



**GA Environment**

## **ENVIRONMENTAL MANAGEMENT PROGRAMME**

FOR THE PROPOSED MINING OF QUARRY 5 ASSOCIATED WITH THE UPGRADE  
OF NATIONAL ROAD R573 (MOLOTO ROAD), GAUTENG PROVINCE

**DMRE Reference: To be Assigned**

**August 2021**



**ENVIRONMENTAL MANAGEMENT PROGRAMME  
FOR THE  
PROPOSED MINING OF QUARRY 5 ASSOCIATED WITH THE UPGRADE OF NATIONAL ROAD R573  
(MOLOTO ROAD), GAUTENG PROVINCE**

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**PROJECT INFORMATION**

<b>Title:</b>	Environmental Management Programme for the Proposed Mining of Quarry 5 associated with the upgrade of National Road R573 (Moloto Road), Gauteng province
<b>Competent Authority:</b>	Department of Mineral Resources and Energy (DMRE)
<b>Applicant:</b>	South African National Roads Agency SOC Ltd
<b>Environmental Assessment Practitioner:</b>	GA Environment (Pty) Ltd.
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<b>Date:</b>	August 2021

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**SIGNING OF THE ORIGINAL DOCUMENT**

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## ABBREVIATIONS

CA	Competent Authority
CBA	Critical Biodiversity Area
DFFE	Department of Forestry, Fisheries, and Environment
DMRE	Department of Mineral Resources and Energy
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme Report
EO	Environmental Officer
ERAP	Emergency Response Action Plan
ER	Engineer's Representative
ESR	Environmental Site Representative
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998),
NEMA	National Environmental Management Act (Act 107 of 1998)
NEM:BA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEM:PA	National Environmental Management: Protected Areas Act (Act 57 of 2003)
NFEPA	National Freshwater Ecosystem Protected Area
PM	Project Manager
RI&AP's	Registered Interested and affected parties
SANBI	South African National Biodiversity Institute

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## DEFINITIONS

**Aspect** - Element of an organisation's activities, products or services that can interact with the environment.

**Auditing** - A systematic, documented, periodic and objective evaluation of how well the Environmental Management Programme (EMPr) is being implemented and is performing with the aim of helping to safeguard the environment by facilitating management control which would include meeting regulatory requirements. Results of the audit help the organisation to improve its environmental policies and management systems, while keeping track of their compliance with the Environmental Authorization.

**Clearing of vegetation** - Clearing refers to the removal of vegetation through permanent eradication and in turn no likelihood of regrowth. 'Burning of vegetation (e.g. fire- breaks), mowing grass or pruning does not constitute vegetation clearance, unless such burning, mowing or pruning would result in the vegetation being permanently eliminated, removed or eradicated.

**Contractor** - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

**Corrective (or remedial) action** - Response required in addressing an environmental problem that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

**Degradation** - The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.

**Developer** - Entity which applies for environmental approval and is ultimately accountable for compliance to conditions stipulated in the EA (Environmental Authorisation) and EMPr.

**Environment** - The surroundings within which humans exist and that are made up of land, water and atmosphere of the earth, micro-organisms, plant and animal life: or any part or combination of the two and the interrelationships among them, the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

**Environmental Impact Assessment (EIA)** - An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development. The EIA includes an evaluation of alternatives; recommendations for appropriate management actions for minimising or avoiding negative impacts and for enhancing positive impacts; as well as proposed monitoring measures.

**Environmental Management System (EMS)** - Environmental Management Systems (EMS) provide guidance on how to manage the environmental impacts of activities, products and services. They detail the organisational structure, responsibilities, practices, procedures, processes and resources for environmental management. The ISO14001 EMS standard has been developed by the International Organisation for Standardisation.

**Environmental Policy** - A statement of intent and principles in relation to overall environmental performance, providing a framework for the setting of objectives and targets.



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**Habitat** - A habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism lives, or the physical environment that surrounds a species population.

**Hazardous substance** - is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

**Impact** - A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time, space, magnitude and intensity.

**Indigenous species** - Flora and Fauna species that are naturally found in an area.

**Infrastructure** - The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage, etc.

**Integrated Environmental Management**- This is a philosophy used in the assessment of and management of the environment, during all actions, plans, activities, etc. that could affect the environment. Its aim is to ensure sustainability.

**Method statement** - means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover as a minimum applicable details with regard to:

- (i) Construction procedures;
- (ii) Plant, materials and equipment to be used;
- (iii) Transporting the equipment to and from site;
- (iv) How the plant/ material/ equipment will be moved while on site;
- (v) How and where the plant/ material/ equipment will be stored;
- (vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- (vii) Timing and location of activities;
- (viii) Compliance/ non-compliance; and
- (ix) Any other information deemed necessary by the Project Manager.

**Mitigation** - Measures designed to avoid, reduce or remedy adverse impacts. Actions that limit, stop or reverse the magnitude and/or rate of long-term effect on the environment.

**Natural environment** - Encompasses all living and non-living things occurring naturally on Earth or some region thereof. It is an environment that encompasses the interaction of all living species. Climate, weather, and natural resources that affect human survival and economic activity.

**Policy** - A set of aims, guidelines and procedures to help you make decisions and manage an organisation or structure. Policies are based on people or an organisation's values and goals.

**Process** - Development usually happens through a process - a number of planned steps or stages.

**Resources** - Parts of our natural environment that we use and protect, e.g. land, forests, water, wildlife, and minerals.

**Slope**- means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units.

**Solid waste**- means all solid waste, including construction debris, hazardous waste, excess cement/concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

**Spoil**- means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works.

**Topsoil**- means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil.

**Works**- means the works to be executed in terms of the Contract.

### LEGISLATIVE REQUIREMENTS FOR AN EMPr

The table below provides the Requirements for an Environmental Management Programme (EMPr) in terms of the 2014 EIA Regulations, as amended, (Appendix 4) with reference to the relevant sections of this report or where these requirements are addressed.

Section	Content	Reference in report
An EMPr must comply with section 24N of NEMA and include-		
1(a)	Details of (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 2
1(b)	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 7
1(c)	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 1.1
1(d)	A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Section 8
1(e)	A description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 8
1(f)	A description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to – (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Section 8
1(g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 8
1(h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 8
1(i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 8

1(j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 8
1(k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 8 and 9
1(l)	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 9
1(m)	An environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 6.3
1(n)	Any specific information that may be required by the competent authority.	None Required

**UNDERTAKING TO IMPLEMENT THE EMPr**

**Undertaking by the Principal Contractor**

I ..... acting on behalf of the **Contractor**, hereby indicate that I have read through the EMPr and understand the measures required to be implemented in terms of the EMPr. I hereby undertake to implement these measures and carry out my duties as specified herein.

Signed on ..... at .....

.....  
Contractor’s Environmental  
Representative

.....  
Witness (1)

.....  
Witness (2)

**Undertaking by the Environmental Control Officer**

I ..... the **Environmental Control Officer** appointed by SANRAL hereby indicate that I have read through the EMPr, and understand the measures required to be implemented in terms of the EMPr and hereby undertake to fulfil my duties as specified herein.

Signed on ..... at .....

.....  
Contractor’s Environmental  
Representative

.....  
Witness (1)

.....  
Witness (2)

**THE SIGNING OF THIS DOCUMENT IS CRUCIAL AS IT BINDS THE CONTRACTOR TO THE CONTENTS OF THE EMPr IMPLEMENTATION THEREOF**

## 1. INTRODUCTION

### 1.1 Project background

It is the intention of the South African National Roads Agency SOC Ltd to establish various Quarries to provide the necessary construction materials for the proposed upgrading of national road R573-1 (K139) from Baviaanspoort Road in Tshwane (km 0,00) to the Gauteng / Mpumalanga Provincial Border ( $\pm$  46.00 km). The upgrading of the R573 Moloto Road includes the following projects:

- Upgrading of the entire length of the R573/1 Moloto Road to a 4-lane barrier-divided dual carriageway from Stormvoël Road to the Gauteng border;
- Construction of the southern link between Stormvoël Road and Baviaanspoort Road;
- Construction of the new PWV2 link between the N1/N4 Interchange and the R573/1 Moloto Road;
- Construction of the Moloto/Sefako Makgatho Interchange;
- Construction of the Big Tree Mall Interchange;
- Construction of the De Wagendrift bypass along the R573/1; and
- Various upgrades to local roads and upgrading of intersections to small interchanges (Moepel Overpass; Baviaanspoort Road East extension; Dewar, Sakabuka and Maroela interchanges and road developments).

The SANRAL appointed KBK Engineers to provide engineering services for the proposed development. KBK Engineers appointed GA Environment (Pty) Ltd on behalf of SANRAL as independent Environmental Consultants to undertake the required Environmental approvals for the mining of four Quarries for the purpose of the proposed development. All four Quarries are situated along the R573 Moloto Road and are as follows:

- Quarry 6A;
- Quarry 6B;
- Quarry 4 and
- Quarry 5.

This Environmental Management Programme (EMPr) serves to present the identified environmental impacts and mitigation for **Quarry 5**. Separate Environmental applications will be submitted for each of the Quarries identified above and will be submitted to the Department of Mineral Resources and Energy (DMRE).

The proposed Quarry 5 is located approximately 30km to the northeast of the N1/ N4 highway intersection along the R573 (Moloto Road) roadway and 14.5km to the southwest of the Moloto township near the Gauteng/ Mpumalanga provincial border. The R573 roadway borders the project area in the north. The site centre geographic coordinates are 25°31'39.95" S, 28°30'58.01" E (**Figure 1**). The project area is located on Portion 46 of the Farm Boekenhoutskloofdrift 286 JR.

The proposed study area where Quarry 5 is located is considered as a potential source of rock material. According to the material investigation report, three types of material can be sourced from Quarry 5. Approximately 810 000m<sup>3</sup> of unprocessed bedrock material suitable for the production of crushed G5 material, approximately 405 000m<sup>3</sup> of material can be crushed as possible G6 material, as well as 47 000m<sup>3</sup> of potential G7 material is available from Quarry 5. The limited overburden material will be stockpiled for rehabilitation purposes is estimated at a volume of 7 000m<sup>3</sup>. The commodity to be mined is aggregates.

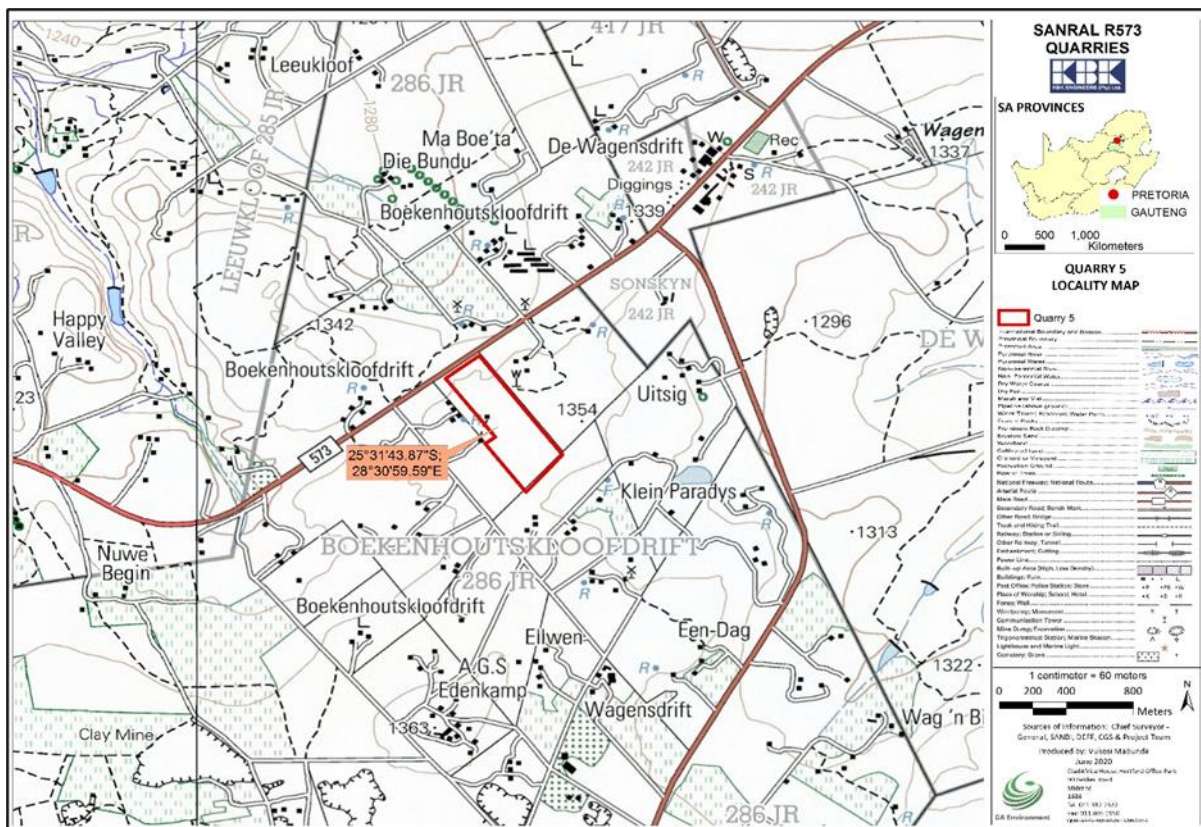


Figure 1: Project Site Locality

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact



assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including but not limited to the applicant and the competent authority (CA).

This EMPr has been prepared in consultation with the Appendix 4 to the Environmental Impact Assessment Regulations, 2014, as amended.

SANRAL is exempted from applying for a Mining Permit to develop a quarry for the purposes of sourcing road building material. However, SANRAL is still required to obtain Environmental Authorisation in terms of the National Environmental Management Act (107 of 1998).

### **1.1 Specific Mitigation Measures and Specialist Studies**

All recommendations made by the specialists and all mitigation measures proposed by the specialists in their assessments, as incorporated in the EMPr should be implemented and adhered to; and all other conditions, monitoring and mitigation measures as provided in the EMPr should be adhered to. Some specific recommendations and mitigation measures were highlighted in the Environmental Impact Report and are included in this EMPr.

### **1.2 Key Site Sensitivities**

Sensitive Environmental features were assessed, and the findings are as follows. **Figure 3** provides the key site sensitivities.

- A Heritage impact Assessment was undertaken by Dr Johnny van Schalkwyk, in terms of heritage resources, no sites, features or objects of cultural significance were identified within the study area.
- A desktop Palaeontological Assessment was undertaken by Dr Heidi Fourie. The study concluded that the potential impact of the development on fossil heritage is LOW for the Wilgerivier Formation and therefore a field survey is not necessary for this development (according to SAHRA protocol).



- 
- According to the Wetland Assessment undertaken by Limosella Consulting, no drainage lines, wetlands or other freshwater features are indicated by the National Freshwater Ecosystem Priority Area (NFEPA) databases to be located within or in close proximity to Quarry 5.
  - According to the Terrestrial Biodiversity Assessment, the project area is not located within a listed threatened ecosystem, or within an area earmarked as being of high conservation importance in terms of the Gauteng C-Plan (2011) and the 2012 Mining and Biodiversity Guidelines. The project area is however located within a conservancy, indicated to comprise remnant vegetation in terms of the 2018 NBA, and located within the Central Sandy Bushveld vegetation type which has a Vulnerable conservation status. The habitat within the project area is largely intact, and that limited direct disturbances on the terrestrial ecology have taken place historically or are taking place currently. The project area predominantly comprises rocky niche habitat, and also provides habitat for several confirmed floral SCC (although no IUCN or SANBI Red Listed floral species were recorded), with an increased probability of several floral and faunal SCC to occur. A medium-high ecological sensitivity was therefore assigned to the majority of project area. Four broad habitat units were identified within the project area (**Figure 2**), based primarily on floral species composition and vegetation structure, faunal species' habitat provision, the topographical position of the habitat unit in the landscape, as well as the degree of anthropogenic impact and disturbance within the unit. These habitat units are:

- *Burkea africana* Woodland on rocky slopes, which occurs within the majority of the project area; and
- The Mixed Woodland habitat unit which occurs within the northern portion of the project area on a low rocky ridge/ outcrop.
- The *Terminalia sericea* Open Woodland habitat unit which occurs to the southwest of the project area on deep sandy soils; and
- The Modified habitat unit which includes all areas currently or historically impacted by anthropogenic activities.

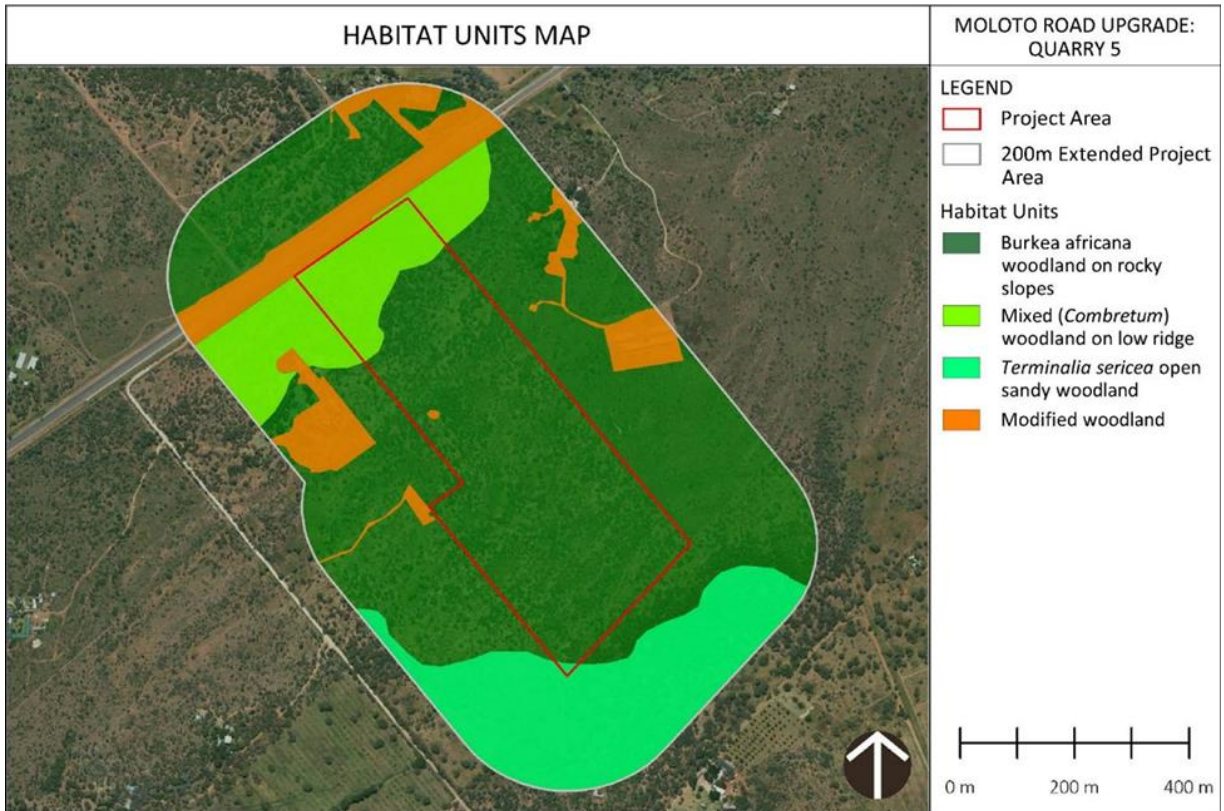


Figure 2: Habitat Unit Map (Field and Form Landscape Science, 2020)

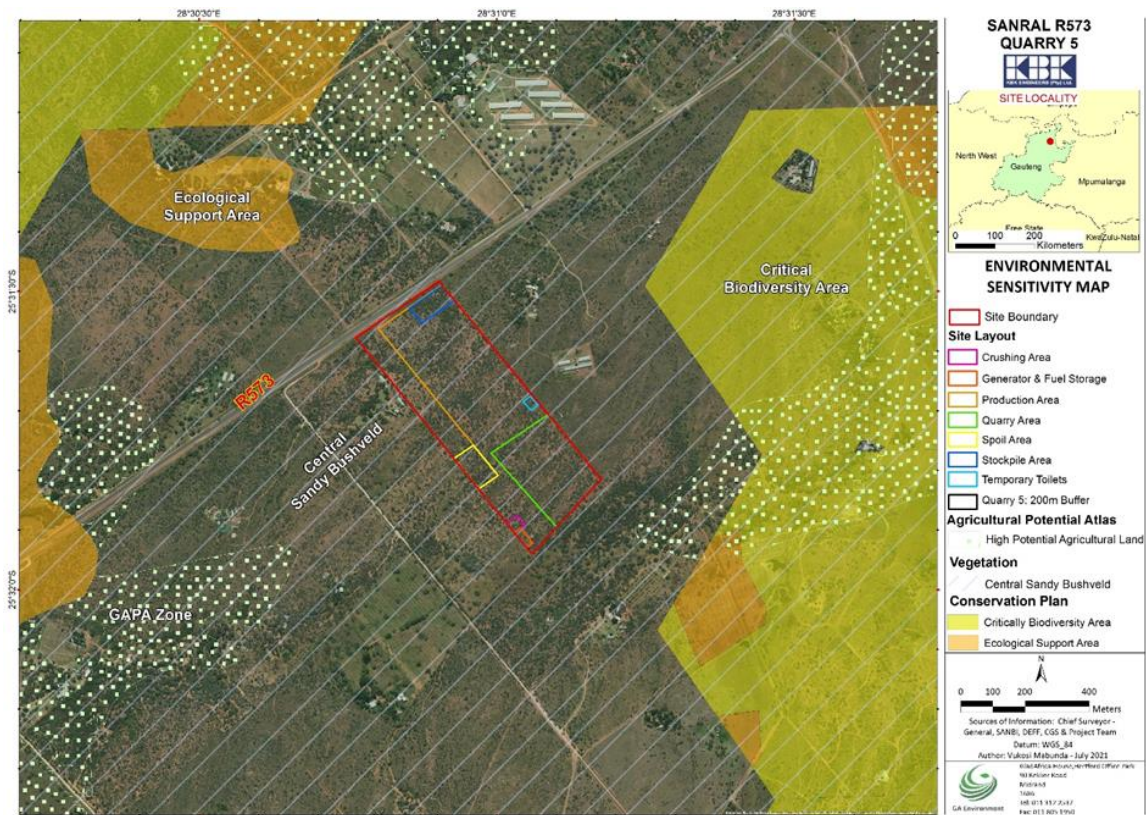


Figure 3: Key Site Sensitivities

### 1.3 Purpose and objectives the document

This EMPr is the main output of the Environmental Impact Assessment process and has been compiled in accordance with the requirements of the National Environmental Management Act (No. 107 of 1998) (NEMA) legislation and Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development (DEAT, 1992).

The purpose of this EMPr is to provide a framework within which the environmental risks and liabilities identified during the Environmental Impact Assessment process are managed for the duration of the project lifecycle. This document further provides mitigation measures to ensure legal compliance and environmental best practice during the construction of the proposed project.

The EMPr has the following key objectives:

- To ensure compliance of the with applicable environmental legislation;
- To communicate environmental expectations and requirements of the project;
- To ensure that the roles and responsibilities of the various parties involved in the implementation of the EMPr are clearly outlined;
- To reduce adverse environmental impacts as a result of the project activities; and
- To ensure continuous improvement in terms of the environmental performance of the project.

## 2. PREPARATION OF THIS EMPr

In accordance with the Regulation 13 of the EIA Regulations (GN R982 of 2014) as amended, the proponent is required to appoint an independent registered Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for any activities regulated in terms of the NEMA. As such, SANRAL appointed GA Environment (Pty) Ltd an independent consulting firm to undertake the required Environmental Authorisation process. Both GA Environment and associated specialist are not subsidiaries of the proponent or have vested interested in the proposed activity. This document has been compiled in in line with the requirements *for an Environmental Management Programme (EMPr) in terms of the 2014 EIA Regulation 982 (Appendix 4) with reference to the relevant sections of this report or where these requirements are addressed.* The details of the project proponent and EAP are provided below:

**Table 2** below provides the particulars of the key stakeholders associated with the project

Table 1: Application details

Applicant's representative	Environmental Assessment Practitioner	Project Reviewer
<b>Name:</b> Progress Hlahla <b>Designation:</b> Northern Region: Regional Manager <b>Tel:</b> Available on request <b>e-mail:</b> Available on request	<b>Name:</b> Kirthi Peramaul <b>Designation:</b> Environmental Impact Assessment Practitioner <b>Tel:</b> 011 312 2537 <b>Fax:</b> 011 805 1950 <b>e-mail:</b> <a href="mailto:environment@gaenvironment.com/">environment@gaenvironment.com/</a> <a href="mailto:kirthip@gaenvironment.com">kirthip@gaenvironment.com</a>	<b>Name:</b> Nkhensani Khandlhela <b>Designation:</b> Environment and Sustainability Manager <b>Tel:</b> 011 312 2537 <b>e-mail:</b> <a href="mailto:nkhensanik@gaenvironment.com">nkhensanik@gaenvironment.com</a>

This EMPr was prepared by **Mrs Kirthi Peramaul**, an Environmental Assessment Practitioner (EAP) employed by GA Environment. Mrs Peramaul is a Senior Environmental Assessment Practitioner who holds a BSc (Hons) in Environmental Monitoring and Modelling. She is currently registered with the South African Council of Natural Scientific Professions (SACNASP) as a Professional Natural Scientist and as a Registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA). Kirthi has extensive knowledge of environmental waste management and water use legislation as she has been involved in various environmental and water use authorisation applications. She has a strong background in environmental authorisations, environmental compliance monitoring, environmental management plans, water use authorisation, stakeholder engagement, data analysis, risk assessments and blue and green drop auditing.

### 3. KEY APPLICABLE LEGISLATION

The management and mitigation of the environmental impacts during construction is governed by environmental legislation. It is of utmost importance that this project is constructed in compliance with all relevant environmental legislation whether; National, Provincial and/or Local. This EMPr has thus been compiled as per the requirements of *Appendix 4* of the NEMA EIA Regulations 2014, as amended and in terms of Section 24N of the NEMA.

It is understood that any development during its various phases is a dynamic activity within a dynamic environment. The common list of legislative references contained herein is by no means exhaustive but is applicable to the general principles of this document:



- Constitution of the Republic of South Africa (Act No. 108 of 1996);
- National Environmental Management Act (Act No. 107 of 1998);
- National Environmental Management: Biodiversity Act (Act 10 of 2004);
- National Heritage Resources Act (Act No. 25 of 1999);
- National Water Act, 1998 (Act No. 36 of 1998);
- Mineral and Petroleum Resources Development Act (Act No 28 of 2002); and
- Occupational Health and Safety Act (Act No. 85 of 1993);

In addition to the above, other provincial and municipal legislation by relevant to the proposed development must also be adhered to.

#### **4 Public Participation**

A public participation process was carried out as part of the Environmental Impact Assessment. A newspaper advertisement was placed, and site notices were put up. A Background Information Document informing comprehensively about the proposed activities was distributed to potentially Interested & Affected Parties (I&APs). Details of the Public Participation process has been included in the Basic Assessment Report. This EMPr has been circulated with the Draft Basic Assessment Report for stakeholder review and comment.

#### **5 Roles and Responsibilities for EMPr Implementation**

The effective implementation of this EMPr is dependent on established and clear roles, responsibilities, and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an Environmental Control Officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

*Table 2: Guide to roles and responsibilities for implementation of an EMPr*

FUNCTION	RESPONSIBILITY
<b>DEVELOPER/PROPONENT</b>  <i>South African National Roads Agency</i>	SANRAL will be the project proponent for all components of the work related to the project. SANRAL is therefore accountable for ensuring compliance with the EMPr and all legal requirements related to the project. The proponent is also responsible for the appointment and management of the rest of the project team.
<b>PRINCIPAL CONTRACTOR</b>  <i>To be appointed by SANRAL</i>	<p>The Principal Contractor is responsible for the implementation and compliance with the requirements of the EMPr and conditions of the EA's (where applicable), contract and relevant environmental legislation. The Contractor must ensure that all sub-contractors have a copy of and are fully aware of the content and requirements of this EMPr, through inductions and training.</p> <p>The Contractor is also required, where specified, to provide Method Statements setting out how the management actions contained in this EMPr of the EA will be implemented.</p>
<b>CONSULTING ENGINEER</b>  <i>KBK Engineers (Pty) Ltd</i>	The Consulting Engineer (CE) is contracted by the developer to design and specify the project engineering aspects. Generally, the engineer runs the works contract and oversee the overall implementation of the project as well as the compliance of the EMPr and incorporate any environmental consideration recommended in this EMPr into the design. The CE may also fulfil the role of PM on the proponent's behalf (see PM).
<b>PROJECT MANAGER</b>  <i>To be appointed by SANRAL</i>	The Project Manager (PM) has overall responsibility for managing the project, Contractors, and Consultants and for ensuring that the environmental management requirements are met. All decisions regarding environmental procedures must be approved by the PM. The PM has the authority to stop any construction activity in contravention of the EMPr in accordance with an agreed warning procedure.
<b>ENVIRONMENTAL CONTROL OFFICER</b>  <i>To be appointed by SANRAL</i>	The Environmental Control Officer (ECO) is an independent person responsible for monitoring and implementation of the EMPr and environmental licences/authorisation (where applicable). This will be through frequent environmental audits, however the frequency at which the ECO will be required to conduct audits will depend on the conditions of the Environmental Authorisation (where applicable) or the nature of the development/ sensitivity of the environment.

FUNCTION	RESPONSIBILITY
	<p><u>Other responsibilities of the ECO may include the following, depending on the nature of the appointment:</u></p> <ul style="list-style-type: none"> <li>• Authority to stop any works until the matter is resolved if, in his/her opinion, there is or may be a serious threat to or impact on the environment; caused directly by the Contractor's actions or activities during the construction phase.</li> <li>• Submit environmental audit reports to the relevant project team and Competent Authority to keep abreast of compliance on site. Report any environmental incidents/ accidents on site and follow appropriate corrective actions.</li> <li>• Liaise with the relevant authorities and the project team, as and when required. The ECO must communicate and inform the developer and CE of any changes to environmental conditions as required by relevant authoritative bodies.</li> <li>• Ensure that the registration and updating of all relevant EMPr documentation is carried out. Review all environmental related method statements.</li> <li>• Undertake to conduct an induction and an environmental awareness training for the key staff on site.</li> <li>• Advise the Contractor on preventative measures as well as corrective action measures to eliminate the cause of the non-conformance incidents.</li> </ul>
<p><b>ENVIRONMENTAL SITE REPRESENTATIVE</b></p> <p><i>To be appointed by Principal Contractor</i></p>	<p>The Environmental Site Representative (ESR) is employed by the Contractor as his / her environmental representative to monitor, review and verify compliance with the EMPr and other Environmental Authorisations on a day-to-day basis on site.</p> <p>The site representative needs to work closely with the ECO to manage the environmental impacts on site. They will also be responsible for maintaining all records in relation to the EMPr requirements on site.</p> <p><i>NOTE: It is possible that the Health and Safety representative on site can also fulfil this role</i></p>
<p><b>ENVIRONMENTAL OFFICER</b></p> <p><i>Developer's Environmental Representative</i></p>	<p>The Environmental Officer (EO) is employed by the Developer, i.e. SANRAL, to fulfil the following responsibilities, <i>inter alia</i>:</p> <ul style="list-style-type: none"> <li>• Aiding the Contractor to comply with all the project environmental requirements, objectives and targets;</li> <li>• Facilitating environmental activities and environmental awareness training of all personnel on site, and</li> <li>• Implementing the internal or Developer's Environmental Management Systems (EMS).</li> </ul> <p>This individual also works closely with the ESR and ECO.</p>

FUNCTION	RESPONSIBILITY
<p><b>Competent Authority</b></p> <p><i>Department of Mineral Resources and Energy</i></p>	<p>The Competent Authority (CA) will be responsible for approving the EMPr and issuing of the Environmental Authorisation (if applicable). Once the project has been approved, the competent authorities will be accountable for ensuring that the Developer complies with the conditions of the Environmental Authorisation and requirements stipulated in this EMPr and other environmental legislations. This will be achieved by reviewing audit reports submitted by the Environmental Control Officer. and conducting regular site visits should the need for this arise.</p> <p><i>Other authorities may also be involved in the reviewing and approval process of this EMPr.</i></p>
<p><b>ENVIRONMENTAL ASSESSMENT PRACTITIONER</b></p> <p><i>GA Environment (Appointed by KBK Engineers)</i></p>	<p>The definition of an Environmental Assessment Practitioner (EAP) in Section 1 of NEMA is <i>“the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments introduced through regulations”</i>.</p> <p>The Environmental Assessment Practitioner is generally responsible for undertaking environmental processes necessary to authorise the project activities proposed. The Developer can also appoint the Environmental Assessment Practitioner to act an Environmental Control Officer during the implementation or construction phase of the project.</p>

## 6. OPERATIONAL CONTROLS

The operations that are associated with the identified environmental aspects must be consistent with the objectives and conditions of the EMPr. The typical operational controls that must be put in place for a construction site are as follows:

### 6.1 Environmental-related method statements

Environmental-related method statements are written submissions to the Engineer by the Contractor, in collaboration with environmental personnel involved in the project. The method statements set out the plant, materials, labour and method that the Contractor proposes using to carry out an activity (identified by the Engineer) to address specific requirements and ultimately this EMPr.

All method statements, including those which may be required as *ad-hoc* or emergency construction method statements, must be submitted for approval prior to the commencement of any activity. Any changes to the method of works must be reflected by amendments to the original approved method statement and re-approved on the understanding that such changes are environmentally acceptable and in line with the requirements of this EMPr.



The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr. The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager prior to the commencement date of the activity:

- Site establishment (Camps, Lay-down or storage areas, satellite camps, infrastructure).
- Batch plants.
- Workshop or plant servicing.
- Handling, transport and storage of Hazardous Chemical Substance's.
- Vegetation management (Protected species , clearing, aliens, felling).
- Access management (Roads, gates, crossings etc).
- Fire plan.
- Waste management (transport, storage, segregation, classification, disposal).
- Social interaction (complaints management, compensation claims, access to properties ).
- Water use (source, abstraction and disposal).
- Emergency preparedness (Spills, training, other environmental emergencies).
- Dust and noise management methodologies.
- Blasting,
- Fauna interaction and risk management.
- Heritage and palaeontology management.
- Site refuelling of construction vehicles and plant on site.

- Stormwater Management.

## **6.2 Emergency preparedness**

In the event of emergency, the following elements must present and easily accessible on site for the management of such emergency:

### *6.2.1 Emergency contact details*

The Contractor must ensure that the numbers of the following persons are displayed at a prominent place on site at all times:

- The local Police Stations;
- The nearest Ambulance/hospital;
- Resident Engineer, project Manager and Representative of the Contractor; and
- Representative of the Developer.

These details, which must be updated should the need arise.

### *6.2.2 Spill kits and first aid*

The Contractor must ensure that spill kits, first-aid and associated equipment are present onsite and easily accessible for the potential occurrence of hazardous and/or material spills. The staff should be trained in the use thereof.

## **6.3 Environmental training and awareness**

Prior to commencement of site establishment and construction activities, all the teams involved in work on the project are to be briefed on their obligations towards environmental controls and methodologies in terms of this EMPr. The importance of the environmental awareness training is to also ensure all workers understand the risks involved as well as how to adequately implement mitigation measures. The education/awareness programme should be aimed at all levels of management and construction workers within the Contractor's team. All new employees arriving on site shall undergo environmental awareness programme.

It is recommended that the environmental awareness training be undertaken by the ESR and the programme must include:

- Induction of all personnel in a language and method most suitable; and
- Signing of an attendance register and declaration of ensuring environmental protection. Proof of the induction must be kept.

Indicative topics that may be included/ covered in the environmental induction:

- What is the environment and why must it be protected?
- What are the environmental sensitivities of the area in which activities are being undertaken?
- How construction activities can adversely impact of the environment;
- What are the mitigation measures for adverse impacts?
- What is the social responsibility of all site employees during construction?
- How should environmental incidents be recorded?

*Awareness posters and pamphlets must also be provided to create environmental awareness throughout the site.*

Refresher environmental awareness training must be conducted and when the need arises.

#### *6.3.1 Toolbox talks*

The Environmental Site Representative must also ensure daily toolbox talks include alerting the workforce to particular environmental concerns associated with the tasks for that day or the area / habitat in which they are working, etc.

It is also recommended that the toolbox talks are conducted in an interactive way as to ensure the employees understand the content and purpose of the EMPr requirements. The Contractor shall keep records of the environmental subjects discussed in the toolbox talk sessions. Signed registers documenting all employees' attendance must also be kept on record.

#### **6.4 Site documentation**

The following is a list of some examples of documentation that should be kept on site and made available to the ECO and/or any other relevant parties on request:

- This EMPr;
- The Project's Environmental Authorisation obtained from DMRE;
- Species removal permits;
- Site daily diary;
- Site instruction book;
- A Complaints register;
- Incident register;
- Copies of environmental audit reports;
- Proof of environmental training undertaken by the Contractor and the ECO;

- Schedules for environmental audits;
- Minutes of project meetings;
- Agreements;
- Waste management records;
- Non-compliance and corrective action reports; and
- Method statements signed and approved by the Contractor, the ECO and Engineer.

### 6.5 Communication procedures

- Site instructions: The site instruction journal entries will be used for the recording of instructions as they relate to implementation of the EMPr, and/or any work orders given by the Engineer.
- Site Meetings: A clear channel of communication and coordination between the Developer and the Contractor is very crucial in any construction project. One way of ensuring this is through regular site meetings. The purpose of the meetings will be to discuss general progress of construction. Some of the environmental aspects to be discussed in the meeting shall include:
  - *Efforts to lower the environmental, social and health risks involved;*
  - *Discuss and resolve non-conformance to environmental legislation / policies or the EMPr; and*
  - *Report on environmental performance of the construction works.*

### 6.6 Other general guidelines

The following measures provide guideline solutions to frequently anticipated issues on most development activities.

- The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase, illegal activities, delays caused by archaeological finds etc. are ultimately the responsibility of the applicant / developer as per Section 28 of NEMA, 1998 (as amended) which discusses 'Duty of Care and remediation of environmental change'.
- The study area must be clearly defined and surveyed according to the proposed activities. All workforce members and other construction personnel are not to go beyond the defined footprint.
- The Contractors must adhere to agreed and approved access points and no-go areas.

- Damage to private or public property such as fences, gates and other infrastructure may occur at any time. All damages are to be repaired as soon as practically possible.
- Landowners of the site and adjacent properties must be informed of the starting and completion dates of the construction activities.
- The Contractor must adhere to all conditions of contract including this EMPr.
- All private and public manmade structures near the project site must be protected against damage at all times and any damage must be rectified by no later than 7 days after occurrence.
- Proper documentation and record keeping of all complaints and actions taken must be kept at the site office.
- Regular site inspections and good control over the site activities should be undertaken.
- A positive attitude towards environmental management by all site personnel must be motivated through regular and effective awareness and training sessions.
- Social issues in terms of safety for human life, on employees should be encouraged. All construction areas and activities should be cordoned off.

## **7 PROJECT PHASES AND ASSOCIATED ACTIVITIES**

### **7.1 Pre-construction phase**

The 'pre-construction phase' refers to the period leading up to and prior to the commencement of the construction activities and is included to ensure pro-active environmental management measures with the goal of identifying avoidable environmental damage at the onset and sustain optimal environmental performance throughout the construction phase. Most impacts will occur during the construction phase and must be mitigated through the contingency plans identified in the pre-construction phase.

### **7.2 Construction phase**

The 'construction' section refers to all construction activities associated with the construction of the Quarry. This phase will include the clearance of vegetation for the proposed development and support infrastructure.

### **7.3 Operational Phase**

The operational phase pertains to the excavation/mining of gravel and aggregates.

#### 7.4 Rehabilitation and demobilisation phase

A proper rehabilitation procedure must be followed, immediately after construction activities and prior to demobilisation. The objective of rehabilitating the site would be to re-instate the affected areas to a similar or better condition to the current environment. This phase will include the rehabilitation of areas disturbed by construction works and removal and disposal of all construction equipment and rubble.

### 8 ENVIRONMENTAL CONTROLS AND MANAGEMENT PROGRAMME IMPLEMENTATION

The point of departure for this EMPr is to ensure a pro-active rather than re-active approach to environmental performance by addressing potential problems before they occur. This will limit corrective measures needed during the construction activities.

This section describes the potential environmental impacts which may result from the identified aspects, the objectives of mitigating these impacts as well as the targets used to measure the level of environmental compliance.

The tables below present the objectives to be achieved and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria / targets and timeframes are specified.

The tables for the construction activities consists of seven parts which are included as key requirements of EMPr as defined in the NEMA EIA Regulations 2014. These sections are described below as follows:

- **Phase of development** – This section will identify either pre-construction (planning) or actual construction activities during the Operation phase.
- **Impact / issue** - This section will identify the issue being addressed, e.g. Materials, site demarcation, heritage, etc.
- **Mitigation measure** - This column will include all the necessary mitigation measures for each impact / issue'.
- **Management objectives** - This column will indicate what the management objectives to be achieved for each mitigation measure.

- **Measurable targets** - This column will indicate what evidence is to be used as an indication to whether or not the 'Management objectives' have been implemented and hence achieved.
- **Frequency of action** - Provides time guidelines for the 'Responsible party' by which he / she is to action or manage the required mitigation.
- **Responsible party** – Provides the details of the responsible team member which should account on the activities highlighted in column 1 to 4.

This EMPr must be read in conjunction with the following rehabilitation plans and procedures compiled for the proposed Quarry 5. These plans have been attached as appendices to the Environmental Impact Report.

Appendix G: Alien and Invasive Species Management Plan.

Appendix G: Erosion and Soil Management Plan

## 8.1 General planning and administrative considerations (A)

PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<b>A1 ENVIRONMENTAL AUTHORISATIONS AND DOCUMENTATION</b>					
<p><b>a. Construction commencing without all required environmental permits and authorisations</b></p>	<ul style="list-style-type: none"> <li>i. Environmental file;</li> <li>ii. A copy of the Environmental Authorisation and this EMPr and other management plans as well as other developer environmental obligations shall be kept on site during the construction phase.</li> <li>i. Copies of all other project permits must be acquired and kept on site.</li> <li>ii. A site walkdown shall be undertaken prior to the construction phase of the project. The Floral SCC and projected tree species shall be clearly marked and recorded.</li> <li>iii. Floral SCC should be removed/ rescued from the project footprint and relocated to suitable, similar habitat in the vicinity of the project area under the supervision of a suitably qualified botanist, with prior approval from GDARD to do so</li> <li>iv. According to specialist communication with GDARD dated February 2020, only threatened (Red Listed) and Orange listed species indicated for the Gauteng Province (GDARD, 2017) require removal/ rescue. For Quarry 5, this includes only <i>Boophone disticha</i>, which is a bulbous species and therefore has an increased probability of being successfully relocated. According to GDARD the relocation of floral species listed as protected in terms of the TNCO (No. 12 of 1983) but not of national or provincial conservation concern in Gauteng, is not required.</li> </ul>	<ul style="list-style-type: none"> <li>• Contingencies for minimising negative impacts anticipated to occur during the planning stages of the project.</li> <li>• Obtain all required environmental authorisations/ permits prior to construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>• No fines due to unauthorised activities or absence of authorisations.</li> <li>• Compliance with Authorisations and Permits conditions</li> </ul>	Once-off	<ul style="list-style-type: none"> <li>• Developer</li> <li>• Contractor</li> <li>• ESR</li> <li>• ECO</li> <li>• DEO</li> </ul>



PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<p>i. One protected tree species in terms of the National Forest Act (Act No. 84 of 1998), namely <i>Sclerocarya birrea subsp. caffra</i> was recorded approximately 50m outside of the project area boundaries, where it is recommended to remain conserved <i>in situ</i>. Although <i>S. birrea subsp. caffra</i> was not recorded within the project area boundaries, a possibility exists that this species may be present. Should <i>S. birrea subsp. caffra</i> be encountered within the project development footprint area during any of the proposed project's development phases, a permit for the removal or destruction of these species has to be obtained from the Department of, Forestry and Fisheries and Environment (DFFE; previously Department of Agriculture, Forestry and Fisheries (DAFF)).</p> <p>ii. All adjacent residents shall be informed of the Quarry 30 days prior to site establishment.</p> <p>iii. Air quality to be monitored (baseline) for dust fallout and particulate matter. Sampling locations to consider major sources of dust and sensitive receptors.</p> <p>iv. Prior to the commencement of construction activities, baseline noise monitoring shall be undertaken at sensitive receptors (within 1km from the site) and at the site.</p>				
<b>A2 ENVIRONMENTAL SITE DOCUMENTATION AND RECORDS</b>					
<p>a. <b>Inadequate environmental documentation or records on site</b></p>	<p>i. The following documents must be prepared and kept on site</p> <ul style="list-style-type: none"> <li>• Copy of this EMPr along with a signed declaration of understanding of the contents of the EMPr.</li> <li>• Site daily diary / instruction book / incident reports.</li> <li>• Copies of Environmental Audit Reports.</li> <li>• A Complaints register.</li> </ul>	<ul style="list-style-type: none"> <li>• Contingencies for minimising negative impacts anticipated to occur during the planning stages of the project.</li> <li>• Document and file all environmental related</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental file that is up to date, with all the relevant environmental documentation.</li> </ul>	Ongoing	<ul style="list-style-type: none"> <li>• Developer</li> <li>• Contractor</li> <li>• ESR</li> <li>• ECO</li> </ul>

PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>Proof of Environmental training undertaken by the ECO.</li> <li>Proof of Environmental training undertaken by the Contractor.</li> <li>Schedules for environmental audits.</li> <li>Non-compliance and corrective action reports compiled by the Contractor.</li> <li>Method statements signed by the Contractor and approved by the Eco and the Engineer.</li> </ul>	information about the project.			
<b>A3 ENVIRONMENTAL REPRESENTATIVE ON SITE</b>					
<b>a. Inadequate implementation and monitoring of environmental requirements on site</b>	<ol style="list-style-type: none"> <li>An independent ECO must be appointed to monitor and to provide environmental advisory services on site.</li> <li>Appoint a suitably qualified ESR to manage daily environmental issues on site.</li> </ol>	<ul style="list-style-type: none"> <li>No construction activities must commence without an ESR on site.</li> <li>Official appointment of ESR on site.</li> </ul>	<ul style="list-style-type: none"> <li>Monthly environmental audits.</li> <li>Weekly/daily environmental inspection checklists.</li> </ul>	Ongoing	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> <li>ECO</li> </ul>
<b>A4 SITE ESTABLISHMENT AND DEVELOPMENT</b>					
<b>a. Unnecessary environmental degradation and removal of</b>	<ol style="list-style-type: none"> <li>A site walkdown shall be undertaken prior to the construction phase of the project. The Floral SCC and projected tree species shall be clearly marked and recorded.</li> <li>Floral SCC should be removed/ rescued from the project footprint and relocated to suitable, similar habitat in the vicinity of the project area under the supervision of a</li> </ol>	<ul style="list-style-type: none"> <li>Ensure no unnecessary degradation of the environment adjacent to authorised project footprint.</li> </ul>	<ul style="list-style-type: none"> <li>No vegetation cleared or disturbed outside the working footprint .</li> </ul>	Once off	<ul style="list-style-type: none"> <li>CEO</li> <li>Contractor</li> <li>ESR</li> <li>ECO</li> </ul>

PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
natural vegetation	<p>suitably qualified botanist, with prior approval from GDARD to do so.</p> <p>iii. According to specialist communication with GDARD dated February 2020, only threatened (Red Listed) and Orange listed species indicated for the Gauteng Province (GDARD, 2017) require removal/ rescue. For Quarry 5, this includes only <i>Boophone disticha</i>, which is a bulbous species and therefore has an increased probability of being successfully relocated. According to GDARD the relocation of floral species listed as protected in terms of the TNCO (No. 12 of 1983) but not of national or provincial conservation concern in Gauteng, is not required.</p> <p>iv. No areas should be cleared of natural vegetation if not required for construction and operational purposes and development footprint areas should be kept as small and compact as possible.</p> <p>v. No natural areas on adjacent properties may be disturbed in any way and access roads towards the project area should follow existing roads and tracks and utilise existing access points to prevent clearing of additional areas.</p> <p>vi. Ecological connectivity within the project area and between the project area and adjacent properties should be considered and maintained where and if possible, to ensure faunal movement patterns are not completely restricted.</p> <p>vii. The establishment and maintenance of ecological corridors linking sensitive faunal habitats to the larger area must be maintained during the construction and operational phases to ensure faunal movement patterns are not completely restricted.</p> <p>viii. Construction camps, contractors' laydown areas and other temporary infrastructure are to be placed within areas that have already been modified where possible, and existing roads and tracks should be used during construction and</p>				<ul style="list-style-type: none"> <li>DEO</li> </ul>

PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<p>operations as far as possible. The existing access road should not be widened more than required for hauling vehicle access.</p> <p>ix. The contractors must provide and maintain a Site layout indicating the proposed location of all key infrastructure which are:</p> <ul style="list-style-type: none"> <li>• Ablution facilities</li> <li>• Eating areas</li> <li>• Smoking area</li> <li>• Waste storage areas</li> <li>• Working areas</li> <li>• Cement storage and concrete mixing areas (where applicable)</li> <li>• Stockpile areas for topsoil and cleared vegetation</li> <li>• Parking area</li> </ul> <p>x. Prior to the commencement of project activities, the site layout must be agreed upon by Developer, the ECO and the Engineer. The locations of key infrastructure such as toilets, eating and smoking areas, bins, stockpile areas, etc.</p> <p>xi. Baseline dust monitoring shall be undertaken prior to any construction activities undertaken on site.</p>				
<b>A5 ACCESS ROADS EXISTING SERVICES AND INFRASTRUCTURE</b>					
<p><b>a. Damage to existing infrastructure</b></p> <p><b>b. Disruption in the provision of</b></p>	<p>i. Permission from landowners must be obtained before site establishment.</p> <p>ii. The location of all services including underground services must be identified and confirmed by the Surveyor during the Design phase of the project and the services be included in the Design drawings.</p>	<ul style="list-style-type: none"> <li>• Avoiding impact on surrounding services such as access roads, sewer lines, and bulk water lines.</li> </ul>	<ul style="list-style-type: none"> <li>• No impacts of services and infrastructure within the vicinity of the site</li> </ul>	Ongoing	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Developer</li> <li>• RE</li> <li>• ESR</li> </ul>

PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>services in the vicinity of working area</p>	<ul style="list-style-type: none"> <li>iii. The Contractor must ensure that design layouts of all existing services are readily available and considered prior to the commencement of construction activities.</li> <li>iv. The Contractor shall ensure that all existing services are not damaged or disrupted by any activities Prior to construction.</li> <li>v. During the set-up phase of the project, the Contractor needs to make contact with those people that are interested or affected by the development (IAPs).</li> <li>vi. The Contractor shall be responsible for the repair and reinstatement of any existing infrastructure that is damaged or services which are interrupted.</li> <li>vii. Where applicable all existing services shall be protected by the Contractor.</li> <li>viii. The required wayleaves shall be obtained from the applicable service providers prior to the commencement of construction activities.</li> <li>ix. The CoT Water and Sanitation and Electricity department shall be informed of all construction activities prior to commencement.</li> <li>x. Prior to commencement of site establishment activities, SANRAL and the Contractor should ensure that formal written agreements are in place with the affected landowners with regards to dealing with damage to property caused as a result of construction activities (where applicable).</li> <li>xi. Any damage caused to adjacent properties or infrastructure, as a result of construction activities, should be fixed by the Contractor to the satisfaction of the landowner. All repairs or reinstatement will be to the Contractor's cost and shall receive top priority over all other activities.</li> </ul>	<ul style="list-style-type: none"> <li>• All services providers with services in the vicinity of the site must be notified prior to construction.</li> </ul>			<ul style="list-style-type: none"> <li>• ECO</li> </ul>

PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<p>xii. Any planned service interruptions should be communicated to relevant service providers and affected parties prior to the interruptions. Fourteen 14 days are recommended for the notification of possible affected parties.</p> <p>xiii. Where infrastructure is damaged, the landowner and relevant service provider must be notified within 24 hours.</p>				
<b>A6 ENVIRONMENTAL AWARENESS TRAINING AND INDUCTION</b>					
<p><b>a. Inadequate training and awareness about environmental protection</b></p>	<p>i. The ECO/EO must undertake an initial environmental induction during the site establishment for all key site staff.</p> <p>ii. Environmental induction/ training shall be repeated by the ESR and extended in the weekly Toolbox Talks. This should also include awareness programmes (i.e. emergency and use of spill kits etc).</p> <p>iii. Proof of all environmental training and awareness undertaken must be kept on site, both training material used and attendance registers.</p> <p>iv. ECO shall review and approve training and awareness material content before material is presented to the Labourers on site.</p> <p>i. It is the Contractor's responsibility to provide ongoing environmental training to ensure that all staff have sufficient understanding to pass this information onto the construction staff.</p> <p>ii. Use of environmental awareness posters on site where necessary, especially for the protection of the certain plant and animal species around the working area.</p>	<ul style="list-style-type: none"> <li>• Raise awareness about the importance of environmental protection including EMPr and authorisation condition.</li> </ul>	<ul style="list-style-type: none"> <li>• Records of environmental training and awareness programmes .</li> <li>• Reduce and manage potential Environmental impacts .</li> </ul>	Weekly	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• ECO</li> <li>• ESR</li> <li>• EO</li> </ul>

PHASE OF DEVELOPMENT: PRE-CONSTRUCTION/CONSTRUCTION					
POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	iii. The Contractor must ensure that all subcontractors are informed of the importance of the adherence to the EMPr and their labourers are also inducted.				

**8.2 Construction phase (B)**

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<b>B1 WASTE MANAGEMENT</b>					
a. <b>Pollution and environmental degradation</b>  b. <b>Decrease in the aesthetic quality of the environment</b>	i. Adequate refuse bins must be provided. ii. Bins must be emptied at least once a week or as and when the need arises. iii. Overspill of the bin should not occur, and neither should waste be allowed to lie on the ground near the bin or anywhere else on site. iv. Proof of safe disposal must be obtained from the service provider and kept in the environmental file. v. Waste must be disposed by a Registered Waste Service provider.  i. A waste disposal management plan for the removal of vegetation must be compiled. ii. The contractor must provide labourers with plastic bags or other containers to allow for the storage of litter during the clean-up of the construction site on a daily basis. These areas must then be inspected by the contractor or his / her ESR to ensure compliance with this requirement.  <u>Ablution facilities:</u>	<ul style="list-style-type: none"> <li>Minimise unwarranted environmental damage outside the footprint</li> <li>Maintain a clean and healthy working environment</li> <li>Control potential influx of vermin and flies and rats</li> <li>Minimise potential of diseases onsite and influence the health of the employees</li> </ul>	<ul style="list-style-type: none"> <li>No signs of pollution</li> <li>No complaints received from the landowners / I&amp;AP's</li> </ul>	Daily	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> <li>ECO</li> <li>EO</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	i. Adequate chemical toilets for the staff on site must be provided. ii. Under no circumstances should pit toilets be constructed on site. iii. Under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities. iv. The location of all toilets must be approved by the ECO. v. Chemical toilets must be emptied / serviced on a regular basis to prevent them overflowing. vi. Waste from chemical toilets must be disposed of in a license disposal facility. Proof of this must be obtained from the service provider and made available during the environmental audits.  <u>Eating Areas:</u> i. The Contractor must, in conjunction with the ECO, designate restricted eating areas for eating during normal working hours. ii. Under no circumstance should informal food traders be allowed on site. iii. Open fires must not be permitted anywhere on site. iv. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited.				
<b>B5 DUST AND AIR QUALITY MANAGEMENT</b>					
<b>a. Dust generation from</b>	i. The Contractor must provide and maintain a method statement for “dust control”. The method statement must provide information on the proposed source of	<ul style="list-style-type: none"> <li>Reduce dust fall out at construction site</li> </ul>	<ul style="list-style-type: none"> <li>No visible signs of dust around the site</li> </ul>	Daily	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> </ul>



PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p><b>construction activities</b></p>	<p>water to be utilised and the details of any licenses or permits required.</p> <p>ii. Air quality to be monitored (baseline and during construction) for dust fallout and particulate matter. Sampling locations to consider major sources of dust and sensitive receptors.</p> <p>iii. Dust monitoring should be implemented around aggregate crushing plants, in particular where these are located in proximity to sensitive receptors in order to monitor if dust levels are exceeding standards and to identify additional dust suppression measures. If it becomes evident that dust emissions from aggregate crushing and screening and extraction of borrow or quarry material are resulting in an impact to sensitive receptors within the Project Area then additional dust suppression measures (and wind breaks if feasible) will need to be considered around these crushing, screening and extraction activities.</p> <p>iv. Consideration should be given to scheduling aggregate crushing and hauling activities outside of dry and windy conditions where sensitive receptors may be affected, if feasible.</p> <p>v. The Contractor shall document any air quality / dust complaints raised by communities and record them on a grievance register sheet. Any dust related grievances raised shall be investigated.</p> <p>vi. Dust suppression must be considered as part of the design and location of borrow pits, quarries and aggregate crushing plants, and other measures will be implemented to restrict dust-related impacts</p> <p>vii. If the use of watering techniques on exposed open earthworks is not feasible and if it becomes evident that dust emissions from these exposed areas are resulting in an impact to local residents then the use of surface binding agents shall be considered.</p> <p>viii. Diesel generators shall be subject to routine maintenance to keep the engines in optimum working order.</p>	<ul style="list-style-type: none"> <li>Minimise loss of valuable soil material</li> </ul>	<ul style="list-style-type: none"> <li>No complaints from I&amp;APs regarding dust</li> <li>No incidences reported to ECO</li> <li>No visible evidence of dust contamination on the surrounding environment</li> <li>Method statements adhered to</li> </ul>		<ul style="list-style-type: none"> <li>ECO</li> <li>EO</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	ix. The construction site must be watered during dry and windy conditions to control dust fallout. Preferably grey water or other dust suppressant substances must be used. x. Dust production must be controlled by regular watering of access roads and roads and working areas, should the need arise. xi. Construction vehicles must adhere to low speeds to avoid the generation of dust on the construction site. xii. All vehicles transporting material that can be blown off (e.g. soil, rubble, etc.) must be covered with a tarpaulin, and adhere to speed limits on public roads. xiii. Restrict the project footprint to only what is required. xiv. Stockpiles shall be protected from wind erosion. xv. Excessive dust conditions must be reported to the ECO. xvi. A continuous dust monitoring process needs to be undertaken during operation. xvii. An Environmental monitoring committee shall be established. Such committee shall include the adjacent landowners. The dust monitoring results shall be discussed in this committee. xviii. Speed restriction of no more than 30km/h must be implemented for all construction vehicles within the construction site. xix. All construction vehicles must be maintained to avoid adverse impacts on air quality as a result of a lack of maintenance.				
<b>B6 NOISE MANAGEMENT</b>					
<b>a. Nuisance factor to surrounding</b>	i. All construction vehicles must be in a good working order to reduce possible noise pollution.	<ul style="list-style-type: none"> <li>Effectively manage noisy activities</li> </ul>	<ul style="list-style-type: none"> <li>No complaints from site staff and</li> </ul>	Daily	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
landowners, communities and fauna	i. Prior to the commencement of construction activities, baseline monitoring shall be undertaken at sensitive receptors (within 1km from the site) and at the site. Base line and daily noise monitoring shall be undertaken at sensitive receptors when construction activities occur within 1 km of the receptor, and at mining and crushing area. ii. Noise levels shall be monitored to comply with SANS 10103:2008 and Occupational Health and Safety Act requirements. iii. Undertake excavations and crushing only after 07:00 in the morning and before 18:00 in the evening in consultation with adjacent landowners. Sensitive receptors shall be notified of the timing and duration of the construction related activities and the potential noise nuisance it may cause. iv. The Contractor shall compile a method statement that describe all measures that will be implemented to control and minimise noise and impacts on biodiversity, people and livestock. v. The Contractor will be required to develop a grievance protocol to manage and address any noise complaints received. Respond to all noise related grievances received and implement mitigation measures. vi. The informal use of truck honking systems will be prohibited (especially when in or passing residential areas or schools) and will only be used to prevent vehicle / pedestrian collision. vii. The excessive idling of stationary trucks will be prevented. viii. A conservative vehicle maintenance schedule will be developed that seeks to reduce any increase in noise / vibration outputs due to 'wear and tear'	emanating from construction activities.	landowners about noise from site.		<ul style="list-style-type: none"> <li>• ECO</li> <li>• EO</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<p>ix. Contractors must endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc.</p> <p>x. The Contractor must inform all I&amp;APs in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the neighbouring residents.</p> <p>xi. The following measures regarding blasting shall be adhered to:</p> <ul style="list-style-type: none"> <li>• The contractor shall implement a blast management plan as per the blast design prior to the implementation of blasting on site.</li> <li>• The blast design shall take into consideration the adjacent poultry farming, landowners, and structures.</li> <li>• A monitoring programme for the recording of blasting operations shall be implemented. The elements of the programme shall include the following: <ul style="list-style-type: none"> <li>i. Weather conditions at time of the blast.</li> <li>ii. Video recording of the blast.</li> <li>iii. Fly rock observations.</li> <li>iv. Ground vibration and air blast results.</li> </ul> </li> <li>• Noisy activities (e.g., blasting) are not to be scheduled around critical times (e.g., school exams, religious services/ celebrations). Local leaders, school principals, healthcare workers and religious leaders are to be consulted regarding times that may be negatively affected by noise.</li> <li>• The Contractor shall compile a method statement that describe all measures that will be implemented to control and</li> </ul>				

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<p>minimise noise and impacts on biodiversity, people, and livestock.</p> <ul style="list-style-type: none"> <li>• Implementation of a noise complain procedure.</li> <li>• The Contractor shall employ industry standard methods to control the impact of blasting and limit the risk of damage to buildings and structures by reducing blast vibrations induced in the rock mass, eliminating fly rock and limiting air-blast and noise to acceptable levels.</li> <li>• The size of explosive charges used for blasting (if required) should be optimised so as to balance breaking capacity against minimising any vibration impact and fly-rock.</li> <li>• Survey potentially affected structures prior to and after blasting. Pre-mining photographic crack survey shall be undertaken.</li> <li>• Adjacent landowners and businesses must be notified well in advance about blasting activities and appropriate precautionary measures must be taken.</li> <li>• All blast related complaints shall be recorded and closed out by the Contrcator.</li> <li>• An emergency response plan shall be developed taking into consideration sensitive receptors such as the adjacent poultry farms.</li> <li>• The appointed Contractor shall be responsible to reimbursed residents for</li> </ul>				

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	damages resulting from blasting activities through the grievance procedure				
<b>B7 CEMENT STORAGE AND CONCRETE HANDLING</b>					
<b>a. Contamination of the soil and runoff from concrete mixing</b>	<ul style="list-style-type: none"> <li>i. Mixing of concrete must only be permitted on site in designated and disturbed areas approved by the ECO.</li> <li>ii. Under no circumstances should concrete be mixed directly on the ground but on an adequate liner.</li> <li>iii. Cement bags must be stored in a designated and secure area on site. Empty cement bags must be placed in litter bins.</li> <li>iv. All concrete spillages must be cleaned immediately.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain noise levels below “disturbing” as defined in the National Noise Regulations.</li> <li>• Minimise the nuisance factor of the development</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints from surrounding landowners or I&amp;AP’s</li> </ul>	Daily	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• ESR</li> <li>• ECO</li> <li>• EO</li> </ul>
<b>B8 STOCKPILE AND SOIL MANAGEMENT</b>					
<ul style="list-style-type: none"> <li><b>a. Sedimentation and erosion</b></li> <li><b>b. Soil loss</b></li> <li><b>c. Stormwater Management</b></li> </ul>	<ul style="list-style-type: none"> <li>i. All the mitigation measures with regards to erosion control of the site stipulated in Appendix G Erosion and soil management of the BAR must be implemented as required.</li> <li>ii. Stockpiles of any material only be placed within demarcated areas which will not create nuisances to adjacent landowners by blocking access roads, servitudes etc.</li> <li>i. Stormwater runoff from any stockpile sites and other related areas must be contained as far as possible.</li> <li>ii. Stormwater must be discharged via many smaller outlets rather than few larger ones to spread out flows.</li> <li>iii. Infiltration of all stormwater runoff generated by the proposed development should be maximised as far as practically possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimise scaring of the soil surface and land features</li> <li>• Minimise disturbance and loss of soil</li> <li>• Minimise contamination of stormwater run-off</li> </ul>	<ul style="list-style-type: none"> <li>• No visible erosion scars once construction is completed</li> </ul>	Daily	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• ESR</li> <li>• ECO</li> <li>• EO</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>iv. The central collection and concentration of stormwater must be minimised as far as practically possible.</li> <li>v. Stockpiles are to be stabilised if signs of erosion are visible.</li> <li>vi. Topsoil stockpile must be separated to allow for reuse of the soil for rehabilitation. Topsoil stockpiles should not be higher than 2.5 meters to avoid compaction.</li> <li>vii. Topsoil stockpiles must be clearly demarcated as no-go areas. Although it is noted that there is minimal topsoil on site, this must be conserved for rehabilitation purposes.</li> <li>viii. Topsoil stockpiles must be monitored for invasive vegetation growth. Contractors must remediate as and when required in consultation with the ECO.</li> <li>ix. To reduce the loss of soil by erosion, the contractor must ensure that disturbance on site is kept to a minimum and in areas agreed upon with the ECO.</li> <li>x. The contractor is responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed.                             <ul style="list-style-type: none"> <li>i. Control visual intrusion by screening of the site where possible, e.g., screen fencing and earth bunds shall be used where topographically feasible.</li> </ul> </li> </ul> <p><b><u>Stormwater Management:</u></b></p> <ul style="list-style-type: none"> <li>i. Stormwater must be managed such that the stormwater from the site does not erode the surrounding area.</li> <li>ii. Stormwater runoff from any stockpile sites and other related areas must be contained as far as possible. Erosion/sediment control measures must be placed</li> </ul>				

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	around the stockpiles to limit sediment runoff from stockpiles. iii. Stormwater must be discharged via many smaller outlets rather than few larger ones to spread out flows. iv. The use of point source discharge outlets must be avoided or minimised in favour of infiltration systems. v. The central collection and concentration of stormwater must be minimised as far as practically possible.				
B9 HANDLING OF HAZARDOUS GOODS AND SUBSTANCES					
a. <b>Potential spillage of hazardous substance into the environment</b>	i. Should there be storage of hydrocarbons on site, the Contractor must provide method statements for the “handling & storage of oils and chemicals” (where these will be kept on site) and “accidental spills management” ii. All chemicals kept on site must be clearly labelled and stored with MSDS to prevent leakage or incidental spills. iii. Leaking equipment must be repaired immediately or be removed from site to facilitate repair. iv. Drip trays must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended. The drip trays must be large enough to catch any hydrocarbons that may leak from the vehicle while standing. v. Where possible and practical all maintenance of vehicles and equipment must not be done on site. vi. Spill kits must be obtained from reputable service providers and restocked once any material within the kit has been depleted.	<ul style="list-style-type: none"> <li>Prevention of pollution of the environment</li> <li>Ensure hazardous substances are transported, used and disposed in a responsible manner</li> </ul>	<ul style="list-style-type: none"> <li>No pollution of the environment</li> <li>No litigation due to transgression of pollution control acts</li> <li>Method statements as set out by the contractor adhered to.</li> </ul>	Daily	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> <li>ECO</li> </ul>



PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<p>vii. Contaminated material or spilled hazardous substances must be removed by service provider or by the Contractor to a licenced facility. Proof of all removal (i.e. waste manifest) must be kept by the Contractor.</p> <p>viii. Labourer must be trained on how to use the spill kits</p> <p>ix. A record must be kept of all spills and the corrective action taken.</p> <p>x. Records of monitoring and measurement of hazardous substances must be kept.</p>				
B10 FIRE MANAGEMENT					
<b>a. Accidental fires</b>	<p>i. The Contractor must provide smoking areas for construction workers.</p> <p>ii. Fire extinguishers and an outdoor ashtray or similar suitable container must be provided in all smoking areas.</p> <p>iii. Under no circumstances should fires be lit on site.</p> <p>iv. Serviced fire extinguishers must be kept at the smoking area. At least one serviced fire extinguisher should be available on site at all times.</p> <p>v. All site personnel in senior positions and who will be on site on a full-time basis must be trained on the usage of fire extinguishers.</p> <p>vi. The Contractor to ensure that no person smokes in any place in which a flammable liquid is used or stored.</p> <p>vii. The contractor must further affix a suitable and conspicuous no smoking sign notice at all entrances to areas prone to fire.</p> <p>viii. No flammable material, including cotton waste, paper, cleaning rags or similar material should be stored with flammable liquids.</p>	<ul style="list-style-type: none"> <li>Minimise risk of veld fires and loss of natural habitat</li> <li>Maintain safety on site and the community in general.</li> </ul>	<ul style="list-style-type: none"> <li>No veld fires started by the contractor's workforce</li> <li>No claims from landowners for damages due to veld fires</li> <li>Method statement adhered to</li> </ul>	Daily	<ul style="list-style-type: none"> <li>ECO</li> <li>ESR</li> <li>Contractor</li> <li>EO</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	ix. Fire breaks should be clearly demarcated to prevent proliferation of fire during possible incident.				
<b>B11 FAUNA, WILDLIFE AND LIVESTOCK MANAGEMENT</b>					
<p><b>a. Loss of faunal habitat</b></p> <p><b>b. Loss of faunal species</b></p> <p><b>c. Disturbance to faunal community</b></p>	<p>Faunal Specialist Mitigation Measures:</p> <ul style="list-style-type: none"> <li>i. Site clearance of the approved footprint must utilise a phased approach to allow faunal species to disperse from the area. With regards to Quarry 5, site clearance should proceed from the centre of the site moving outwards, to allow fauna to move into adjacent habitats that will not be affected by the proposed project.</li> <li>ii. All vehicles (construction or light motor vehicles) accessing the project must adhere to a 30km/hr speed limit and vigilant driving techniques.</li> <li>iii. No wild animals may under any circumstance be handled or removed by construction workers.</li> <li>iv. Hunting/ killing/ collection of fauna is prohibited.</li> <li>v. Any snares or traps found on or adjacent to the project area must be removed and disposed of.</li> <li>vi. Should any faunal SCC be noted within the project area, quarrying activities must stop, and the relevant authorities must be notified. Input into the possible relocation of such species must be provided by a suitably qualified ecologist.</li> <li>vii. Biodiversity education and awareness programmes must be implemented. This programme should form part of the staff induction in which topics such as vigilant driving techniques and the necessary procedures for working in close proximity to sensitive habitats.</li> </ul> <p>General Mitigation Measures:</p> <ul style="list-style-type: none"> <li>i. Make use of existing access roads as much as possible to reduce the vegetation clearance.</li> <li>ii. Off-road driving must be prohibited.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimise disturbance to animals and their habitats</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints from any I&amp;AP</li> <li>• No evidence of killing or poaching of animals on site</li> </ul>	Daily	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• ESR</li> <li>• ECO</li> <li>• EO</li> <li>• Faunal Specialist (where applicable)</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	iii. No intentional killing or poaching of any animals may be allowed on site and it must be a condition of employment that any employee caught poaching must be disciplined accordingly. iv. Where a snake is encountered on site and must be removed, a specialist must be called in to safely relocate the snake. v. All construction activities must be limited to daylight hours.  <b>Mitigation for livestock/animals</b> <ul style="list-style-type: none"> <li>Landowners and/or land occupiers will be informed of the planned dates of the construction/operational activities.</li> <li>Site activities will be restricted to daylight hours (6:00 am to 18:00 pm) and as per the agreement with the landowner/s and/or land occupiers, unless otherwise agreed upon.</li> <li>The mining area shall be clearly fenced off to prevent animals from accessing the site.</li> </ul>				
<b>B12 FLORA MANAGEMENT</b>					
a. <b>Loss of Floral Habitat and Species Diversity</b>  b. <b>Loss of floral SCC</b>  c. <b>Introduction of alien invasive plants</b>	<b>Flora Specialist mitigation measures:</b> <ol style="list-style-type: none"> <li>All the mitigation measures with regards to Alien Invasive management of the site stipulated in Appendix G: Alien and Invasive Species Management of the BAR must be implemented as required.</li> <li>No areas should be cleared of natural vegetation if not required for construction and operational purposes, and development footprint areas should be kept as small and compact as possible. The loss of indigenous vegetation should be limited where possible.</li> </ol>	<ul style="list-style-type: none"> <li>Minimal disturbance to vegetation where such vegetation does not interfere with construction</li> <li>Minimise scarring of the soil surface and land features</li> <li>Removal of alien plant species to encourage indigenous plant growth</li> </ul>	<ul style="list-style-type: none"> <li>No litigation due to removal of vegetation without necessary permission</li> <li>No visible erosion scars once construction is completed</li> <li>The footprint has not exceeded the agreed boundaries</li> </ul>	Daily	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> <li>ECO</li> <li>EO</li> <li>Ecological Specialist (where applicable)</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p><b>d. Erosion and soil compaction</b></p>	<ul style="list-style-type: none"> <li>iii. No natural areas on adjacent properties may be disturbed in any way and access roads towards the project area should follow existing roads and tracks and utilise existing access points to prevent clearing of additional areas.</li> <li>iv. Ecological connectivity within the project area and between the project area and adjacent properties should be considered and maintained where and if possible, to ensure faunal movement patterns are not completely restricted.</li> <li>v. Where areas of increased ecological sensitivity can be avoided, these areas should be indicated on site and be off limits to construction vehicles and workers.</li> <li>vi. Vehicle access beyond the designated project footprint areas should be prohibited.</li> <li>vii. Construction camps, contractors' laydown areas and other temporary infrastructure are to be placed within areas that have already been modified where possible.</li> <li>viii. No littering or dumping of waste and construction material within natural areas beyond the project footprint areas may be allowed.</li> <li>ix. Edge effects from construction and operational activities, such as erosion and alien floral species proliferation and the spread of these within disturbed areas, should be managed throughout all the development phases through the implementation of erosion control measures where required and the implementation of an alien and invasive species control plan.</li> <li>x. Any fires made by construction workers, if unavoidable, should be restricted to designated</li> </ul>				

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<p>areas, where accidental spread thereof can be avoided.</p> <ul style="list-style-type: none"> <li>xi. The establishment of a temporary site nursery for the purposes of cultivating tree and shrub species for use in revegetation should be considered, if time frames allow for this.</li> <li>xii. All construction and operational personnel must be educated in environmental awareness and be trained to identify floral SCC known to occur in the project area, as well as floral SCC with a high probability of occurring in the project area</li> <li>xiii. Floral SCC should be removed/ rescued from the project footprint and relocated to suitable, similar habitat in the vicinity of the project area under the supervision of a suitably qualified botanist, with prior approval from GDARD to do so.</li> <li>xiv. Should <i>S. birrea subsp. caffra</i> be encountered within the project development footprint area during any of the proposed project's development phases, a permit for the removal or destruction of these species has to be obtained from the Department of Forestry Fisheries and Environment (DFFE; previously Department of Agriculture, Forestry and Fisheries (DAFF)).</li> <li>xv. No harvesting of firewood or collection of floral species from natural areas surrounding the project footprint should be allowed by construction workers.</li> </ul> <p>Additional mitigation measures include:</p> <ul style="list-style-type: none"> <li>i. Construction workers must not remove flora or collect seed from any plants outside the areas on which vegetation clearing has not been planned.</li> </ul>				

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>ii. Under no circumstances should chemicals be used in the removal of plant species.</li> <li>iii. Only indigenous plants must be used in the rehabilitation of disturbed areas.</li> <li>iv. All construction vehicles and equipment as well as construction material should be free of plant material.</li> <li>v. Prevention of erosion, and where necessary rehabilitation of eroded areas.</li> <li>vi. Rehabilitation of disturbed vegetation as soon as undertaken as soon as construction has ended in the area that has been disturbed.</li> <li>vii. No collection of plant material should be allowed by operational personnel.</li> </ul>				
<b>B13 MANAGEMENT OF HERITAGE RESOURCES AND ARTEFACTS</b>					
<p><b>a. Damage or loss of valuable heritage resources</b></p>	<ul style="list-style-type: none"> <li>i. Known sites should be clearly marked in order that they can be avoided during construction activities.</li> <li>ii. The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.</li> <li>iii. Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible.</li> <li>iv. All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid damage to heritage resources</li> <li>• Report all finds of human remains or other heritage resources</li> <li>• Implement chance find procedures in case where possible heritage finds area made</li> </ul>	<ul style="list-style-type: none"> <li>• Limited or no damage to heritage resources</li> </ul>	Daily	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• ESR</li> <li>• ECO</li> <li>• EO</li> <li>• Heritage Specialist (If required)</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	v. Under no circumstances shall any artefacts be removed, destroyed, or interfered with by anyone on the site.  vi. Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological, or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).				
<b>B14 PALAEOLOGICAL RESOURCES</b>					
<b>b. Palaeontological Impacts</b>	i. Special care must be taken during the digging, drilling, blasting, and excavating of foundations, trenches, channels and footings and removal of overburden as a site visit may have missed a fossiliferous outcrop.  ii. The development may go ahead, but the Contractor and ECO must survey for fossils before and or after clearing, blasting, drilling, or excavating.  iii. If any palaeontological material is exposed during digging, excavating, drilling, or blasting SAHRA must be notified. All construction activities must be stopped, and a palaeontologist should be called in to determine proper mitigation measures,  iv. Should Fossils be unearthed the Contractor shall notify the Provincial Heritage Resource Agency Gauteng and specialists to further investigate;  v. The area must be fenced-off with a 30 m barrier and the construction workers must be informed that this is a no-go area.	<ul style="list-style-type: none"> <li>Avoid damage to Palaeontological resources</li> </ul>	<ul style="list-style-type: none"> <li>Limited or no damage to Palaeontological resources</li> </ul>	Daily	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> <li>ECO</li> <li>EO</li> <li>Heritage specialist (if required)</li> </ul>
<b>B15 MANAGEMENT OF NO-GO / SENSITIVE AREAS</b>					

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p><b>a. Environmental impacts outside working areas</b></p>	<p>vi. All construction activities must be demarcated at the start of construction and maintained accordingly during the construction phase.</p> <p>vii. The Contractor must communicate the importance of specific working methods in sensitive areas close to the site, e.g. identified endangered plant species, in close proximity to other infrastructure.</p> <p>viii. Mark and/ or demarcate all sensitive sites.</p>	<ul style="list-style-type: none"> <li>Minimise unnecessary impacts outside the working footprint</li> </ul>	<ul style="list-style-type: none"> <li>Containment of footprint</li> <li>No impacts on sensitive areas</li> <li>No complaints from adjacent landowners</li> </ul>	Daily	<ul style="list-style-type: none"> <li>Contractor</li> <li>ESR</li> <li>ECO</li> <li>EO</li> <li>RE</li> </ul>
<b>B16 MANAGEMENT OF SOCIO ECONOMIC IMPACTS</b>					
<p><b>a. Enhance the Positive Economic Impacts during the Construction Phase</b></p> <p><b>b. Reduce the Potential Negative Impacts on Traffic and Road Infrastructure</b></p> <p><b>c. Reduce Nuisance Impacts (Noise, Dust, Littering) Related to Construction Activities</b></p> <p><b>d. Reduce Negative Impacts on</b></p>	<p>i. A Community Liaison Officer (CLO) must be appointed on the project.</p> <p>ii. As far as possible and based on the Developers' required skills for the construction of the proposed infrastructure, locals must be employed in line with SANRAL's 14-point plan that stipulates the principles concerning project liaison, sub-contracting and labour sourcing that shall be implemented.</p> <p>iii. The Contractor must ensure that the recruitment process is conducted through the community structures established for the contract.</p> <p>iv. Access roads and entrances to the site should be carefully planned to limit any intrusion impacts, noise and dust pollution, as well as to limit any risks of accidents.</p> <p>v. Construction vehicles should adhere to the speed levels.</p> <p>vi. Construction vehicles and those transporting materials and goods should be inspected to ensure that these are in good working order and not overloaded.</p>	<ul style="list-style-type: none"> <li>To ensure that communities in the vicinity of the facility are involved in the project and are able to improve their economic conditions through the acquisition of employment</li> </ul>	<ul style="list-style-type: none"> <li>The local community benefits from the employment opportunities created during the construction phase</li> </ul>	Ongoing	<ul style="list-style-type: none"> <li>Developer</li> <li>Contractor</li> <li>ESR</li> <li>ECO</li> <li>EO</li> </ul>



PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p><b>Community Safety</b></p> <p><b>e. Reduce Potential Negative Impacts on Local Infrastructure</b></p> <p><b>f. Reduce impact on Social Cohesion and Sense of Place</b></p>	<p>vii. Source material and goods locally as far as possible to limit transportation of these over long distances.</p> <p>viii. Adjacent land owners must be informed timeously, at least 14 days of any planned service stoppages in their areas.</p> <p>ix. Construction workers should be confined to the construction area as far as possible and should be easily identified.</p> <p>x. Construction activities should keep to normal working hours e.g. sunrise to sunset.</p> <p>xi. Noise should be kept to the minimum.</p> <p>xii. The construction area should be fenced to avoid unauthorised entry by animals or children.</p> <p>xiii. Dust suppression methods should be implemented on-site.</p> <p>xiv. Security personnel to be placed on site for the duration of mining activities.</p>				
<b>B17 GROUNDWATER RESOURCES</b>					
<p><b>a. Groundwater disturbance and contamination</b></p>	<p>i. Water level readings in the core locations where standpipes were established shall be taken prior to the commencement of constructions activities.</p> <p>ii. Excavations shall not be deeper than the groundwater depth as advised by the geotechnical investigations.</p> <p>iii. Emergency machinery and equipment maintenance shall be conducted over a drip tray, or a PVC lining to prevent soil and water contamination.</p>	<ul style="list-style-type: none"> <li>To ensure that excavations are not deeper than groundwater and to prevent groundwater contamination</li> </ul>	<ul style="list-style-type: none"> <li>No incidents of groundwater contamination</li> </ul>	<p>Weekly</p>	<ul style="list-style-type: none"> <li>Contractor</li> <li>ECO</li> <li>EO</li> <li>ESR</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>iv. Effective stormwater management should be a priority during the construction and operational phase.</li> <li>v. Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean up requirements to ensure correct clean up procedure.</li> </ul>				
B18 TRAFFIC MANAGEMENT					
<p><b>b. Disruption of access routes and daily movement patterns</b></p>	<ul style="list-style-type: none"> <li>vi. There must be an erection of signage warning motorists about the presence of construction vehicles.</li> <li>vii. Construction activities must be limited to daytime hours.</li> <li>viii. Construction vehicles travelling on public roads must adhere to speed limits.</li> <li>ix. Construction vehicles must not dispose of soil or other material on roads. Where this occurs, the material must immediately be removed before the end of the working day.</li> <li>x. Movement of haulage vehicles shall be restricted to off peak traffic times.</li> <li>xi. Implementation of a traffic complaints procedure.</li> <li>xii. A traffic management plan shall be compiled and implemented by the Contractor.</li> <li>xiii. The number of haulage vehicles shall be controlled per day.</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure that public roads around the site are safe and the flow of traffic is not disrupted</li> </ul>	<ul style="list-style-type: none"> <li>• No incidents of reported vehicle/pedestrian accidents</li> <li>• Adequate signage and alternative routes for traffic to flow</li> </ul>	Daily	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• ECO</li> <li>• EO</li> <li>• ESR</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<b>B19 MANAGEMENT OF HEALTH AND SAFETY IMPACTS</b>					
<p><b>a. Impacts associated with loss of human lives and risk of injuries</b></p>	<p><i>Detailed Health and Safety issues will be addressed in reports compiled by the appointed Health and Safety Officer</i></p> <ol style="list-style-type: none"> <li>i. The Contractor must ensure compliance with the applicable Covid-19 regulations at the time of construction or any other communicable disease managed at pandemic level.</li> <li>ii. Contractor must appoint an independent Health and Safety Officer for the construction phase of the project.</li> <li>iii. Suitable Personal Protective Equipment (PPE) must be worn at all times by all employees on site during the construction and maintenance phases of the project.</li> <li>iv. With the exception of the project team members, no persons should be allowed to enter the construction site area.</li> <li>v. The site and crew are to be managed in strict accordance with the OHS Act.</li> <li>vi. The contractor must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures must include (but not be limited to) fire, spills, contamination of soil, accidents to employees and limiting casual access to the construction site for workers, use of hazardous substances and materials, etc.</li> <li>vii. The Contractor must ensure that lists of all emergency telephone numbers / contact persons are kept up to date and that all numbers and names are posted at relevant locations throughout the construction site.</li> </ol>	<ul style="list-style-type: none"> <li>• To ensure safety of employees, site visitors as well as surrounding landowners</li> <li>• Minimise the potential for impacts associated with loss of human lives and risk of injuries</li> <li>• Reduce the likelihood of the occurrence of traffic accidents as result of the presence of construction vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints from surrounding landowners and communities</li> </ul>	<p>Daily</p>	<ul style="list-style-type: none"> <li>• Contractor</li> <li>• Health and Safety personnel</li> <li>• ESR</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	viii. The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. The contact details of this emergency centre, including police and ambulance services must be available at prominent locations around the construction site.  ix. A Health and Safety Officer as well as an independent firm must be appointed to audit the site's compliance with the OHS Act during construction.				
B20 IMPACTS ON NEIGHBOURING PROPERTY, EXISTING INFRASTRUCTURE AND SERVICES					
<b>b. Damage to infrastructure or neighbouring properties</b>	i. Permission from landowners must be obtained before site establishment. ii. The location of all services including underground services must be identified and confirmed by the Surveyor during the Design phase of the project and the services be included in the Design drawings. iii. The Contractor must ensure that design layouts of all existing services are readily available and considered prior to the commencement of construction activities. iv. The Contractor shall ensure that all existing services are not damaged or disrupted by any activities Prior to construction. v. During the set-up phase of the project, the Contractor needs to make contact with those people that are interested or affected by the development (IAPs).	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>		<ul style="list-style-type: none"> <li>•</li> </ul>

PHASE OF DEVELOPMENT: OPERATION					
IMPACTS	MITIGATION MEASURES	MANAGEMENT OBJECTIVES	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>vi. The Contractor shall be responsible for the repair and reinstatement of any existing infrastructure that is damaged or services which are interrupted.</li> <li>vii. Where applicable all existing services shall be protected by the Contractor.</li> <li>viii. The required wayleaves shall be obtained from the applicable service providers prior to the commencement of construction activities.</li> <li>ix. The CoT Water and Sanitation and Electricity department shall be informed of all construction activities prior to commencement.</li> <li>x. Prior to commencement of site establishment activities, SANRAL and the Contractor should ensure that formal written agreements are in place with the affected landowners with regards to dealing with damage to property caused as a result of construction activities (where applicable).</li> <li>xi. Any damage caused to adjacent properties or infrastructure, as a result of construction activities, should be fixed by the Contractor to the satisfaction of the landowner. All repairs or reinstatement will be to the Contractor's cost and shall receive top priority over all other activities.</li> <li>xii. Any planned service interruptions should be communicated to relevant service providers and affected parties prior to the interruptions. Fourteen 14 days are recommended for the notification of possible affected parties.</li> </ul>				

Where applicable, the mitigation measures for the construction phase will be carried forward to other phases. In addition, the following specific measures presented in the table below will also apply.

### 8.3 Demobilising and rehabilitation phase (C)

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES	FREQUENCY OF ACTION	OBJECTIVES	RESPONSIBLE PARTY
1. Proliferation of exotic vegetation and weeds in disturbed areas	<ul style="list-style-type: none"> <li>All exotic flora and weeds to be eradicated in an environmentally friendly manner</li> </ul>	<ul style="list-style-type: none"> <li>Monthly for the first year after rehabilitation.</li> </ul>	To ensure that indigenous plants are well established	Developer & EO
2. Damage to plants established as part of rehabilitation	<ul style="list-style-type: none"> <li>All areas under rehabilitation must be cordoned off as no-go areas. If necessary, these areas should be fenced off</li> <li>The survival rate of plant species established as part of rehabilitation must be monitored and replanted where necessary</li> </ul>	<ul style="list-style-type: none"> <li>Weekly for the first two months after establishment and after that, monthly for the first year after construction</li> </ul>	To ensure that indigenous plants are well established	Developer & EO
3. Soil erosion	<ul style="list-style-type: none"> <li>All areas that have been eroded by construction activities must be rehabilitated accordingly</li> </ul>	<ul style="list-style-type: none"> <li>Monthly for the first year after construction. Frequency must be increased during the rainy season</li> </ul>	To ensure there are no visible erosion scars	Developer & EO

*The decommissioning phase will entail the rehabilitation of the mining site. Upon cessation of the mining activities, the area will be fully rehabilitated. The rehabilitation of the mining area will comply with the minimum closure objectives as prescribed by DMRE. Rehabilitation shall be undertaken in line with a comprehensive rehabilitation and Closure Plan to be developed prior to the decommissioning and closure of the proposed quarry operation.*

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## 9 REPORTING, MONITORING AND REVIEWING

To ensure continuous improvement in terms of the environmental performance of the project, the site must be audited and monitored against the EMPr requirements. The EMPr must also be reviewed to ensure its applicability. This is detailed in subsequent sections.

### 9.1 Reporting on EMPr compliance

In order to ensure sufficient levels of compliance with the EMPr, regular environmental monitoring has to be undertaken and the results of the monitoring be reported on a regular basis. In order to control the reporting on the EMPr Compliance, it is imperative that the following be borne in mind:

- Typical report description;
- Document control procedures;
- System for documenting environmental training; and
- Frequency of reports.

Each of these are briefly discussed below:

#### 9.1.1 Typical report description

A typical report used to indicate the level of environmental compliance on the project must adhere to **Appendix 7** of NEMA EIA Regulations, 2014, as amended, which must include the following

(a) details of the—

- (i) independent person who prepared the environmental audit report; and
- (ii) expertise of the independent person that compiled the environmental audit report;

(b) a declaration that the independent auditor is independent in a form as may be specified by the competent authority;

(c) an indication of the scope of, and the purpose for which, the environmental audit report was prepared;

(d) a description of the methodology adopted in preparing the environmental audit report;

(e) an indication of the ability of the EMPr, and where applicable, to—

- (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis;*
- (ii) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and*

*(iii) ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan;*

(f) a description of any assumptions made, and any uncertainties or gaps in knowledge;

(g) a description of any consultation process that was undertaken during the course of carrying out the environmental audit report;

(h) a summary and copies of any comments that were received during any consultation process; and

(i) any other information requested by the competent authority.

In addition to the above, the **Environmental Audit Report** must include the following

- Project Background Information;
- Terms of Reference of various project team members;
- Scope of audit and the audit period;
- Objectives of the Environmental Audit;
- Methods used for undertaking of Compliance Audits;
- Roles and Responsibilities of different parties involved in ensuring the compliance of the EMPr;
- Summary of main findings;
- Checklist used for checking compliance;
- Photographs of observations of audit; and
- Any other documents deemed important to support the audit findings.

#### *9.1.2 Document control procedures*

To ensure the Environmental Auditing Reports are of good quality, these must undergo an internal review prior to submission to relevant parties. An indication of the document history indicating as a minimum the revision number and date as well as the names and signatures of the compiler, reviewer and approver must be provided.

#### *9.1.3 System for documenting environmental training*

The Developer, Project Manager, Contractors and subcontractors must develop a system for documenting environmental monitoring, training and reporting. This system must as a minimum include the following:

- Plans on relevant parties to train and the frequency of training to ensure that all parties; working on the site/providing services are aware of the necessity to adhere to the EMPr;
- An indication of items to be discussed in typical training sessions; and



- Typical documents/material to be used for training and proof of the undertaking of training.

#### 9.1.4 Frequency of audit reports

The reports compiled to record the findings of the audit must be provided at frequencies required by the Department of Mineral Resources and Energy (DMRE), where stated, or by SANRAL.

## 9.2 Monitoring of the EMPr

In order to ensure that the EMPr is being correctly implemented and remains relevant to site activities, the following must be undertaken:

### 9.2.1 Environmental auditing

Internal Audits as well as External Audits (where required by the DMRE- Competent Authority) of the EMPr must be undertaken at the periods and according to procedures outlined below unless otherwise stated in the Authorisation conditions:

- Internal Audits - these must be undertaken at periods and according to procedures prescribed by the Developer/Project Manager (if applicable). Records associated with this auditing must be kept. The Contractor shall undertake their own Internal Audits and must communicate their procedure to the ECO. All Internal Audits must also be aligned to the SANRAL's audit process in terms of internal environmental policy requirements. Where required, the DMRE will also be provided with copies of all audit reports.
- External Audits – if required by the DMRE, these must be undertaken by a suitably qualified and experienced Environmental Control Officer (ECO). Similar to the Internal Audits, these must entail the checking of Environmental Compliance based on the EMPr and the Environmental Authorisations as well as any other requirements including environmental best practice. All External Audits must also be aligned to the SANRAL's audit process in terms of internal environmental policy requirements. In order to undertake the external audits, the ECO must adopt the following methods and approaches as a minimum:
  - Review of background information to acquaint the ECO with various aspects of the project;
  - Document review;
  - Observations during site walkabout. Photographs must be undertaken during the walkabout;
  - Interviews and Questioning (open-ended questions will be asked); and

- Completion of checklists to report and discuss the findings of each of the areas within the construction site.

Audit reports will be compiled and submitted to the relevant parties within the project. These must include the SANRAL as the Project Developer, the Project Manager and the Contractor.

### 9.2.2 *Corrective actions*

The Contractor must compile an Environmental Action Plan to ensure that the non-compliances are addressed and ensure that the issues are addressed within a certain target date set by the ECO. The Contractor must ensure that corrective actions arising as a result of non-compliances are undertaken and recorded accordingly. These records must be kept for review by the ECO and/or any other party with authority to undertake this exercise.

## 9.3 **Review of the EMPr**

The EMPr must be reviewed by and with the Project Team, should the need arise. The discussion of this item must preferably be led by the ECO. The frequency of the review of the EMPr must be decided between the ECO and SANRAL. All records of this review must be kept by the ECO on behalf of the Project Manager and SANRAL.

Any amendments to the EMPr must be communicated to the Project Team by the ECO. Proof of the communication must be kept.

### 9.3.1 *Amendment of the EMPr (where required)*

The NEMA EIA Regulations, December 2014, as amended regulate the procedures and criteria for the submission and consideration of the EMPr including its content. It must be noted that the EMPr is a living document that can be amended should the need for this arise. The amendment must however be undertaken according to the EIA Regulations that will be relevant at the time of the required amendment. It must be noted that the NEMA EIA Regulations 2014 (Sections 34-37) (which were applicable during the compilation of this EMPr) introduce a defined process with regard the amendment of the EMPr as outlined below:

- **First amendment** applies to the amendment of the EMPr as a result of audit findings.
- **Second amendment** pertains to an amendment of a specific impact management action of an EMPr.
- **Third amendment** gives opportunity to the holder of the EA to amend the EMPr, and also requires the involvement of the Competent Authority (CA) and the undertaking of Public Participation (PP).

It is important that the Developer and the Contractor follow these defined processes during the implementation phase as deviating from this process is regarded as a non-conformance.

In terms of the NEMA EIA Regulations 34, Government Notice No 982, of Government Gazette No 40772, Developers must ensure compliance with the conditions of the EMPr by undertaking an Environmental Audit in a structured and systematic manner. This audit must provide for recommendations regarding the need to amend the EMPr, and where applicable the Closure Plan. It is a requirement of the environmental compliance audit process that risks to the environment are identified and these possible risks should be taken into account during the planning and construction phase of the development. These risks are presented in this EMPr. The implementation of this EMPr, through the appointed Contractor, remains the responsibility of the Developer, i.e. SANRAL.

## 10 REFERENCES

- DEA GN 435, 2019 . Generic Environmental Management Programme relevant to an application for substation and overhead electricity transmission, Department of Environmental Affairs, Pretoria.
- DEAT (Department of Environmental Affairs and Tourism), 1992. Integrated Environmental Management Guideline Series, Volumes 1-6, Department of Environmental Affairs, Pretoria.
- DEAT (Department of Environmental Affairs and Tourism), 2004. Environmental Management Plans, Integrated Environmental Management, Information Series 12, Department of Environmental Affairs and Tourism (DEAT), Pretoria.