



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT

SUBMITTED FOR ENVIROMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIROMENTAL 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: The South African National Roads Agency Soc Limited (SANRAL)

TEL NO: 012 844-8000

FAX NO: 012 844-8200

POSTAL ADDRESS: P O Box 415, Pretoria, 0001

PHYSICAL ADDRESS: 48 Tambotie Avenue, Val De Grace, Pretoria

FILE REFERENCE NUMBER SAMRAD: Section A

FILE REFERENCE NUMBER SAMRAD:

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 and an Environmental Management Programme report 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 a 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 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.

SCOPING REPORT

2. Contact Person and correspondence address

a) Details of:

(i) The EAP who prepared the report

Name of the Practitioner: Dr Josephine Bothma from Chameleon Environmental

Tel No.: 012 809-1704 or 082 571 6920

Fax No.: 086 6855 080

e-mail address: ce.j@mwebbiz.co.za

(ii) Expertise of the EAP.

(1) The qualifications of the EAP

(with evidence attached as **Appendix 1**).

PhD in Environmental Management. Please find proof of qualifications of EAP in Appendix 1.

(2) Summary of the EAP's past experience

(Attach the EAP's curriculum vitae as **Appendix 2**)

The EAP that prepared this report is Dr J Bothma from Chameleon Environmental. The Environmental Assessment Practitioner (EAP) has the appropriate skills and experience to undertake the required studies for the proposed project. Dr Bothma has:

- Experience in undertaking environmental studies for linear development projects. The EAP has specific experience in EIAs for National Roads for the South African National Roads Agency Soc Limited and other clients.
- Experience in environmental studies for mining areas and quarries.
- The EAP is registered as an Environmental Assessment Practitioner with EAPSA with registration number 0082/06.
- Proven ability to timeously produce thorough, readable and informative documents.
- Adequate recording and reporting systems to ensure the preservation of all data gathered.
- A good working knowledge of all relevant and applicable policies, legislation, guidelines, norms and standards.

- The EAP does not have any links to engineering firms, construction companies, or financial institutions, and would be able sign the required declarations of independence to be submitted to the relevant environmental authorities.

Dr Bothma has a PhD in Environmental Management with extensive experience in the environmental field. She was previously the Environmental Manager for the South African National Roads Agency Soc Limited where she was responsible for the management of the environmental section at the Agency and consequently has gained extensive experience in project management and EIAs for major national road projects. Dr Bothma is a founder member of Chameleon Environmental since August 2006, a specialist environmental consulting company based in Pretoria, South Africa but operates nationwide. The company provides a broad range of environmental consulting services to the public and private sectors.

She has:

- » Twenty-seven (27) years' experience in the environmental field
- » Sixteen (16) years' experience in Project Management
- » Project management of large environmental assessment and environmental management projects.

See curriculum Vitae in Appendix 2.

b) Description of the property.

Farm Name:	Quarry 15: Rem 3 of the farm Weltevreden No. 289-IT; Borrow Pit 20: Portion 1 of the farm Twyfelaar No 289-IT. Quarry 13-14: Rem of the farm Mavieriestad No. 321-IT.
Application area (Ha)	Quarry 15: 61.3 ha Borrow Pit 20: 116.6 ha Quarry 13-14: 59.3 ha
Magisterial district:	Msukaligwa
Distance and direction from nearest town	Quarry 15: Approximately 20.2 km South East from Ermelo Borrow pit 20: Approximately 30.4 km South East from Ermelo Quarry 13-14: Approximately 32.2 km South East from Ermelo
21 digit Surveyor general code for each farm portion	Quarry 15: T0IT00000000028900003 Borrow pit 20: T0IT00000000029800001 Quarry 13-14: T0IT00000000032100004

c) Locality map

(show nearest town, scale not smaller than 1:250000 attached as **Appendix 3**).

Please see locality map of the mining areas in Appendix 3.

d) Description of the scope of the proposed overall activity.

(i) Listed and specified activities

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as **Appendix 4**

NAME OF ACTIVITY (All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)
<p>Quarry 15 is an existing mining areas that will be extended. Borrow pit 20 and Quarry 13-14 will be new mining areas to be opened.</p> <p>Gravel material will be mined. Code: Gr, Commodity: Gravel, Type_code: MIN, Type_Description: Minerals.</p> <p>Access to the mining areas will be from an existing gravel access road.</p> <p>Opencast mining will take place as they are quarries and borrow pits to be mined. Open case excavations will, therefore be present.</p> <p>The following mining components will also be found on site:</p> <ul style="list-style-type: none"> - Temporary toilets, - Generator and fuel storage, - Stockpiles: Subsoil, overburden, spoil, topsoil, - Gravel stockpiles, 	<p>Quarry 15: 61.3 ha Borrow pit 20: 116.6 ha Quarry 13-14: 59.3 ha</p>	<p>x</p>	<p>Activities 22 GNR. 983</p> <p>Activity 15, 17 and 21 GNR R. 984</p>

<ul style="list-style-type: none"> - Crusher, - Weigh bridge; - Temporary offices. <p>The mined gravel material will be hauled to the construction site.</p> <p>Blasting will be undertaken in the mining areas.</p>			

(ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

a. Farm Names

SANRAL intends to open the following mining areas for the improvement of National Route N2 sections 33 and 34 from Camden to the Mpumalanga/KZN border:

- Quarry 15: Rem 3 of the farm Weltevreden No. 289-IT;
- Borrow pit 20: Portion 1 of the farm Twyfelaar No 289-IT.
- Quarry 13-14: Rem of the farm Mavieriestad No. 321-IT;

b. Sizes and amount of material to be mined

The sizes of the mining areas are the following:

- Quarry 15: 61.3 ha
- Borrow pit 20: 116.6 ha
- Quarry 13-14: 59.3 ha

Amount of material to be mined:

- Quarry 15: A volume of approximately 450 000 m³ will be mined from the area and it will be approximately 35 m deep.
- Borrow pit 20: A volume of approximately 470 000 m³ will be mined from the area and it will be approximately 7 m deep.
- Quarry 13-14: 59.3: A volume of approximately 430 000 m³ will be mined from the area and it will be approximately 35 m deep.

c. Mining Components and Methodology

Opencast mining will take place as they are borrow pits and quarries to be mined.

The following mining components will be found on site:

- Temporary toilets,

- Generator and fuel storage,
- Stockpiles: Subsoil, overburden, spoil, topsoil,
- Gravel stockpiles,
- Crusher,
- Weigh bridge;
- Temporary offices.

The gravel material mined will be stockpiled within the mining areas and hauled to the construction site.

Blasting will be undertaken in the mining areas.

The following process will be undertaken during the mining operation:

a. Vegetation Stripping

All vegetative material would be retained to ensure proper vegetation establishment during the rehabilitation phase. The vegetation material would be stripped by a bulldozer and stockpiled for use during the rehabilitation phase.

b. Topsoil Stripping

All topsoil would be stripped and stockpiled by a bulldozer for redistribution over the site during the rehabilitation phase. Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once the ore or gravel has been excavated. All topsoil, subsoil and vegetative material to be stockpiled for use during the rehabilitation phase.

c. Opencast Mining

The required gravel material will be excavated by an excavator and taken to the road construction area by trucks. Excavations shall take place only within the approved demarcated mining area.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a Description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED
NEMA, EIA Regulations 2014, GN R. 983	Activities 22 GNR. 983
NEMA, EIA Regulations 2014, GN R. 984	Activity 15, 17 and 21
National Environmental Management Act, 1998 (Act No. 107 of 1998) The National Environmental Management Act, 1998 (Act No. 107 of	General objectives of Integrated Environmental Management as set out

1998): [NEMA] was enacted in November 1998. NEMA provides for cooperative governance by establishing principles for decision-making on matters affected the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions, public participation and sustainable development.	in section 23 of NEMA taken into account
National Water Act (Act No. 36 of 1998) The application for a Water Use License in terms of the National Water Act, 1998.	Stream crossings and possible application of Water Use License or general authorization at the Department of Water and Sanitation
National Heritage Resource Act 1999 (Act No. 25 of 1999) In terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) comment will be obtained from SAHRA.	Any development exceeding 5000 sq m area requires input from SAHRA.
Regulation 15 of the Conservation Act of Agricultural Resources Act, 1983 (Act 43 of 1983)	Ecological study Alien vegetation identification on site

f) Need and desirability of the proposed activities.

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

Gravel material is an essential material for road building purposes. The gravel material is obtained from of the following sources:

- From commercial sources;
- From excavations within the road reserve;
- From excavations of mining areas and quarries outside the road reserve.

During the design stage of the project, the consulting engineers to the project investigated the demand for gravel material as well as the most suitable commercial sources in close proximity to the project.

It was found that no commercial sources are available in close proximity to the site that is suitable for the road works. The use of only commercial sources of gravel/aggregates for a project of this magnitude would also be inordinately expensive, and would render the project unviable. It was therefore, decided that investigations would be conducted to obtain additional rock or gravel for the project from mining area in close proximity to the road project.

The N2 forms part of the strategic national road network. The volume of heavy vehicles on the N2 is expected to increase significantly over the next 20 years. The road is also a prominent route to transport produce to Richards Bay harbour for export purposes. The SANRAL is also developing the N2 as an alternative route for the N3 to KZN on a strategic level.

Traffic volumes and design principals determine that the road needs to be maintained to ensure the safety of the traveling public. The additional traffic lanes are proposed to accommodate increased capacity and reduce congestion and assist traffic flow. The road upgrade will also cater for future traffic demand and support economic growth. This could benefit the

communities in the area including local residents, motorists, the road freight industry and its customers.

The upgrade of the road could, therefore, ensure safer driving conditions for the travelling public by enabling vehicles to travel more efficiently and smoothly with less congestion as a result of the additional passing lanes to be constructed that will allow vehicles to safely pass slower moving trucks and vehicles. The proposed extension of the mining areas is, therefore, necessary to ensure the safety of the traveling public. This will also accommodate the predicted increase in traffic volume and avoid high driver frustration.

The mining of the required gravel material is needed for the upgrade of the N2 from Camden to the KZN/Mpumalanga border. Should the mining of the areas not be undertaken, the necessary gravel material for the N2 will not be available and the N2 will not be able to be upgraded and/or expanded. The traveling public could, therefore, experience increasingly unsafe driving conditions.

Indirect impacts:

Possible traffic accidents as a result of poor driving conditions.

Possible injury and death of travelling public

Possible delays to travel destinations.

Possible increase in travel and road user costs.

Cumulative impacts:

Possible high health care costs as a result of traffic accidents.

g) Period for which the environmental authorisation is required

8 years

h) Description of the process followed to reach the proposed preferred site.

NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.

i) Details of all alternatives considered.

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

- (a) The property on which or location where it is proposed to undertake the activity;
- (b) The type of activity to be undertaken;
- (c) The design or layout of the activity;
- (d) The technology to be used in the activity;
- (e) The operational aspects of the activity; and
- (f) The option of not implementing the activity.

a. Geological tests in the surrounding area show insufficient quality of gravel material for road construction purposes. The test showed sufficient gravel material for road construction purposes on the following farms:

- Quarry 15: Rem 3 of the farm Weltevreden No. 289-IT;
- Borrow pit 20: Portion 1 of the farm Twyfelaar No 289-IT.
- Quarry 13-14: Rem of the farm Mavieriestad No. 321-IT.

- b. The layout of the activity was determined by conducting specialist ecological and heritage studies with the following findings:

Q15: There is a cultivated field north of the quarry that is fenced. There is no other infrastructure present. A bufferzone is recommended south of Q15, between the quarry area and the edge of the plateau slope downwards to the Vaal River.

Q13-14:

- A large informal burial place with probably more than 30 graves located approximately 40 metres outside (east) of the quarry and it is therefore unlikely that it would be impacted on by the proposed development.
- Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. These features will not be impacted on by the mining activities.
- An old sheep dip constructed from concrete. It will not be impacted on by the mining activities.
- A seasonal drainage line crosses Q13-14. A bufferzone is also recommended around the seasonal drainage line.

BP 20: An informal burial site with at least five graves located within 30 metres from the proposed access road to the borrow pits and it is anticipated that it would not be impacted on by the road improvement activities. There is no other infrastructure present.

- c. The technology used at the activity will be a bulldozer for stripping the topsoil. An excavator will be used for the opencast mining activities. The excavated gravel material will be taken to the construction site with trucks.
- d. Open cast mining will be undertaken for the excavation of the gravel material at the mining areas during the operational phase. The gravel material will be excavated by an excavator and taken to the construction site on the N2 after blasting was undertaken.
- e. Should the mining of the gravel not be allowed, the necessary material for the upgrade of the N2 will not be available and the improvement of the N2 will not be able to continue.

Please find the plans for the mining areas in Annexure A.

ii) Details of Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

Please refer to the Report on the Results of Consultation in Appendix 5.

A public participation process was undertaken in accordance with the EIA Regulations, 2014.

The public participation and communication process aims to identify issues in order to maximise the social and environmental benefits, and to minimise the social and environmental costs of the proposed project. Interested and affected parties (I&APs) were consulted and afforded the opportunity to participate. The I&APs were informed and involved in the project from the outset in order to promote participation and transparency.

The aim of this public participation process is to achieve the following broad goals:

- identification of all key I&APs and stakeholders;
- the active involvement of all I&APs with respect to decision making;
- an exchange of information relevant to the proposed project through Background Information Documents (BID), consultations and newspaper advertisements.
- the development of an understanding with regards to the broader project objectives and goals and knowledge of the project; and
- the identification of issues and concerns with regards to all potential alternatives associated with the proposed development.

The following approach was followed in undertaking the public participation process:

a. Identification of I&APs

The first step in the public participation process was to identify the key I&APs. A list of the registered I&APs is included in Appendix 5.

b. Meetings with landowners

Meetings were held with every individual landowner. The minutes of the meetings are included in Appendix 5.

c. Advertising

In accordance with the EIA Regulations, 2014 an advertisement was placed requesting I&APs to register their interest in the project. An advertisement was placed in the Hoëvelder of 24 June 2016. A copy of the advertisement is included in Appendix 5.

d. Site Notice

Site notifications in English in A2 format requesting comments or objections were placed on site on 30 June 2016 at the site. The site notices were placed at all the mining areas. Photographs of the site notices are included in Appendix 5.

A copy of the site notice is included.

e. Notification Letter and Background Information Document

Notification letters about the project and a Background Information Document were sent out to relevant Government Departments, the particular Ward Councillor and adjacent landowners that would be relevant to this project.

See Appendix 5.

f. Comments and Response Report

A comments and response report was drafted that included all the issues raised by the Interested and/or Affected Parties as well as the responses to the issues raised. The Comments and Response report is included in Appendix 5.

g. Local Authority Involvement

Letters were forwarded to the Msukalingwa Municipality Ermelo. The letters are included in Appendix 5.

h. Review of Draft Scoping Report

The Draft Scoping Report was made available to the public for review and comment, within an allocated 30-day period. A copy of the report was available to I&APs at the following venue:

- Ermelo Public Library, Cnr Kerk & Taute Streets, 017 801-3621.

iii) Summary of issues raised by I&APs

(Complete the summarising comments and issues raised, and reaction to those responses)

Interested and Affected Parties		Date	Issues raised	EAPs response to issues as mandated by the applicant	Section and Paragraph Reference in This report Where the Issues and or Responses were incorporated.
List the names of persons consulted in this column, and		Comments Received			
Mark with an X where those who must be consulted were in fact consulted.					
<u>AFFECTED PARTIES</u>					
Landowner/s	X				
Mr H van der Merwe Landowner: Quarry 15		1 December 2016	Please see minutes of meeting included in Appendix 5.	Please see response in minutes of meeting included in Appendix 5.	Plans in Appendix 4.
Lawful occupier/s of the land	X				
Mr P Nhlapho Representative of Mpsikazi Communal Association Lawful occupiers of land Mavieriestad 321-IT		Meeting 3 February 2017	Please see minutes of meeting included in Appendix 5.	Please see response in minutes of meeting included in Appendix 5.	Plans Appendix 4
Mr Z Nkosi Representative of Bambanani Sakhasizwe Property Association Lawful occupiers of land Farm Twyfelaar 298-IT		1 December 2016	Please see minutes of meeting included in Appendix 5.	Please see response in minutes of meeting included in Appendix 5.	Plans appendix 4
Landowners or lawful occupiers on adjacent properties	X				
None			No response	No response necessary	None

Municipal councillor	X				
Cllr LP Mnisi Ward Councillor Ward 11		4 July 2016	No response	No response necessary	None
Municipality	X				
Mr ZT Shongwe Municipal Manager Msukalingwa Municipality		4 July 2016	No response	No response necessary	None
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA)	X				
Mr Mr Stanford Macevele Department of Water and Sanitation		4 July 2016	No response	No response necessary	None
Ms Cilia de Jesus Mpumalanga Tourism and Parks Agency		28 July 2016	No response	No response necessary	None
Communities	X				
Please see lawful occupiers of land			Please see response above	Please see response above	Please see response above
Dept. Land Affairs	X				
Mr Sam Nkosi Land Claims Commissioner Nelspruit		7 March 2017	No response	No response necessary	None
Traditional Leaders	X				
No traditional leaders affected			No response	No response necessary	None
Dept. Environmental Affairs	X				
Mpumalanga Department of		4 July 2016	Please forward me	The draft documents will be	None

Economic Development, Environmental & Tourism			hard copies of the documents to enable us to register and process it accordingly	forwarded to you for comment as soon as they are ready.	
Other Competent Authorities affected					
South African Heritage Resources Agency	X	Posted on website			
<u>OTHER AFFECTED PARTIES</u>	X				
<u>INTERESTED PARTIES</u>	X				
Ms Zanele Masina By e-mail		13 July 2016	Good Day Jenine Can you please send me the Bid document for From Camden to Laeden as I have a place at Twefelaar but I also have a place in Sheepmoor. So I should be registered on both for I&AP.	I have registered you on both projects. Please find the BID document and locality plan for the Leiden Camden section.	None
Mr Gibson Wenzel By e-mail		23 June 2016	Good day, in response to the advert that was advertised on the 23 of June 2016, in the	You are registered on the database.	None

			<p>Highvelder Newspaper. I'm hereby looking forward to apply as an Affected Party in the Improvement of the National Route N2 Section 34 between Leiden (KM 59.0) and Camden (KM 87.4) (NOTIFICATION OF BASIC ASSESSMENT PROCESS), so will like to be sent information regarding the registration. Regards</p>		
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iv) The Environmental attributes associated with the sites

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

(its current geographical, physical, biological, socio-economic and cultural character)

- Topography

The topography is that of slight to moderately undulating plains, with some low hills and pan depressions scattered throughout the landscape. Rocky outcrops (koppies) and rocky ridges are rare in the region, with none occurring within the study area. Valleys, in which small streams flow, or wetlands are found, tend to be shallow, flat and broad. This is even characteristic of larger rivers such as the Vaal River, which is in the vicinity of Quarry Q15. The general first impression of the landscape is that of flat, open homogenous grasslands and cultivated farmlands, with few distinctive features such as koppies. According to Mucina & Rutherford, (2006) the topography of the area is a less obvious continuation of the Escarpment that links the southern and northern Drakensberg escarpments.

- Watercourses in the study area

There are no major watercourses within the individual mining areas, including wetlands. The closest large or prominent watercourses are the Vaal River (near Q15) and the Sandspruit (near Q13-14). There is however, a seasonal drainage line that is situated at Q13-14.

- Geology and Soils

The geology and soils of the study area is that of mudstones, sandstones and shale of the Madzaringwe and Volksrust Formations (Karoo Supergroup) that were intruded by voluminous Jurassic dolerite dykes and sills. Ac land type is dominant, while Fa and Ca are of subordinate importance (Mucina & Rutherford, 2006).

- Climate

The study area is situated within the higher rainfall regions of South Africa (601mm – 800mm per annum). Summer rainfall with a mean annual precipitation (MAP) of between 600mm+ is common in the region of the Mpumalanga Highveld's moist grasslands. Frost is fairly common during the cold winter months of June to August, with early morning mist being a common occurrence.

The climate of the study area is similar to that of the close by town of Ermelo. Ermelo receives on average about 625mm of rainfall per year, with most rainfall occurring during summertime. The average midday temperatures for Ermelo range from 15,8°C in June, to 24.1°C in January. The region is the coldest during June/July with average night temperatures of around 0,2°C.

The study area is situated within the Cold Interior Climatic Zone of the country.

- Vegetation

South Africa is divided up into nine Biomes. The study area is situated within the Grassland Biome.

The Grassland Biome can be naturally subdivided into dry and moist grassland regions. Grassland veldtypes with a rainfall of 600mm+ per annum tend to be dominated by sour, andropogonoid grasses. While in veldtypes with an average rainfall of below 600mm per annum, the sweet chloridoid grasses tend to be more common. Dry and moist grassland types are divided primarily on the basis of rainfall, with 500-700mm being the broad boundary. Historically, such as with the

classification of veld types by JPH Acocks (1952) and AB Low & AG Rebelo (1998), these grasslands have been divided into sweet grasses (sweetveld) and sour grasses (sourveld) based primarily on agricultural or grazing criteria. In high rainfall areas (moist grasslands) sour grasses tend to dominate, while in low rainfall areas the sweet grasses (which are more palatable for livestock) tend to dominate. Grasslands (like any other vegetation type) are also influenced and shaped by numerous environmental factors such as temperature, soils and altitude.

Mucina and Rutherford (eds) (2006) subdivided the Grassland Biome into four main bioregions. Namely, Dry Highveld Grasslands; Drakensberg Grasslands; Mesic Highveld Grasslands; and Sub-Escarpment Grasslands. These subdivisions of the Grassland Biome are based on gradients of altitude (height above sea-level) and moisture (rainfall). Altitude has a strong influence on climatic variables and an increase in altitude usually corresponds with an increase in rainfall and a decrease in temperature.

The study area occurs within the Mesic Highveld Grassland Bioregion of the Grassland Biome. The study area for Q15 is situated within Eastern Highveld Grassland and BP20-22 & Q13-14 within the Wakkerstroom Montane Grassland.

- **Vegetation of the Study Area**

The vegetation in the study area and in the general region is highly impacted upon. Most of the grasslands have been totally transformed or moderately- to highly- degraded, first from years of cultivation and later from opencast coal mining. There is no pristine grassland within the study area. Most of the area is impacted upon over the years by cultivation and grazing of cattle. There are no indigenous trees within the study area and no sensitive rocky outcrops or ridges. Over-grazing has caused a reduction in specie-richness and mix. A list of the dominant plant species observed in the study area during field investigations is in the appendices.

Quarry Q15 is situated on top of a small plateau close to the Vaal River, but this is not a rocky ridge. The vegetation of the quarry area is however characteristic of Eastern Highveld Grassland. The area of Eastern Highveld Grassland in which Q15 is situated is also often described as Chrissiesmeer Panveld. The vegetation of BP20-22 and Q13-14 are characteristic of Wakkerstroom Montane Grassland.

Numerous wetlands are scattered throughout the Mpumalanga Highveld grasslands. There are a number of valley-bottom wetlands, seepage wetlands and freshwater pans present in the region. Mucina & Rutherford (2006) felt that these open bodies of freshwater wetlands were distinct enough to be classified separately in terms of veldtypes or ecosystems. None of these freshwater pans are present in or near to the quarry or borrow pit areas.

(Source: Flori 2016)

- **Air Quality**

The region is considered rural and the air quality fairly good.

- **Noise**

The current noise levels are low due to the rural nature of the area.

- Visual

The current land use for the mining area is agricultural in nature (grazing land). There is residential activity approximately 1 km South from Q15. There are three informal houses that occur around Q13-14. There is residential activity approximately 300 m south of BP20-22.

- Sensitive Landscapes

No Red Data species (endangered, threatened or vulnerable) were observed during field investigations. According to the SANBI database a few Red Data species have been recorded in the region of the QDS quadrants, but it is unlikely that any of these species are present in the study area. This however, is not to say for certain that none occur.

The quarry sites of BP20-22 & Q13-14 are situated within Wakkerstroom Montane Grassland, which is not a threatened veldtype, while the quarry site Q15 is situated within Eastern Highveld Grassland (Chrissiesmeer Panveld), which is a threatened veldtype.

There are no wetlands or pristine grassland at any of the mining areas.

- Sites of Archaeological and Cultural Interests

There is an informal burial site with at least five graves located within 30 metres from the proposed access road to BP20-22 and it is anticipated that it would not be impacted on by the road improvement activities (There are no sites of archaeological or cultural interest or graves on the site).

The following heritage sites were identified at Q13-14:

- A large informal burial place with probably more than 30 graves located approximately 40 metres outside (east) of the quarry and it is therefore unlikely that it would be impacted on by the proposed development.
- Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. These features will not be impacted on by the mining activities.
- An old sheep dip constructed from concrete will not be impacted on by the mining activities.

- Socio-Economic Aspects

The mining area would have a positive impact on the regional socio-economic structure through its support of the development industry, profit generation contributing to tax revenue, job creation and the skills development of its employees.

- Cumulative Impacts

The cumulative impacts associated with the extension of the proposed mining areas could be the following:

- Possible additional traffic on the local roads during mining of the area;
- Possible limited influx of people in the area during mining of the area;
- Possible additional water and electricity supply to the area - limited, if any.

(b) Description of the current land uses.

The landcover or landuse of the study area is predominantly opencast coal mining, open grassland that is used for grazing and cultivated farmlands. The farming is mainly cultivation in the form of summer maize production with cattle grazing. Opencast coal mining, cultivation and grazing of cattle takes place in large areas. The level of urbanisation in the area is scattered and low-density. The

land-use in the area of the mining areas is predominantly cultivation and grazing. No pristine grassland is present.

(c) Description of specific environmental features and Infrastructure on the site.

Q15: There is a cultivated field north of the quarry that is fenced. There is no other infrastructure present. A bufferzone is recommended south of Q15, between the quarry area and the edge of the plateau slope downwards to the Vaal River.

Q13-14:

- A large informal burial place with probably more than 30 graves located approximately 40 metres outside (east) of the quarry and it is therefore unlikely that it would be impacted on by the proposed development.
- Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. These features will not be impacted on by the mining activities.
- An old sheep dip constructed from concrete. Will not be impacted on by the mining activities.
- A seasonal drainage line crosses Q13-14. A bufferzone is also recommended around the seasonal drainage line.

BP 20: An informal burial site with at least five graves located within 30 metres from the proposed access road to the borrow pits and it is anticipated that it would not be impacted on by the road improvement activities. There is no other infrastructure present.

(d) Environmental and current land use map.
(Show all environmental and current land use features)

Please see maps included in Appendix 6.

v) Impacts identified

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts.

The *potential* impacts associated with the mining areas have been identified as the following:

CONSTRUCTION PHASE:

1. Vegetation stripping

Potential Impacts:

- a. Dust Pollution
- b. Soil Erosion
- c. Noise Impact
- d. Water pollution
- e. Visual impact
- f. Terrestrial ecology
- g. Impact on uncovered heritage aspects
- h. Contamination of site due to hydrocarbon spillage

i. Emissions from heavy vehicles

2. Stripping and stockpiling of topsoil

Potential Impacts:

- a. Clearing of vegetation
- b. Visual intrusion as a result of establishment of mining areas
- c. Dust nuisance caused by machinery stripping topsoil
- d. Noise nuisance caused by machinery stripping topsoil
- e. Infestation of weeds and alien vegetation on topsoil heaps
- f. Loss of topsoil due to incorrect storm water management
- g. Contamination of site due to hydrocarbons
- h. Impact on uncovered heritage aspects
- i. Emissions from heavy vehicles

OPERATIONAL PHASE

1. Blasting

Potential Impacts:

- a. Health and safety risk posed by blasting activities
- b. Dust nuisance caused by blasting activities
- c. Noise nuisance caused by blasting activities

2. Excavations

Potential Impacts:

- a. Visual intrusion associated with the excavation activities
- b. Dust nuisance caused by excavation activities
- c. Noise nuisance generated by excavation equipment
- d. Contamination of surface or groundwater due to effluent runoff from excavation
- e. Unsafe working conditions for employees
- f. Potential damage to uncovered cultural and heritage aspects
- g. Contamination of site due to hydrocarbons
- h. Emissions from heavy vehicles
- i. Water pollution

3. Crushing

Potential Impacts:

- a. Dust nuisance due to the crushing activities
- b. Noise nuisance due to the crushing activities
- c. Contamination of site due to hydrocarbons

4. Stockpiling and Transporting of gravel material

Potential Impacts:

- a. Visual intrusion associated with the stockpiled material and heavy vehicles transporting the gravel material

- b. Loss of material due to ineffective storm water handling
- c. Dust nuisance from stockpiled material and heavy vehicles transporting material
- d. Degradation of access roads
- e. Noise nuisance caused by heavy vehicles
- f. Contamination of site due to hydrocarbons
- g. Emissions from heavy vehicles
- h. Water pollution

DECOMMISSIONING PHASE

1. Sloping and Landscaping during rehabilitation

Potential Impacts

- a. Soil erosion
- b. Health and safety risk posed by unsloped areas
- c. Dust nuisance caused during sloping and landscaping activities
- d. Noise nuisance caused during sloping and landscaping activities
- e. Contamination of site due to hydrocarbons
- f. Emissions from heavy vehicles

2. Replacing the topsoil and revegetating the disturbed area

Potential Impacts:

- a. Loss of reinstated topsoil due to absence of vegetation
- b. Infestation of the area with weed and invader plants

ALL phases: Proper functioning of sanitation systems

vi) Methodology used in determining the significance of environmental impacts

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process were determined in order to decide the extent to which the initial site layout needs revision).

Potential environmental impacts on the environment will be determined in terms of the following in order to determine the significance of each impact:

Nature:

A brief description of the environmental aspect being impacted upon by a particular action or activity is presented. Also:

- Probability (how likely is it that the impact will occur?)
- Magnitude (how severe will the impact be?)
- Duration (how long will the impact last?)
- Scale of the impact (what size of the area will be affected?)

Thereafter, mitigation measures will be proposed in order to reduce or eliminate negative impacts and enhance positive impacts. The impact of the proposed activity on the environment will be considered for the pre- construction, construction and operational phases. The necessary mitigation measures will be consolidated in the form of an Environmental Management Programme (EMPr).

Assessment of significance – method:

The significance of every environmental impact identified will be determined using the following approach:

In assessing the potential significance of an impact two aspects will be considered:

- i) Occurrence
- ii) Severity

Occurrence will be sub-divided into:

- Probability of occurrence
- Duration of occurrence

Severity will be sub-divided into:

- Magnitude (severity) of impact
- Scale/extent of impact

In order to assess each of these factors for each impact, ranking scales were employed as follows:

Probability:

- 5 - Definite/don't know
- 4 - Highly probable
- 3 - Medium probability
- 2 - Low probability
- 1 - Improbable
- 0 - None

Duration:

- 5 - Permanent
- 4 - Long-term*
- 3 - Medium-term (5-15 years)
- 2 - Short-term (0-5 years)
- 1 - Immediate
- 0 - None

Scale:

- 5 - International
- 4 - National
- 3 - Regional
- 2 - Local
- 1 - Site only
- 0 - None

Magnitude:

- 10 - Very high/don't know
- 8 - High
- 6 - Moderate
- 4 - Low
- 2 - Minor
- 0 - None

*impact ceases after operational life of the activity

Once the above factors had been ranked for each impact, the overall risk (environmental significance) of each impact will be assessed using the following formula: $SP = (\text{magnitude (M)} + \text{duration (D)} + \text{scale(S)}) \times \text{probability (P)}$. The maximum value is 100 significance points (SP). Environmental impacts will be rated as either of High, Moderate or Low significance on the following basis:

- SP greater or the same as 60 indicates high environmental significance;
- SP 31 greater or the same as 59 indicates moderate environmental significance;
- SP \leq 30 indicates low environmental significance.

Please see actual assessment in Appendix 7.

vii) 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.

(Provide a discussion in terms of the advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

Positive impacts pertaining to mining areas area:

The N2 forms part of the strategic national road network. The volume of heavy vehicles on the N2 is expected to increase significantly over the next 20 years. The road is also a prominent route to transport produce to Richards Bay harbour for export purposes. Traffic volumes and design principals determine that the road needs to be maintained to ensure the safety of the traveling public. The additional traffic lanes are proposed to accommodate increased capacity and reduce congestion and assist traffic flow. The road upgrade will also cater for future traffic demand and support economic growth. This could benefit the communities in the area including local residents, motorists, the road freight industry and its customers.

The extension of the mining areas is needed in order to obtain the required gravel material for the upgrade of the N2 in the area. The upgrade of the road could, therefore, ensure safer driving conditions for the travelling public by enabling vehicles to travel more efficiently and smoothly with less congestion as a result of the additional passing lanes to be constructed that will allow vehicles to safely pass slower moving trucks and vehicles. The proposed extension of the mining areas is, therefore, necessary to ensure the safety of the traveling public. This will also accommodate the predicted increase in traffic volume and avoid high driver frustration.

The negative impacts associated with the extension of the mining areas are the possible impacts associated with the construction phase i.e.

- a. Dust Pollution
- b. Soil Erosion
- c. Noise Impact
- d. Visual impact
- e. Terrestrial ecology
- f. Impact on uncovered heritage aspects
- g. Contamination of site due to hydrocarbon spillage
- h. Emissions from heavy vehicles
- i. Possible water pollution

With the implementation of the EMPr, the significance of the impacts associated with the extension of the mining areas are foreseen to be low.

viii) The possible mitigation measures that could be applied and the level of risk.

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

The following measures will be implemented by SANRAL to prevent or remedy any possible pollution or degradation of the environment by means of the appointed contractor that is contractually bind to implement the project after the tender process. Provided these mitigation measures are implemented, the level of risk is regarded as low:

a. Possible dust and air pollution

- Dust generated by access roads will be carefully monitored by the OHS&E and should be suppressed by means of watering regularly where required.
- Vegetation will not be unnecessary stripped.
- Domestic fires will be prohibited on site.
- Heavy vehicle will be serviced regularly to ensure emission control.
- All heavy vehicles, excavators and generators used for the mining will be in good working condition and will be serviced regularly.

b. Soil Erosion

- Topsoil will be removed over the entire mining area and stored in a perimeter berm. The height of the topsoil berm will not exceed 3m.
- The topsoil berm will be inspected for erosion daily.
- Minimal amounts of topsoil shall be lost due to erosion, either by wind or water. This can be facilitated through the grassing of topsoil stockpiles.
- Condition of soil in walk or drive areas should be checked daily for erosion.
- Access road condition will be checked daily.
- If erosion is noted at walk and drive areas, access road or topsoil berms, the erosion channel will be fixed by placing cut vegetation, sandbags or rocks within the erosion channel and the cause of the erosion will be mitigated through the creation of runoff channels.

c. Possible Noise Pollution

- The working hours shall be limited to between sunrise and sunset, or as per contract documentation. No work on Sundays.
- Vehicles must be driven at a moderate speed (50 kph) on private roads.
- Noise generated from the trucks that transport the material and the excavator that is used to mine the material shall only be carried out during normal working hours.
- Extended working hours will be in accordance with contract documentation.
- SANRAL shall be obligated to maintain vehicles used at the mining area in a good condition;
- SANRAL will be obliged to ensure that all personnel on site apply occupational health and safety requirements with respect to hearing protection.

d. Possible Visual impact

- Rehabilitation of the mining areas will take place after the mining has ceased.
- The borrow pits and quarry shall be vegetated with an indigenous grass seed.
- All unused material would be levelled to ensure that the mining area blends back into the existing landscape fabric.
- No stockpiled material is to be retained on site.
- The mining areas will be shaped to ensure no stockpiled heaps and that the area blends in with the existing landscape.
- All stockpiled topsoil and vegetative material will be spread over the mined areas to ensure proper seed bed for the re-establishment of vegetative growth.
- The access gravel roads will be rehabilitated and the fencing of the mining areas reinstated following the mining of the areas.

e. Aquatic and Terrestrial Ecology

Construction & Operation Phase

- No temporary accommodation or temporary storage facilities may be setup within 100m of the any river, stream, drainage line, wetland or farm dam.
- No temporary accommodation or temporary storage facilities may be setup within 500m of the outer boundary of any pans in the area.
- No temporary facilities (including portable toilets) to be positioned within a 50m bufferzone of the edge of any watercourses.
- Only existing roads to be used by vehicles during construction as far as possible. Especially in terms of crossing over watercourses.
- No vehicles may drive through wetland areas and no new service road may be made through wetland areas.
- Project activities close to watercourses to be carefully monitored in terms of erosion and possible resulting siltation of watercourses. Weekly inspection of work areas around watercourses to be conducted. Any signs of new erosion and siltation to be rectified immediately.
- Disturbed surface areas in the construction & operation phases to be rehabilitated.
- All construction material, equipment and any foreign objects brought into the area by contractors to be removed immediately after completion of the construction phase.
- Proper rubbish/waste bins to be provided. These to be emptied weekly and the waste to be removed to an official waste disposal site.

Maintenance phase (to be implemented in defect liability period for 1 year)

- Mechanical control of alien plants around disturbed areas caused by construction need to be conducted in the defected liability period following the construction phase. Mechanical control to be of such a nature as to allow local, indigenous grasses and other pioneers to colonise the previously disturbed areas, thereby assisting in keeping out invasive weed species.
- No chemical control (herbicides) of alien plants to be used within 100m of any watercourses.

Source: Flori, 2016

f. Possible Impact on Uncovered Cultural or Archaeological site

- All the graves and other heritage findings at Q13-14 should be avoided. The areas should be fenced and regarded as no-go areas.
- The graves next to the access road to BP20-22 should be avoided. The area should be fenced and regarded as a no-go area.
- If an artefact or grave on-site is uncovered, work in the immediate vicinity shall be stopped immediately and it should immediately be reported to a heritage consultant so that an investigation and evaluation of the finds can be made. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article.
- The South African Heritage Resources Agency (SAHRA) shall be contacted such that an archaeological/heritage resources consultant can be appointed to record the site and excavate if necessary. Work may only resume once clearance is given in writing by the archaeologist/heritage resources consultant.

g. Possible contamination of site due to hydrocarbons spillage

- All heavy vehicles, excavators and generators used for the mining will be in good working condition.

- A drip tray will be available to place underneath haul vehicles while the vehicles are parked at night.
- Should a vehicle have a break down, it will be serviced immediately. If soil contamination with diesel and oils occurred, the spill will be cleared up promptly. If the spill is small, it will be cleaned with a spill kit. If the spill is large, a spill clean-up company will be used to clean-up the spill;
- Proper functioning of heavy vehicles will be ensured.

h. Possible establishment and spread of alien vegetation

- Every 3 months casual labour will be employed to circumnavigate the site to hand pull out known alien vegetation during the construction phase that may have established in the disturbed area. Special attention will be given to the perimeter topsoil berm.
- Casual labour will be provided with photographs of the alien vegetation that could establish.

i. Sanitation Facilities

- Chemical toilet facilities shall preferably be used on site. The toilets shall be serviced every second week by a service provider.

j. Safety of sloped areas

At BP20-22:

- All unused material should be levelled. No stockpiled material is to be retained on site.
- On completion the mining area will be shaped to ensure no stockpiled heaps.
- The sides of the excavation of the borrow pit will be sloped using the material not suitable for the road building purposes and stored for such purposes.
- The walls of the mining area will be sloped to a slope of at least 1:2 but preferably 1:3 as directed by the Engineer on site in order to prevent dangerous vertical walls.
- The borrow pit will be free draining.

Q13-14 and Q15:

Cutting terraces into the steep walls could prevent dangerous vertical surfaces. The quarry cannot be free draining as the existing excavations are up to 10m deep and cut into solid rock. Proper fencing around the quarry and clearly visible signage indicating a dangerous area must be put into place.

The quarry will be mined in steps with at least the following end result:

- A slope of 1:1.5; or
- A 3 m wide step at every 10 m depth.

k. Unsafe working conditions for employees

- Appropriate safety clothing will be worn at all times i.e. head gear, shoes, ear plugs.

ix) The outcome of the site selection matrix. Final Site Layout Plan

(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)

Please find site layout plan in Appendix 3.

x) Statement motivating the preferred site.

(Provide a statement motivation the final site layout that is proposed)

The following provides a motivation for the preferred site layout for the three mining areas:

- There are no major watercourses within the individual mining areas, including wetlands.
- The drainage line at Q13-14 was delineated and will be avoided.
- No priority species were observed on the site during field investigations.
- No protected trees occur on site.
- No Red Data species (endangered, threatened or vulnerable) were observed during field investigations.
- No Red Data fauna species were observed or are expected to regularly occur in the study area itself.
- No fatal flaws were identified at the site.
- The mining areas have the required gravel material to be used for road construction purposes.
- Discussions were held with the relevant landowners and they agree to the proposed opening of the mining areas on the farms.

(i) Plan of study for the Environmental Impact Assessment process

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

Layout alternatives pertaining to the mining areas will be included in the EIA report.

The layout of the activity was determined by conducting specialist ecological and heritage studies with the following findings:

Q15: There is a cultivated field north of the quarry that is fenced that should be avoided. A bufferzone is recommended south of Q15, between the quarry area and the edge of the plateau slope downwards to the Vaal River.

Q13-14:

- A large informal burial place with probably more than 30 graves are located approximately 40 metres outside (east) of the quarry and should be avoided.
- Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. These features should be avoided.
- An old sheep dip constructed from concrete should be avoided.
- A seasonal drainage line crosses Q13-14. A bufferzone was delineated and should be avoided.

BP 20: An informal burial site with at least five graves located within 30 metres from the proposed access road to the borrow pits and should be avoided.

No-go Alternative:

The mining of the required gravel material is needed for the upgrade of the N2 from Camden to the KZN/Mpumalanga border. Should the mining of the areas not be undertaken, the necessary gravel material for the N2 will not be available and the N2 will not be able to be upgraded and/or expanded. The traveling public could, therefore, experience increasingly unsafe driving conditions.

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

(The EAP must undertake to assess the aspects affected by each individual mining activity whether listed or not, including activities such as blasting, Loading, hauling and transport, land mining activities such as Excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).

The aspects to be assessed as part of the EIA process are the following:

CONSTRUCTION PHASE:

1. Vegetation stripping
2. Stripping and stockpiling of topsoil

OPERATIONAL PHASE

1. Blasting
2. Excavations
3. Crushing
4. Stockpiling and transporting of gravel material

DECOMMISSIONING PHASE

1. Sloping and landscaping during rehabilitation
2. Replacing the topsoil and revegetating the disturbed area

iii. Description if aspects to be assessed by specialists

The following will be assessed by specialist consultants:

- a. Potential aquatic and ecological impacts;
- b. Potential impacts on heritage resources.

iv. Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

Potential environmental impacts on the environment will be determined in terms of the following in order to determine the significance of each impact:

Nature:

A brief description of the environmental aspect being impacted upon by a particular action or activity is presented. Also:

- Probability (how likely is it that the impact will occur?)
- Magnitude (how severe will the impact be?)
- Duration (how long will the impact last?)
- Scale of the impact (what size of the area will be affected?)

Thereafter, mitigation measures will be proposed in order to reduce or eliminate negative impacts and enhance positive impacts. The impact of the proposed activity on the environment will be considered for the pre- construction, construction and operational phases. The necessary mitigation measures will be consolidated in the form of an Environmental Management Programme (EMPr).

Assessment of significance – method:

The significance of every environmental impact identified will be determined using the following approach:

In assessing the potential significance of an impact two aspects will be considered:

- Occurrence
- Severity

Occurrence will be sub-divided into:

- Probability of occurrence
- Duration of occurrence

Severity will be sub-divided into:

- Magnitude (severity) of impact
- Scale/extent of impact

In order to assess each of these factors for each impact, ranking scales were employed as follows:

Probability:

- 5 - Definite/don't know
- 4 - Highly probable
- 3 - Medium probability
- 2 - Low probability
- 1 - Improbable
- 0 - None

Duration:

- 5 - Permanent
- 4 - Long-term*
- 3 - Medium-term (5-15 years)
- 2 - Short-term (0-5 years)
- 1 - Immediate
- 0 - None

Scale:

- 5 - International
- 4 - National
- 3 - Regional
- 2 - Local
- 1 - Site only
- 0 - None

Magnitude:

- 10 - Very high/don't know
- 8 - High
- 6 - Moderate
- 4 - Low
- 2 - Minor
- 0 - None

*impact ceases after operational life of the activity

Once the above factors had been ranked for each impact, the overall risk (environmental significance) of each impact will be assessed using the following formula: $SP = (\text{magnitude (M)} + \text{duration (D)} + \text{scale(S)}) \times \text{probability (P)}$. The

maximum value is 100 significance points (SP). Environmental impacts will be rated as either of High, Moderate or Low significance on the following basis:

SP greater or the same as 60 indicates high environmental significance;
SP 31 greater or the same as 59 indicates moderate environmental significance;
SP \leq 30 indicates low environmental significance.

Layout alternatives will be investigated during the EIA phase.

v. The proposed method of assessing the duration significance

The method of assessing the duration significance will be the following:

- 5 - Permanent
- 4 - Long-term*
- 3 - Medium-term (5-15 years)
- 2 - Short-term (0-5 years)
- 1 - Immediate
- 0 – None

vi. The stages at which the competent authority will be consulted

A copy of the draft documents (Scoping and EIR) will be submitted to the competent authority for comment. The competent authority will also be consulted when guidance is required with regard to the process.

vii. Particulars of the public participation process with regard the Impact Assessment process that will be conducted

1. Steps to be taken to notify interested and affected parties.

(These steps must include steps that will be taken to ensure consultation with the affected parties identified in (h) (ii) herein).

One-on-one meetings were held with the respected land owners about the proposed mining areas on their farms. The minutes of the meetings are included in the report. The land owners are registered on the database and the registered I&APs will be further consulted with by means of e-mails during the EIA phase.

2. Details of the engagement process followed.

(Describe the process to be undertaken to consult interested and affected parties including public meetings and one and one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings and records of such consultation will be required in the EIA at a later stage).

Please see a full description of the Public Participation Process followed in Appendix 5. The registered I&APs will be consulted by means of e-mails during the EIA phase.

3. Description of the information to be provided to Interested and Affected Parties.

(Information to be provided must include the site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land).

Registered I&APs will be consulted by means of e-mails during the EIA phase. Information to be provided include the site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land.

viii. Description of the tasks that will be undertaken during the environmental impact assessment process

The following tasks will be undertaken during the EIA phase:

- Desk study of available information and identification of key issues;
- Inform I&APs that the EIA phase will commence.
- Synthesis issues for preliminary investigation;
- Conduct specialist studies;
- Compile a Draft Environmental Impact Report (EIR) and Environmental Management Programme (EMPr) and make it available for public comment;
- Submit Final Environmental Impact Report (EIR) and EMPr to environmental authorities for approval.

(ix) 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.

ACTIVITY (whether listed or not listed). E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution etc....etc...)	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc. E.g. <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	POTENTIAL FOR RESIDUAL RISK
Vegetation stripping	- Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles	- Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation	Low
Stripping and stockpiling of topsoil	- Dust - Soil Erosion - Noise - Visual	- Control through dust suppression - Control measures to prevent soil erosion	Low

	<ul style="list-style-type: none"> - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation 	
Excavations	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation 	Low
Crushing	<ul style="list-style-type: none"> - Dust nuisance - Noise nuisance - Contamination of site due to hydrocarbons 	<ul style="list-style-type: none"> - Control through dust suppression - Control through noise control measures - Control measures for hydrocarbon spillage 	Low
Stockpiling and transporting of gravel material	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise 	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to 	Medium

	<ul style="list-style-type: none"> - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation 	
Sloping and Landscaping	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation 	Medium

l) Other Information required by the Competent Authority

- i) Compliance with provisions of sections 24(4)(a) and (b) read with section 24(3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the: -

(1) Impact on the socio-economic conditions of any directly affected person. (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as **Appendix 2.19.1** and confirm the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein).

A potential socio-economic impact is that the landowners will not be able to use the land for grazing and ploughing purposes for the duration of the mining activity. However, the landowners of the proposed areas will be compensated by the SANRAL for the areas to be used for the excavation of the gravel material.

It is not foreseen that the mining of the gravel material will have any socio-economic impact on any other person.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act. (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estates contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in in 2.5.3; 2.11.6 and 2.12 herein).

A heritage assessment will be undertaken by Dr J van Schalkwyk in compliance with the National Heritage Resources Act and the results of the assessment will be included in the EIR for the mining areas.

m) Other matters required in terms of section 24(4)(a) and (b) of the Act.

The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable of feasible alternatives, as contemplated in sub-regulation 22(2)(h), exists. The EAP must attach such motivation as **Appendix 4**).

Layout alternatives will be further investigated in the EIA phase.

j) 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:

k) 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: