: height, diameter, exit velocity and exit temperature, fuel consumption, and material inputs and outputs for facility processes;
    - Source parameters for area sources (dimensions and co-ordinates - length, width, height as well as activity rates, material characteristics, etc.);
    - Information on all line sources and information of vehicle type and activity .A detailed questionnaire will be put together with all required information.
- Dispersion modelling:
    - Dispersion modelling, using the AERMOD model, will be conducted in line with the South African National Regulations Regarding Air Dispersion Modelling (2014);

  - Potential emissions from the operations and associated activities will be modelled, to determine the predicted ambient air pollutant concentrations (for criteria air pollutants and TSP). Emissions for the operational phase will be modelled only;
  - The output of the dispersion model will include contour maps presenting the results of the assessment;
  - Comparison of the predicted concentrations will be made with the South African National Ambient Air Quality Standards.
- Impact Assessment:
  - Dispersion simulations of ground level pollutant concentrations (criteria pollutants) will be carried out. The anticipated and cumulative impacts of the activities on the ambient air quality of the area will also be identified and discussed;
  - Analysis of dispersion modelling to highlight:
  - Predicted zones of maximum ground level impacts (particulate and gaseous emissions for selected criteria air pollutants);
  - Maximum concentrations at the boundary of the site;
  - Maximum concentrations at identified discrete receptors;
  - Frequency of exceedances of selected criteria air pollutants.

11.4.10 Traffic / Transport Impact Assessment

As part of the EIA the traffic impact assessment will be developed in line with the guidelines of the Manual of Traffic Impact Studies (RR63/635) published by the Department of Transport in 1995 and the TMH16 South African Traffic Impact and Site Traffic Assessment Manual, Volume 1, August 2012 published by the Committee of Transport Officials (COTO) and will include:

- Site Visit
- Traffic counts (sourcing from Municipality, SANRAL, AADT, etc. where possible)
- Details of existing geometry
- Review of any planning data and background information
- Traffic Flows, Trip Generation & Assignment
  - Analysis of traffic count information
  - Trip generation and assignment of new trips during construction and operational stages
- Capacity Analysis & Traffic Impact in Peak Hours
  - Existing traffic flow situation on surrounding road network
  - Capacity analysis/impact on surrounding network for 2017 during construction and operational stages
  - Intersection/access & road network upgrade recommendations, where necessary
- Access Assessment
  - Access arrangements (conceptual) and approval from road authorities
- Rail Assessment
  - Assessment of rail facilities for transport of product
- Non-Motorised Transport & Public Transport Assessment
  - Assessment of pedestrian and public transport activity and facilities.

11.5 Proposed method of assessing duration significance

This will be incorporated into the impact assessment as "degree of loss of resource" which is evaluated in terms of:

- Low degree of loss: where the resource will recover from the impact on its own with no/limited rehabilitation over an observable period of time;
- Moderate degree of loss: where the resource will recover from the impact over extended period or with rehabilitation or remedial measures to assist recovery of resource; and
- High degree of loss: Where the resource cannot recover from the impact or the resource will recover over very extended time periods.

11.6 Stages at which the competent authority will be consulted

The DMR have received all the relevant documentation that would have been presented to registered I&APs during the scoping phase, including copies of the BID, invites to the scoping phase public meeting, review of minutes of the public meeting and the review of information presented in this Scoping Report.

The Competent Authority (DMR) was also notified through the submission of documents in terms of the mining right application and the application for environmental authorisation.

This draft Scoping Report has been submitted to the DMR for comment and feedback. In addition, the final Scoping Report, incorporating all comments raised during the PPP review period, will be submitted to the DMR for approval.

Future stages of the consultation will include:

- The DMR will be invited to complete a site visit after submission of the Scoping Report.
- Notification of the EIA and EMPr phase public meeting, and the presentation of the meeting;
- Notification of the availability of the meeting minutes for public review and comment; and
- Notification of the availability of various environmental reports for public review, including the EIA and EMPr and the IWULA and associated IWWMP report.

The comments received from the public after the completion of the public review period will then be incorporated into the final EIA and EMPr which will be submitted to the DMR for approval.

11.7 Particulars of the public participation process with regards to the impact assessment process that will be conducted

11.7.1 Steps to be taken to notify I&APs

Hand delivered notification has been completed as far as possible with land owners / users and adjacent land owners / users.

PPP during the EIA phase of the project involves the review of the EIA and EMPr as well as the findings of the various specialist studies. I&APs will be notified using the following:

- Advertisements
- Registered I&APs will be notified by order of preference either: SMS, fax, e-mail, post or telephone call.

Registered I&APs will be invited to attend an EIA phase PPP meeting where the contents of the EIA EMPr will be presented and the I&APs will have the opportunity to comment.

The stages at which these will occur are detailed further below.

11.7.2 Details of the engagement process to be followed

All persons registered as I&APs and organs of state identified through the scoping phase PPP will be sent invites to attend the EIA and EMPr Phase PPP meeting. The meeting will address specialist findings, focussing on sensitive issues, and provide information on the impact probability and significance. Proposed mitigation measures will also be discussed.

The meeting will be audio recorded and minuted, and the minutes distributed to all attendees and I&APs for comment.

A Final Draft EIA and EMPr will be compiled.

I&APs will be notified of the availability of the EIA and EMPr and associated Appendices for public review and comment, the location where the hard copy and electronic copies can be viewed and the timeframe (30 calendar days, which will be extended if significant public holidays occur within this period as per NEMA EIA regulations) for comment.

All comments received from the review phase will be incorporated into the issues and response table and incorporated into the Final PPP Report and Final EIA and EMPr for submission to authorities.

During the EIA and EMPr phase, if the need is identified to have one-on-one micro-consultations, then these will be organised with the relevant I&AP.

Upon receipt of a RoD, all registered I&APs will be notified of the RoD, the final decision in the RoD and the appeal process they can follow under NEMA.

11.7.3 Description of the information to be provided to the I&APs

PPP during the EIA phase of the project will entail the review of the EIA EMPr and all the completed specialist studies. These reports will be provided to the public for a period of 30 days.

I&APs will be notified of the availability of the EIA and EMPr (and associated specialist studies) for public review. Hard copies will be placed at the Loeriesfontein Public Library. Electronic copies will be available for download from Cabanga's website (www.cabangaconcepts.co.za). Electronic copies will also be provided to any I&APs requesting these.

In addition to this, registered I&APs will be invited to attend an EIA phase PPP meeting where the contents of the EIA EMPr will be presented and the I&APs will have the opportunity to comment.

As per NEMA, the I&APs will be notified of the RoD within the prescribed timeframes. This will include the outcome of the RoD and detail the appeal process that I&APs can follow. A copy of the RoD will be made available to any I&AP requesting such.

11.8 Description of the tasks that will be undertaken during the Environmental Impact Assessment Process

The impact identification process will commence by identifying all environmental aspects on site, whether sensitive or not. General environmental aspects that will be considered include:

- Topography
- Geology
- Soil and Associated Land Use and Capability
- Surface Water, Associated Wetlands and Aquatic Ecosystems
- Groundwater
- Floral and Faunal Ecosystems
- Air Quality
- Noise
- Archaeological and Cultural Sites
- Visual Aesthetics
- Social
- Closure and Rehabilitation

All potential impacts that may occur will be listed under each of the aspects.

As the specialist studies are completed, any additional impacts identified through the specialist investigations will be added. All specialists utilise some form of impact rating similar to the process detailed in Section 2(h) (vi). The impact rating completed by the specialists will as far as possible be translated into the impact assessment process detailed above to ensure that similar methodology are applied and comparable significances are obtained to allow for ranking of consolidated impacts.

As far as practically possible, considering variations in impact assessment methodology by different specialists, the specialist impact assessment will therefore be duplicated within a single unified impact assessment process. This will allow for all impacts to be assessed in the same way, reducing subjectivity and allowing for direct comparative ranking of all the impacts identified during the environmental process.

Through the PPP, any issues or potential impacts identified by the I&APs will be added to the list of potential impacts.

All these impacts will then be assessed as per the methodology described above and their significance determined.

Impact identification will therefore be a consolidated approach based on Cabanga's professional experience, specialist expertise and I&AP (including organs of state involved in the PPP) input.

The impact table formulated by Cabanga, which will be fully completed and detailed in the EIA and EMPr allows for inclusion of mitigation measures and a post-mitigation assessment of impact significance. In this way, the mitigation measures proposed by specialists can also be directly transferred to the impact assessment process.

11.9 Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored

Each impact identified within the impact assessment process will be evaluated in terms of whether mitigation measure can be applied or not, and what kinds of mitigation measures can be applied. This will be reported in the fully completed and detailed impact assessment table that will be completed for the EIA and EMPr. Therefore each impact, whether the significance is low or high, will have a mitigation measure stipulated where applicable. Furthermore, a post-mitigation assessment of the significance of the impact will also be completed, which will provide an indication of the effectiveness of said mitigation measure.

The preliminary summary is provided in the table below.

Table 12: Preliminary mitigation measures

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
All infrastructure areas, development footprints and associated activities (Discussion of potential impacts due the mining operation as a whole. Specific impacts are discussed for each activity below)	Loss in grazing potential, loss of soil and deterioration of soil characteristics. Alien invasive encroachment. Alienation of, and disturbance to, animals. Loss of biodiversity, degradation of vegetation and loss of ecological function & associated loss of habitat, refuge and food for animals. Destruction of protected species. Change in land use to quarrying/mining. Influx of unsuccessful job seekers. All environmental impacts can affect quality of life; mining activities carry inherent dangers which are a risk to health and safety. Change in land use. **A POSITIVE IMPACT:** Potential for employment & multiplier effect.	**REMEDY** Rehabilitate all disturbed areas as soon as they are no longer required and cordon off areas until vegetation has established. Ameliorate soils as needed to establish stable vegetation communities on rehabilitated areas. Obtain permits to remove / destroy protected species or leave species in situ. **CONTROL** Compile and implement an alien an invasive species management plan. Do not hinder, harm or trap animals. Animals or protected flora under threat from the development will be relocated from site by specialists. Noise control measures will be considered. Machinery and equipment will be regularly serviced. Labourers, contractors, service providers should initially be sought locally and only regionally if skills are not available. Employ as per S&LP. Ensure proper communication channels are in place with local businesses and I&APs.	Species will take time to recover. Land capability may be altered. Alien and invasive species may become rampant if not adequately controlled during operations and rehabilitation.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		STOP Protected species cannot be removed unless the necessary permits are obtained under NEM:BA.	
Quarrying/ Mining	Altered topographical nature and associated drainage. Loss of and disturbance to archaeological / heritage sites. Dust generation as earth material is mobilised.	**REMEDY** Backfill, shape and rehabilitate the area concurrent to mining activities. **CONTROL** Conduct pre-mining topographical surveys to inform the rehabilitation plan and post mining topographical environment. Compile a full rehabilitation model before any mining commences. Conduct soil handling as per soil utilisation guide. Demarcate designated activity area and no-go areas. Dust alleviation through spraying **STOP** 100m / 1:100 year floodlines will be demarcated as no-go areas. Where unavoidable, the necessary authorisations must be obtained prior to doing so. Sites identified in the HIA will be cordoned off as no go areas. Should other sites / graves be uncovered on site during activity progress then all activity should cease and the area	Poor rehabilitation may hinder drainage in the area.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		demarcated as a no-go zone. A specialist will need to be consulted and responsible action considered.	
Soil stripping & stockpiling	Stockpiles will change the topographical nature of the area. Compaction and alteration of physical characteristics of soil and potential loss of soil. Increased runoff and associated potential silt-loading of downstream water resources. Dust generation.	**REMEDY** Material stockpile and soil berm placement should consider remediation of other impacts, such as utilising material as a berm to shield visual impacts. As far as possible, plan soil stripping activities in the dry season. **CONTROL** Minimize the area of disturbance. Topsoil and underlying material should be stored separately as per stripping guidelines. All excavated topsoil will be stored for use during rehabilitation of the mine. Topsoil should be stripped and stockpiled with herbaceous vegetation to retain organic content. All stockpiles / berms which will be in place for more than 6 months must be vegetated to reduce risk of erosion. Topsoil stockpiled as perimeter berms must not exceed 2 m. All stockpiles must have an outer slope of approximately 1 V: 3 H (to limit the	Land capability may be altered.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		potential for erosion of the outer pile face). Construct top perimeter berms on stockpiles to prevent erosion. Cut off drain must be constructed upslope of all stockpiles. Establish storm water control measures before any other activities commence to ensure clean and dirty water separation and dirty water containment. Seed all long term stockpiles - Seeding must be completed at the onset of the rainy season. Consider reducing construction activities when windy.	
Material handling, RoM stockpiling, screening and processing and product stockpile yard	Stockpiles will change the topographical nature of the area. Increased runoff and associated potential silt-loading of downstream water resources. Dust generation.	**REMEDY** Material stockpile and soil berm placement should consider remediation of other impacts, such as utilising material as berms to shield visual impacts or divert clean water runoff from site. **CONTROL** Topsoil stockpiled as perimeter berms must not exceed 2 m. Demarcate stockpile areas and strip soil from these areas. Conduct soil handling as per soil utilisation guide. Ensure water separation and management	None expected, facilities and stockpiles will be removed during rehabilitation.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		as per GN704 requirements. Manage dust through water carts or sprinklers. Investigate the use of wind shields where necessary.	
Water supply (potable & process)	Irresponsible use of water and water wastage.	**REMEDY** Inspection of potable water features for leaks and immediate repair **CONTROL** Saving water initiatives will be included in the environmental awareness training. Utilise water on site responsibly. Record all water usage on site.	Positive impact as water will be available for other users.
Access and hauling along roads	Increased potential for road incidences and road degradation. Increased fugitive dust emissions and associated particulate matter.	**CONTROL** Material stockpiling and handling must be in designated areas. Manage dust on internal haul roads through water carts or sprinklers. Trucks must not be overloaded and must be covered with tarpaulins. Speed limits will be established on the dirt road. Drivers, contractors and visitors will enforce speed limits. Intersections with main roads will be clearly signposted. Trucks will be in road-worthy condition with	None; traffic will cease.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		reflective strips.	
Transportation of product via existing siding	Positive: Less stress on the roads as transportation of product via rail. Increased fugitive dust emissions and associated particulate matter.	**CONTROL** Material stockpiling and handling must be in designated areas. Manage dust through water carts or sprinklers. Investigate the use of wind shields where necessary.	None.
Lighting	Hindrance to nocturnal animals. Increased visibility of the site. Potential nuisance to surrounding land users.	**REMEDY** Utilise lights in the orange and yellow light ranges rather than white. This has the added benefit of reducing strong light and dark contrasts which also has safety benefits for staff. **CONTROL** Ensure directional floodlights are utilised to reduce light pollution to surrounds.	None; light masts will eventually be removed from site.
Waste generation & storage	Potential contamination of soil, surface water and groundwater with indiscriminately dumped waste. Potential harm to flora and fauna through littering and waste toxins. Deterioration in visual aesthetics.	**REMEDY** Inspect and clear all litter and waste. **CONTROL** Apply good housekeeping practices. Waste should be recycled as far as possible and sold/given to interested contractors.	None; waste will be cleared from site during decommissioning.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		Waste will be stored according to the Norms and Standards for Storage of Waste. Recyclable waste should not be stored for excessive periods. Refuse bins will be placed around site to collect waste for separation, recycling and disposal.	
Maintenance shed, hard park & fuel storage area	Potential hydrocarbon contamination of soils, surface water and groundwater and potential contamination of soil with indiscriminate use of contaminating materials (cement, chemicals, etc.). Potential hydrocarbon contamination will be source of toxin to flora and fauna.	**REMEDY** Oil from oil traps will be removed to used hydrocarbon drums for removal from site by a reputable hydrocarbon waste contractor. Spill kits must be available on site and personnel trained to utilise these to clear spills. **CONTROL** Cement will be handled over protected ground or sheeting. Chemicals will be stored as per requirements with the MSDS. Wet and dry chemicals, reducing and oxidising agents, will be stored separately. All vehicles / machinery on site will be up-to-date with their service and maintenance plans. The use of persistently leaky equipment will be discontinued until repairs are made. Equipment will not be parked over bare	None; will eventually be removed from site.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		ground; where unavoidable, drip trays will be placed under the equipment to collect potential leaks. Minimise direct spillages of oils or diesels as result of machinery use. Ensure action and emergency response plans are in place for all hydrocarbon spills. Spills must be reported and attended to immediately. Bunding / concrete flooring and oil traps must be constructed in areas of hydrocarbon storage and transfer and in workshop areas where diesel-driven equipment is serviced. Bunds in workshop and washbays will be fitted with an outlet valve and drain to an oil trap.	
Ablutions & conservancy tanks	Potential contamination of soil, surface water and groundwater with sewage. Source of microbial contamination and health risk if sewage leaks occur.	**REMEDY** Ensure conservancy tanks are adequately sized and emptied accordingly. **CONTROL** Ablutions and conservancy tanks will be inspected regularly for any leaks which will be repaired immediately.	None; will eventually be removed from site.
Rehabilitation	Dust generation associated with material handling. Lack of functional vegetation due to poor rehabilitation.	**REMEDY** The utilizable soil removed during the construction phase shall be redistributed in a manner that achieves an approximate	Groundwater monitoring, soil quality monitoring, topographical surveying, surface water monitoring and monitoring of vegetation cover and succession must

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE (modify, remedy, control, or stop)	POTENTIAL FOR RESIDUAL RISK
		uniform stable thickness consistent with the approved post-mining land use, and will attain a free draining surface profile. Fertilization and amelioration of rehabilitated areas will be undertaken as per soil fertility assessments. Seedbed preparation must be undertaken using agricultural equipment. Restriction of vehicle movement over rehabilitated areas and do not allow any grazing for the first two years. **CONTROL** Compile a full rehabilitation model before any mining commences and apply this on site. Conduct soil handling as per soil utilisation guide. Rehabilitated areas must be contoured and free draining to prevent ingress and pooling of water. Manage dust through water carts or sprinklers. Runoff from the rehabilitated areas must be allowed to flow naturally to the environment. Monitoring of the rehabilitation success should take place and include corrective follow-up action.	be on-going after decommissioning to ensure site is stable.

12 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

12.1 Impact on the Socio-economic Conditions of any Directly Affected Person

The Land Claims Commissioner was contacted to determine whether any land claims have been registered over Farm Kanakies Portion 0 (RE). The response from the Department indicates that no land claims have been received/registered.

12.2 Impact on any National Estate referred to in Section 3(2) of the National Heritage Resources Act

SAHRA has been notified as an organ of state and has been notified of the project through the various PPP procedures described in this Scoping Report. A heritage assessment study will be undertaken during the EIA/EMP phase, these reports will be submitted to SAHRA for comment.

All outcomes will be reported in the EIA and EMPr.

12.3 Other matters required in terms of Section 24(4)(a) and (b) of the Act

Section 24(4) (b) (i) of the Act specifies "investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity"

This has been addressed in the relevant sections above. As stipulated, the site is delimited by the prospecting rights area and the extent of the resource. The type of mining to be conducted is limited by the depth of the resource. Processing requirements are limited to the in situ quality and market needs and demands.

Site layout alternatives are limited. Any further changes will be described and motivated in the EMPr once the specialist studies are completed.

13 UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I, _____, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties have been correctly recorded in the report.

_____

Signature of the EAP

DATE:

14 UNDERTAKING REGARDING LEVEL OF AGREEMENT

I, _____, herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with Interested and Affected Parties and stakeholders has been correctly recorded and reported herein.

_____

Signature of the EAP

DATE:

-END-

15 REFERENCES

Mucina, L. and Rutherford, M.C. (eds) 2006. *The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

Hantam Local Municipality. *Hantam Municipality Integrated Development Plan 2015 – 2020.* Date: 2015/2016.

Middleton B J; Bailey AD. 2005. *Water resources of South Africa, 2005 STUDY (WR2005)*. The Water Research Commission.

Mucina, L. and Rutherford, M.C. (eds) 2006. *The vegetation of South Africa, Lesotho and Swaziland.* Strelitzia 19. South African National Biodiversity Institute, Pretoria.

Soil Grids [ACCESSED ONLINE ON 14TH MARCH 2018] Available at. https://soilgrids.org/

Statistics South Africa. Census 2011. [ONLINE] Available at: http://www.statssa.gov.za/?page_id=993&id=hantam-municipality

The Biodiversity Company, 2017. *Biodiversity Assessment, Kanakies, Northern Cape Province.*

Ubufazi Consulting & Danida. July 2005. *Proposal for the Establishment of the Olifants-Doorn Catchment Management Agency*. Northern Cape.

van Dyk, G.S. , Makhetha J., Potgieter D., Zikali T., Leeme V., Moletsane F., Vonya T. 2008. *Groundwater Resources In The Northern Cape Province 2008*. Department of Water Affairs and Forestry. Kimberley.

Webley L, Halket D. 2010. *An Archaeological Impact Assessment (Report 2): Proposed construction of a sub-station between Helios-Juno and associated loop in and loop out lines, north of Nieuwoudtville, Northern Cape*. University of Cape Town.

Appendix 1: Acceptance Letter

Appendix 2: Curriculum Vitae of EAP

Appendix 3: Site Photographs

Plates 1 – 2: Transnet housing with MTN Tower

Plate 3: Rail siding with stockpiled sleepers

Plate 4: Sishen-Saldanha Rail Line

Plate 5: Old train at Siding

Plate 6: Transnet buildings

Plate 7: Small scale farming and sheep grazing underway on the farm Kanakies

Plate 8: Flat topography with mountain ranges in the distance

Plate 9: Borrow pits adjacent to the rail line

Appendix 4: Plans in A3 Format

Appendix 5: Proof of Public Participation

Appendix 6: Biodiversity Assessment for Kanakies Prospecting