PROPOSED UPGRADE OF NATIONAL ROAD R30 SECTION 8 FROM KLERKSDORP (KM 0.0) TO BUFFELSVALLEI (KM 37.0) AND ASSOCIATED BORROW PITS WITHIN DR KENNETH KAUNDA DISTRICT MUNICIPALITY IN THE NORTH WEST PROVINCE

ENVIRONMENTAL ASSESSMENT PRACTIONERS: Earthlink Environmental Services (Pty) Ltd. 572 24th Withok Estates, Brakpan, 1451.	**APPLICANT:** South African National. Roads Agency SOC Ltd. Northern Region, 38 Ida Street, Menlo Park, Pretoria, 0081.	**CONSULTING ENGINEER:** ROMH Consulting. Building 12, Highgrove Office Park, 50 Tegel Avenue, Highveld, Centurion, 0157.
Earthlink Environmental Services In rhythm with nature	SANRAL SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD	ROMH CONSULTING

APRIL 2025

CONTACT DETAILS

CONSULTANT: EARTHLINK ENVIRONMENTAL SERVICES

Project Team	**Ms. – Lehlogonolo Chuene EAP** **Ms. Kgakile Mapaulo- Project Manager**
Email Address	lehlogonolo@earthlinkenvironmental.co.za kgakile@earthlinkenvironmental.co.za
Physical Address	572 24th Rd, Withok Estates, Brakpan, 1541
Contact Details	071 633 4485 071 878 8295

APPLICANT: SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD (SANRAL)

Contact Person	**Mirriam Ramoba**
Email	mosiam@nra.co.za
Physical Address	38 Ida Street, Menlo Park, Pretoria, Gauteng, 0081, South Africa
Contact Details	083 275 0115

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ABBREVIATIONS

BA	Basic Assessment
BAR	Basic Assessment Report
DEAT	Department of Environmental Affairs and Tourism
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
EO	Environmental Officer
GA	General Authorisation
GNR	Government Notice Regulation
IEM	Integrated Environmental Management
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
SANRAL	South Africa National Roads Agency SOC Limited

DEFINITIONS	
Contractor	The main contractor as engaged by SANRAL for the construction of the subject infrastructure, including all Subcontractors and service provides appointed by the main contractor of his own volition for the execution of parts of the Works. "Contractor" also includes any other contractor engaged by SANRAL directly in connection with any part of the construction operations, which is not a nominated sub-contractor to the main contractor.
Environment	Our surroundings, including living and non-living elements, e.g. land, soil, plants, animals, air, water and humans. The environment also refers to our social and economic surroundings, and our effect on our surroundings.
Environmental Control Officer	A person who is responsible for the monitoring of the implementation of the requirements of Environmental Authorisation (EA) and Environmental Management Programme (EMPr).
Environmental Officer	A person who is responsible for the implementation of the requirements of EA and EMPr.
Environmental Impact	An environmental change caused by some human act.
Environmental Impact Assessment (EIA)	An 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.
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 and space.
Indigenous species	Plants and animals that are naturally found in an area.
Integrated Environmental Management (IEM)	A way of managing the environment by including environmental factors in all stages of development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments.
Method Statement	Setting out in detail how the management actions contained in an EMPr will be implemented, in order to ensure that the environmental objectives are achieved.
Mitigation	Measures designed to avoid, reduce or remedy adverse impacts.
Proponent.	Developer. Entity which applies for environmental approval and is ultimately accountable for compliance to conditions stipulated in the EA and requirements of the EMPr.

SECTION 1: INTRODUCTION

1.1 BACKGROUND INFORMATION

South African National Road Agency SOC Limited (SANRAL) proposes to upgrade Road R30 section 8, from Klerksdorp (KM 0.0) to Buffelsvallei (KM 37.0) within Dr Kenneth Kaunda District Municipality in the Northwest Province. The project is aimed at improving the road geometry by adding surfaced shoulders and rehabilitating the existing pavement structure to enable it to carry a 20-year design traffic load.

The major aspects of this project include the following:

- Improving the existing 37km single carriageway road,
- Increasing the existing road reserve width from 30m to a range of 40 m to 45 m, with a maximum of 50m where required,
- Strengthening the existing pavement,
- Improving the existing road cross-section to adhere to SANRAL standards, from an existing road formation width of 7.6m to 13.4m comprising of 3.7 m lanes and 3 m surfaced shoulders,
- Vertical and horizontal geometric improvements that follow the existing alignment, aiming to achieve a design speed of 120km/h,
- Widening and (or) replacement of 1 river bridge and some major and minor culverts.
- The route has 8 major culverts and 97 minor culverts.
- Improving two major intersections to adhere to SANRAL standards, located at km 19.2 and km 35.4,
- Possible treatment of up to 1m width over and above the required width of final travel way to accommodate two-way through traffic during construction,
- Possible temporary bypass roads during construction where drainage structures need to be upgraded,
- Entry into eleven (11) potential borrow pits for sourcing G5 – G9 material during construction,
- A total of twelve (12) possible hard rock quarries within a 10 to 20 km radius from the route were identified.
- Stockpile areas and vegetation clearance outside road reserve in excess of 1 Hectare.

Table 1: Coordinates of the Road

Table 2: The affected property coordinates	
Affected Property	The road passes through Portion 0 Farm BRAKSPRUIT
Road coordinates:	*Start:* 26°50'24.3"S, 26°38'54.8"E Middle: 26°40'54.1"S, 26°35'29.8"E End point: 26°30'46"S, 26°38'37.6"E

SGID Code:	T0IP00000000037000000

Table 3: Improvement Strategy for Major Structures

Culvert No.	**PROPOSED STRUCTURE NO / WIDTH X HEIGHT X LENGTH**	**Coordinates**
C4412	3 / 1.8 X 1.2 X 21.819 LENGTHENING SKEW: = 0° SLOPE: = 0.06 % MAX FILL = 1.282 m	26°33'5.63"S 26°37'58.40"E
C0360	3 / 1.8 X 1.5 X 18.856 LENGTHENING SKEW: = 1.0° SLOPE: = 0.15% MAX FILL = 0.610 m	26°44'48.25"S 26°36'8.20"E
C0361	4 / 4.5 X 1.5 X 17.755 NEW CULVERT SKEW: = 0° SLOPE: = 1.0 % MAX FILL = 0..42m	26°42'1.32"S 26°35'41.03"E
NCTN1	4 / 4.5 X 1.5 X 17.755 NEW CULVERT SKEW: = 0° SLOPE: = 1.0 % MAX FILL = 0.58m	26°42'0.49"S 26°35'40.98"E
C0382	4 / 4.5 X 1.6 X 17.752 NEW CULVERT SKEW: = 0° SLOPE: = 1.0 % MAX FILL = 0.277 m	26°38'29.81"S 26°36'3.09"E
NCTN2	4 / 4.5 X 1.6 X 17.752 NEW CULVERT SKEW: = 0° SLOPE: = 1.0 % MAX FILL = 0.277 m	26°38'29.06"S 26°36'3.27"E
NCTN3	3 / 4.5 X 1.6 X 17.752 NEW CULVERT SKEW: = 0° SLOPE: = 1.0 % MAX FILL = 0.277 m	26°38'28.23"S 26°36'3.56"E
C4412	4 / 4.5 X 1.8 X 18.238 NEW CULVERT SKEW: = 0° SLOPE: = 1.0 % MAX FILL = 0.381m	26°33'5.68"S 26°37'58.38"E
NCTN4	3 / 4.5 X 1.6 X 17.752 NEW CULVERT SKEW: = 0° SLOPE: = 1.0 % MAX FILL = 0.277 m	26°33'3.76"S 26°37'58.98"E

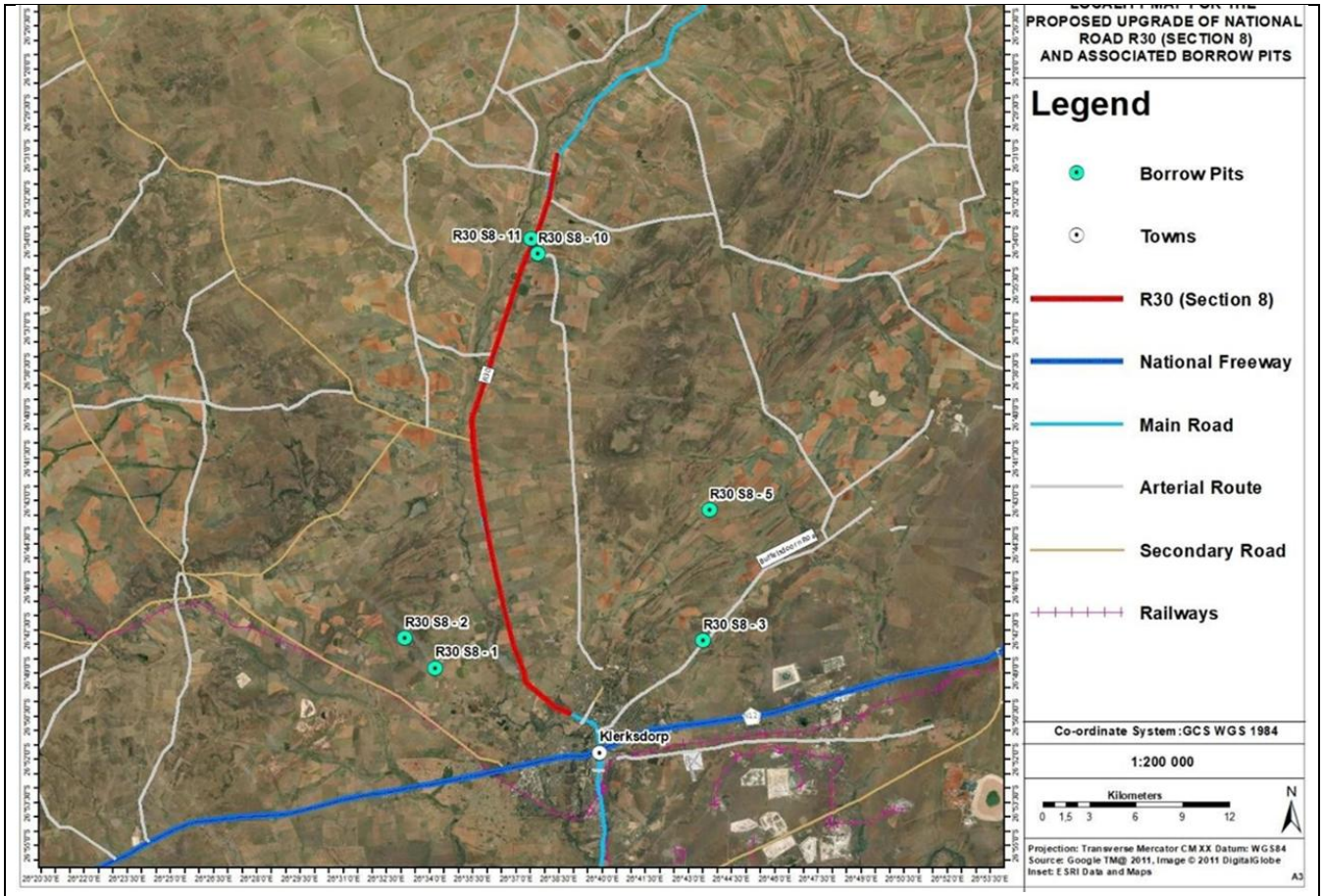

Figure 1: Regional Locality Map

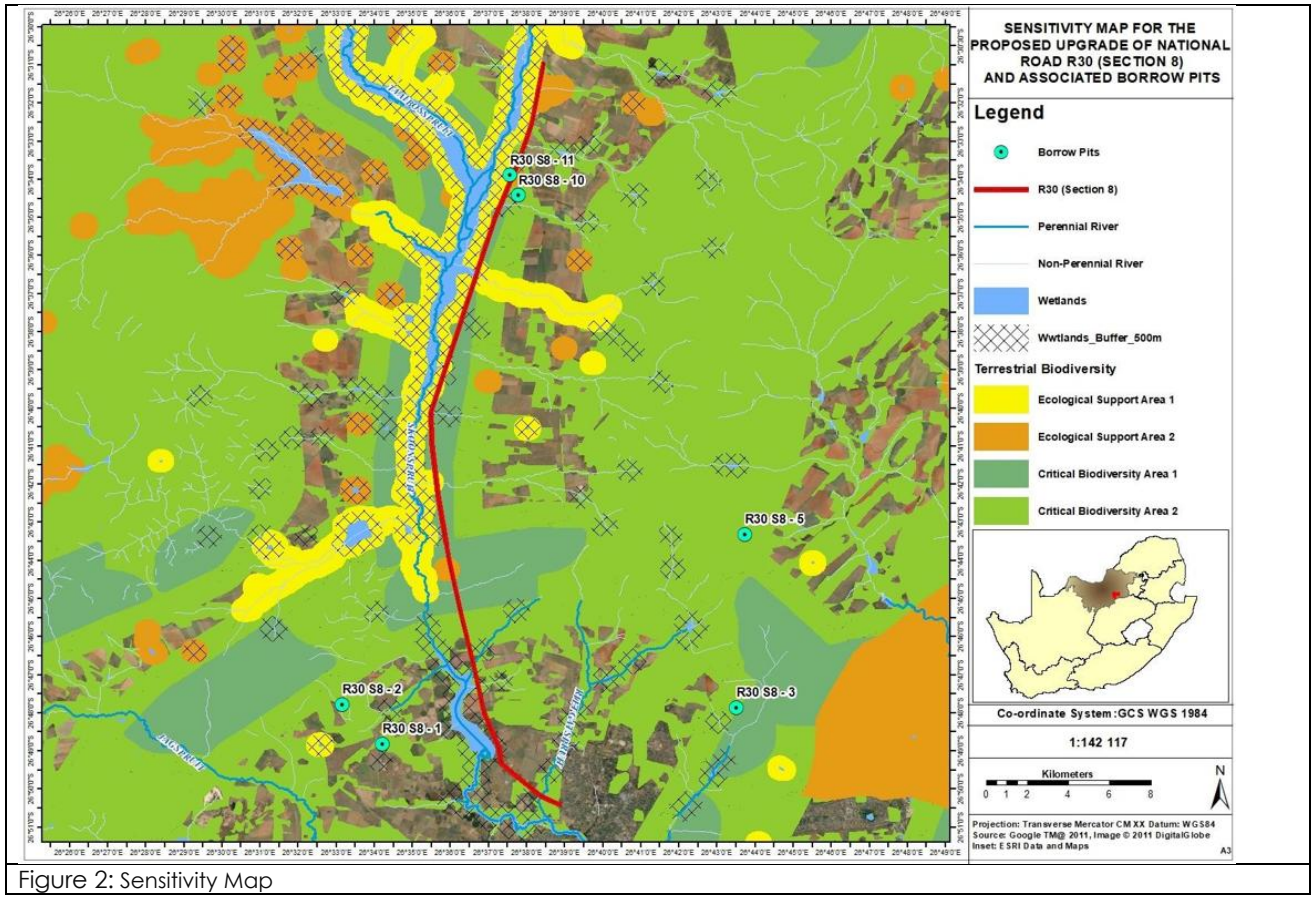

Figure 2: Sensitivity Map

1.2 DETAILS OF THE APPLICANT

Table 4: Details of the applicant

Project applicant:	South African National Roads Agency (SANRAL)		
Contact person:	Ms. Mirriam Ramoba		
Physical address:	38 Ida Street, Menlo Park, Pretoria, Gauteng, 0081, South Africa		
Postal code:	0081	Cell:	083 275 0115
Telephone:	0124266204	Fax:	
E-mail	mosiam@nra.co.za		

1.3 DETAILS OF THE EAP

Table 5: Details of the EAP

Aspect	Details
Name	Earthlink Environmental Services (Pty) Ltd
Contact Person	Mrs. Lehlogonolo Chuene
Physical Address	572 24th Rd, Withok Estates, Brakpan, 1541
Other contact details	082 552 0299/ 071 878 8295
Expertise/experience	EAP Experience: 10 years' experience Affiliation: EAPASA Registered Qualifications: MSc of Geography- University of Limpopo Current BSc Honours in Geography- University of Limpopo: 2014 BSc Environmental and Resource Studies
Registration	EAPASA 2019/1567

1.4 URPOSE AND OBJECTIVES OF THE EMPR

This Environmental Management Programme (EMPr) has been compiled in terms of generally acceptable environmental practices and policies.

1.4.1 Purpose of the Environmental Management Programme

The EMPr has been compiled to provide recommendations and guidelines in order to minimise the environmental impacts during the construction phase and should be used for compliance monitoring during the construction phase of the proposed R30 road upgrades. This EMPr informs all relevant parties of the legal requirements for the construction and operation of the R30 road which would have been upgraded, with particular reference to the prevention and mitigation of anticipated potential environmental impacts.

This EMPr has been compiled in accordance with Appendix 4 of GNR.326.

EMPr is defined as *"an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the project phases are prevented and that the positive benefits of the projects are enhanced". Impacts range from those incurred during start up (e.g. site clearing) and through to those incurred during the construction activities themselves (erosion, pollution of watercourses, noise, dust etc.)".*

The purpose of this EMPr is therefore to ensure that undue or reasonably avoidable adverse impacts of the proposed road upgrades are prevented and that the positive impacts are enhanced during the road.

1.4.2 Objectives of the Environmental Management Programme

This EMPr has been compiled to provide recommendations and guidelines in order to minimise the environmental impacts during the construction phase and should be used for compliance monitoring during the construction phase of the proposed R30 road upgrades.

This EMPr informs all relevant parties [the Project Co-ordinator, the Contractor (s) and all other staff employed by SANRAL at the site as to their duties in the fulfilment of the legal requirements for the R30 road upgrades. with particular reference to the prevention and mitigation of anticipated potential environmental impacts.

Specifically, the objectives of this EMPr can be articulated as follows:

- To give effect to the construction related requirements.
- To give effect to the environmental commitments to the various role players.
- To ensure that these requirements/ commitments are expressed in a manner that is accessible to all parties and is binding upon those responsible for project implementation.
- To ensure that sufficient resources are allocated to the project budget in order to give effect to the environmental requirements / commitments, and to ensure that the scale of EMPr-related interventions is consistent with the significance of identified impacts.
- To provide a coherent and pragmatic framework for the implementation of the requirements, ranging from the roles and responsibilities of the key project participants to the auditing and reporting of compliance;
- To facilitate appropriate and proactive response to unforeseen events or changes in project implementation; and
- To ensure that the construction phase of the project does not result in undue or reasonably unavoidable adverse environmental impacts, and that any potential environmental benefits are enhanced.

The EMPr is compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between

conservation and development (Department of Environmental Affairs and Tourism (DEAT, 2004)). IEM is a key instrument of the NEMA. NEMA promotes the IEM of activities that may have a significant effect on the environment, while IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool under the NEMA Chapter 5 is an EMPr.

The IEM guidelines encourage a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels.

1.5 SCOPE OF THE EMPR

The scope of the EMPr must ensure that the objectives outlined above will be addressed. In order to achieve the above objectives, the scope of an EMPr should include the following:

- Definition of the environmental management objectives to be realised during the construction phase in order to enhance benefits and minimise adverse environmental impacts.
- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification, and to what target or performance level. Mechanisms must also be provided to address changes in the project implementation, emergencies or unexpected events, and the associated approval processes.
- Clarification of institutional structures, roles, communication and reporting processes required as part of the implementation of the EMPr.
- Description of the link between the EMPr and associated legislated requirements.
- Description of requirements for record keeping, reporting, review, auditing and updating of the EMPr.

The scope of the EMPr is principally determined by the key documentation related to the EIA process, notably the Draft Basic Assessment Report (BAR).

1.5.1 Structure of an EMPr

An EMPr focuses on sound environmental management practices, which should be undertaken to minimise adverse impacts on the environment through the lifetime of a development. In addition, an EMPr identifies which measures will be in place or will be actioned to manage any incidents and emergencies that may occur during all phases of the R30 road upgrades. However, this EMPr has been developed particularly for the R30 road upgrades. This EMPr provides specifications that should

be adhered to, in order to minimise adverse environmental impacts associated with the R30 road upgrades.

According to Appendix 4 of GNR.326, as amended, an EMPr must include:

1. An EMPr must comply with section 24N of the Act and include—	**Section in the Report**
(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 4**
(b). a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	**Section 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**
(d). description of the impact management outcomes, 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) preconstruction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities	**Section 3**

(f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) 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 provision for rehabilitation, where applicable;	**Section 3**
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	**Section 2**
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	**Section 2**
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	**Section 2**
(j)	the time periods within which the impact management actions	**Section 2**

	contemplated in paragraph (f) must be implemented;	
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	**Section 2**
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	**Section 2**
(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 2**
(n)	any specific information that may be required by the competent authority.	**Section 3**

1.5.2 Legal Requirements

The Contractor must identify and comply with all South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the project. Key legislation currently applicable to the construction phase of the project must be complied with, even during design and implementation phases.

1.5.2.1 The Constitution of South Africa (Act No. 108 of 1996)

Section 24 of the Constitution of South Africa No. 108 of 1996 states that "…*everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (c) secure ecologically sustainable development and use of natural resources while promoting*

justifiable economic and social development." This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development.

1.5.2.2 National Environmental Management Act (Act 107 of 1998)

The NEMA provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by State Departments and to provide for matters connected therewith.

On 5 September 1997, the Minister of Environmental Affairs and Tourism had, under sections 26 and 28 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (ECA), and with the concurrence of the Minister of Finance, promulgated Regulations in terms of Section 21 of the Act, GNR. 1182 GG No.18261, GNR. 1183 GG No. 8261, 1184 GG 18261 (as amended).

On 21 April 2006, the Minister of the Department of Water and Environmental Affairs [DWEA, now called the DFFE and the Department of Water and Sanitation (DWS) separately] promulgated Regulations in terms of Chapter 5 of the NEMA. When these Regulations came into effect on 3 July 2006, they replaced the EIA Regulations that were promulgated in terms of the ECA in 1997 and introduced new provisions for EIAs. Subsequently, the National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008) (NEMAA) was promulgated on 9 January 2009 and came into effect on 1 May 2009. The NEMAA made a number of significant amendments to the general provisions applicable to EIAs. On 18 June 2010, the Minister promulgated amended EIA Regulations in terms of Chapter 5 of NEMA. From the date of effect of these amended EIA Regulations, 2 August 2010, these amended EIA Regulations replaced the previous EIA Regulations that were promulgated on 21 April 2006.

In 2014 on 8 December, new EIA Regulations came into effect and replaced the previous EIA Regulations of 18 June 2010. The Regulations are as follows:

- GNR. 982 provides with the methodology and format which needs to be considered when conducting a Basic Assessment (BA) and S&EIR processes.
- GNR. 983 (Listing Notice 1) provides for activities which require a BA process to be followed.
- GNR. 984 (Listing Notice 2) provides for activities which require a S&EIR to be followed; and
- GNR. 985 (Listing Notice 3) also provides for activities which require a BA process to be followed.

The Minister of Environmental Affairs has again made amendments to the EIA Regulations, 2014, published under GNR. 982, GNR. 983, GNR. 984 and GNR. 985 of 4

December 2014, in terms of sections 24(5) and 44 of the NEMA through the promulgation of GNR. 324, GNR. 325, GNR. 326 and GNR. 327 of 07 April 2017.

The NEMA EIA Regulations define two broad processes for an EIA, namely: BA and S&EIR.

S&EIR is applicable to all projects likely to have significant environmental impacts due to their nature or extent, activities associated with potentially high levels of environmental degradation, or activities for which the impacts cannot be easily predicted.

BA is required for projects with less significant impacts or impacts that can easily be mitigated.

The project will entail the undertaking of the BA in terms of the EIA Regulations 2014, as amended; promulgated in terms of the NEMA as listed in GNR. 327 and GNR. 324. These activities are identified as actions that may not commence without an EA from the relevant competent authorities, in this case, the DFFE.

Listed and specified activities for the R30 Road upgrade project
The listed activities associated with the project in respect of NWA are also provided. Based on the nature and extent of the listed activities, Earthlink on behalf of SANRAL will conduct separate EA and GA applications.

Table 6: Triggered activity listed under GNR.327 (Listing Notice 1)

Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.**
19	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) a watercourse;	The proposed R30 road Improvement will involve the widening of the existing 3 major culverts and a number of minor culverts. This activity will involve excavation, removal and or deposition of material of more than 10m3 of soil in watercourse. This will exceed 10m3 threshold, therefore this activity is triggered
21	Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources	The R30 Road Upgrade will include the following developments:

	Development Act, 2002 (Act No. 28 of 2002), including — (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]	• Drilling at twelve (12) potential quarries for sourcing crushed stone material during construction, • Entry into four (4) potential borrow pits for sourcing G5 – G9 material during construction, The application for borrow pits will be submitted to DMRE for consideration.
27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Stockpile areas and vegetation clearance outside road reserve in excess of 1 Hectare.
56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; Excluding where widening or lengthening occur inside urban areas.	Increasing the existing road reserve width from 30 m to a minimum of 40 m, with a maximum of 50 m where required. Along the rural section, the existing road formation width of 7.6 m will be widened to 13.4 m comprising of 3.7 m wide lanes and 3 m wide surfaced shoulders. For the urban section, the existing single carriageway will be improved to a dual carriageway comprising four 3.5m wide lanes, a 5 m wide median and 2.5 m wide sidewalks As such this activity must be included in the authorisation.

Table 7: Triggered activity listed under GNR.324 (Listing Notice 3)

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. h. North West i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; vi. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from a biosphere reserve;	Increasing the existing road reserve width from 30 m to a minimum of 40 m, with a maximum of 50 m where required. Along the rural section, the existing road formation width of 7.6 m will be widened to 13.4 m comprising of 3.7 m wide lanes and 3 m wide surfaced shoulders. For the urban section, the existing single carriageway will be improved to a dual carriageway comprising four 3.5m wide lanes, a 5 m wide median and 2.5 m wide Sidewalks The proposed upgrade is also located 5 kilometres to a proclaimed protected area, the Schoonspruit Nature Reserve and within CBA 1 and 2. As such this activity must be included in the authorisation.

12	The clearance of an area of 300square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan h. North West ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.	Clearance of vegetation for the purpose of improving R30 National Road within CBA 1 and 2. The proposed upgrade is also located 5 kilometres to a proclaimed protected area, the Schoonspruit Nature Reserve and within watercourses/ wetland. As such this.
18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (h) In North West: i. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; ii. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from a biosphere reserve; v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; ix. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.	The R30 Road Improvement involves Increasing the existing road reserve width from 30 m to a minimum of 40 m, with a maximum of 50 m where required, Improving the existing road cross-section to adhere to SANRAL standards along both rural and sections. Along the rural section, the existing road formation width of 7.6 m will be widened to 13.4 m comprising of 3.7 m wide lanes and 3 m wide surfaced shoulders. For the urban section, the existing single carriageway will be improved to a dual carriageway comprising four 3.5m wide lanes, a 5 m wide median and 2.5 m wide sidewalks.

		The proposed upgrade is located 5 kilometres to a proclaimed protected area, the Schoonspruit Nature Reserve and within watercourses/ wetland. As such this activity must be included in the authorisation.
23 (ii)	The expansion of—(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; ~~(b) in front of a development setback adopted in the prescribed manner; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour~~ h. North West ii. A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; vi. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from the core areas of a Biosphere reserve. vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.	widening of 3 major culverts and Minor culverts along the road within watercourse/ wetland ,and within CBA 1 and 2. The widening of structures will exceed physical footprint of 10 square meters. The proposed upgrade is located 5 Kilometres to a proclaimed protected area, the Schoonspruit Nature Reserve As such the proposed will exceed 10 square metre thresholds

1.5.2.3 National Water Act (1998)

Water uses listed under Section 21 of the NWA will be triggered by the proposed project. The GA Application is therefore being lodged with the relevant Regional DWS. Water uses identified in terms of Section 21 of the NWA are as follows:

(c)impeding or diverting the flow of water in a watercourse.

(i) altering the bed, banks, course, or characteristics of a watercourse.

Due to water resources identified on the proposed site, the proposed development triggers Section (c) and (i) water uses listed in Section 21 of the NWA.

The NWA recognises that the entire ecosystem, and not just the water itself, and any given water resource constitutes the resource and as such needs to be conserved. No activity may therefore take place within a watercourse unless it is authorised by the DWS. Any area within a wetland or riparian zone is therefore excluded from development unless authorisation is obtained from the DWS in terms of Section 21 (c) and (i) of the NWA.

However, according to General Notice (GN) 509 as published in the Government Gazette No. 48187 of 10 March 2023, it must be noted that as defined by the Replacement General Authorisation (GA) in terms of Section 39 of the NWA, on account of the extremely sensitive nature of wetlands and estuaries, the section 21(c) and (i) water use GA does not apply to:

- To the use of water in terms of section 21(c) or (i) of the Act for the rehabilitation of a wetland as contemplated in General Authorisation 1198 published in Government Gazette 32805 dated 18 December 2009.
- To the use of water in terms of section 21(c) or (i) of the Act within the regulated area of a watercourse where the Risk Class is Medium or High as determined by the Risk Matrix. The Risk Matrix must be completed by a suitably qualified SACNASP professional member.
- In instances where an application must be made for a Water Use License (WUL) for the authorisation of any other water use as defined in section 21 of the Act that may be associated with a new activity.
- Where storage of water results from the impeding or diverting of flow or altering the bed, banks, course, or characteristics of a watercourse; and
- To any water use in terms of section 21 (c) or (i) of the Act associated with construction/ installation or maintenance of main or bulk sewage sewerage pipelines, pipelines carrying hazardous materials.
- To any section 21 (c) or (i) water use associated with construction of water- and wastewater treatment works.
- To any section 21 (c) or (i) water use associated with hazardous material within the regulated area of a watercourse; and
- To any section 21 (c) or (i) water use associated with mining activities and associated infrastructure unless it falls within appendix D2

A GA Application is therefore imperative for the proposed development as the proposed use of water in terms of section 21(c) or (i) of the Act is within the regulated area of a watercourse and the Risk Class is Low.

The following definitions have been provided to give clarity on the imperativeness of the GA Application for the proposed development:

"Watercourse" means - (a) a river or spring;(b) a natural channel in which water flows regularly or intermittently;(c) a wetland, pan, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the NWA; and a reference to a watercourse includes, where relevant, its bed and banks.

"Wetland" means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

For the purpose of S21 (c) and (i) water uses, the water course encompasses the extent (i) of the riparian habitat, as delineated according to the Department of Water Affairs and Forestry (DWAF) (2005a) or the 1:100-year flood line, whichever is greatest, or (ii) within 500m radius from the boundary of any wetland.

1.5.2.4 National Heritage Resources Act (NHRA) (Act 25 of 1999)

The National Heritage Resources Act's mission is to inspire communities to protect and preserve their heritage for the benefit of present and future generations. A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area of interest, in particular as per S38 (1).

1.5.2.5 National Environmental Management: Biodiversity Act (Act No 10 of 2004)

NEMBA was signed into law in mid-2004 and entered into effect on 1 September 2004. NEM: BA provides for the consolidation of biodiversity legislation through establishing national norms and standards for the management of biodiversity across all sectors and by different management authorities. Certain activities, known as Restricted Activities, are regulated on listed species using permits by a special set of regulations published under the Act. Restricted activities regulated under the act are keeping, moving, having in possession, importing and exporting, and selling.

1.5.2.6 The National Biodiversity Framework (2017-2022)

The National Biodiversity Framework (NBF) is a requirement under Section 38 of the National Environmental Management: Biodiversity Act (Act 10 of 2004, hereafter referred to as the 'Biodiversity Act'). The NBF is a short to medium-term coordination tool that shows the alignment between the strategic objectives and outcomes identified in the National Biodiversity Strategy and Action Plan (NBSAP v.2, 2015) and other key national strategies, frameworks and systems that currently guide the work of the biodiversity sector and identifies mechanisms through which this work is coordinated. It also identifies a set of interventions or "acceleration measures" that can unlock or fast-track implementation of the NBSAP and indicates the relative roles of the many agencies involved in implementing these activities. The purpose of the NBF is not to provide a comprehensive review of all work currently being undertaken in the biodiversity sector, nor to list all of the actions required to conserve and manage South Africa's biodiversity in support of sustainable development.

1.5.2.7 The North West Biodiversity Management Act, 2016 (Act No. 4 of 2016) (NWBMA)

The objective of this act is to provide for the management and conservation of the North West Province's biophysical environment and protected areas within the framework of the National Environmental Management Act, 1998 (Act No 107 of 1998); to provide for the protection of species and ecological systems that warrant provincial protection; to provide for the sustainable use of indigenous biological resources; and to provide for matters connected therewith.

1.5.2.8 Conservation of Agricultural Resource Act (Act no 43 of 1983)

This act regulates the utilization and protection of wetlands, soil conservation and all matters relating thereto; control and prevention of veld fires, control of weeds and invader plants, the prevention of water pollution resulting from farming practices and losses in biodiversity.

1.6 SPECIFICATION STRUCTURE AND APPLICATION

These specifications are not exclusive and could, within reason, be expanded on or amended at any time during the contract by the Environmental Control Officer (ECO).

1.6.1 Method statements

Environmental practitioners are not specialists with regard to construction techniques. Therefore, so as not to hinder construction activities by stipulating elaborate, costly and/ or ineffective mitigation measures, the environmental specification is underpinned by a series of Method Statements, within which the Contractor is required to outline how they propose to mitigate any identified environmental risks. For example, if the specification states that "cement contaminated water shall not be allowed to contaminate the soil or adjacent watercourse", the Method Statement compiled by the Contractor would be required to outline how he or she intends to achieve this requirement.

In terms of the environmental specifications for the proposed project, the Contractors must submit various written Method Statements to the Engineer and ECO as requested in the Specification. For the purposes of the environmental specifications, a Method Statement is defined as "a written submission by the Contractor to the Engineer in response to the Specification or a request by the Engineer, setting out the materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer when requesting the Method Statement, in such detail that the Engineer is enabled

to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications".

The Method Statement must cover applicable details with regard to:

- Construction 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 Specifications; and
- Any other information deemed necessary by the Engineer.

The environmental specifications set very stringent requirements in terms of the provision of Method Statements and the commencement of the activities they cover:

- Any Method Statement required by the Engineer or the specification must be produced within the timeframes specified by the Engineer or the specification (typically two weeks);
- The Contractor may not commence the activity covered by the Method Statement until it has been approved, except in the case of emergency activities and then only with the consent of the Engineer;
- The Engineer may require changes to a Method Statement if the proposal does not comply with the specification or if the proposed methodology carries an unreasonable risk of excessive damage to the environment;
- Approved Method Statements must be readily available on the site and must be communicated to all relevant personnel;
- The Contractor is required to carry out the activities covered by the Method Statement in accordance with the proposed approach; and
- Approval of the Method Statement does not absolve the Contractor from their obligations or responsibilities in terms of the Contract.

The following specific method statements must be drawn up before construction on commence site

- Emergency spills, accidental leaks and fire procedures;
- Cement and concrete batching;
- Management of hazardous materials (including oils and chemicals);
- Solid waste management;
- Dust control management;
- Crew camps and construction lay down areas;
- Handling of stockpiles;
- Clearance of vegetation during construction

1.6.2 Site documentation

The following is a list of documentation that must be held on site and must be made available to the ECO on request:

- This EMPr;
- Site daily diary / instruction book / incident reports with incident registers;
- Copies of Environmental Officer (EO) and ECO reports (management and monitoring);
- Complaints register; and
- Method statements.

1.6.3 Pro forma documentation

1.6.3.1 Prior to the commencement of upgrading activities

The following pro forma documentation are to be filled out and is binding to the EMPr and project contract and includes *inter alia*:

- Declaration of understanding by the Proponent;
- Declaration of understanding by the Engineer;
- Declaration of understanding by the Contractor;
- Method statements; and
- ECO / Engineer approval for method statements.

1.6.3.2 During construction activities

The following attached pro forma documentation are to be filled out and maintained. These are binding to the EMPr and project contract.

They include *inter alia*:

- Amended Method Statements;
- ECO / Engineer approval for amended method statements;
- Environmental incidents; and

1.7 SUMMARY OF IMPACTS ASSOCIATED WITH THE PROPOSED ROAD UPGRADES

Environmental impacts associated with proposed road construction/ upgrade have been identified. Consequently, mitigation measures to be implemented during construction/ upgrade have been prescribed in order to reduce, or if possible, avoid the impacts that may be caused by the proposed project activities.

The following is a summary of impacts associated with the road construction/ upgrade activities:

Biophysical Impacts

Construction Phase

- Degradation and/or destruction of wetland habitats.
- Loss of indigenous fauna and flora diversity associated with wetlands.
- Alien Invasive Species
- Pollution of water resources and soils
- Sedimentation and soil erosion
- Loss of habitat associated with the road upgrade
- Loss of Species of special concern (SCC)

Operational Phase

- Loss of habitat associated with the road upgrade

Cumulative Impacts

- Increased Employment and local economic development

SECTION 2: ON-SITE IMPLEMENTATION

The implementation of the impact management actions and an indication of the persons who will be responsible for the implementation of the impact management actions.

This EMPr is specifically compiled for the period of time prior to commencement of, and activities associated with road upgrades of the above-mentioned activities.

2.1 ENVIRONMENTAL ROLES AND RESPONSIBILITIES

In order for the EMPr to be successfully implemented, all the role players involved in the project need to co-operate. Role players must clearly understand their roles and responsibilities in the project. They must also be professional, form respectful and transparent relationships, and maintain open lines of communication.

2.1.1 South African National Roads Agency Soc Ltd (SANRAL)

SANRAL will be responsible for making sure that the EMPr is being complied to and conditions contained in the EA. SANRAL will appoint an ECO for the period of R30 road upgrades. The ECO will objectively monitor implementation of all relevant environmental legislation, conditions of an EA, and the EMPr for the project.

2.1.2 Consulting Engineers (To be appointed by SANRAL)

SANRAL will appoint Consulting Engineers who will fulfil the role of Project Co-Coordinator/ Project Managers on behalf of SANRAL.

Consulting Engineers will be responsible and accountable for ensuring that all parties involved in the implementation of the standing EMPr are compliant. The Consulting Engineers will therefore be responsible for overall management of project and EMPr implementation. The following tasks will fall within their responsibilities:

- Be familiar with the recommendations and mitigation measures of this EMPr and implement these measures.
- Monitor site activities on a regular basis for compliance.
- Conduct internal audits of the construction site against the EMPr.
- Confine the construction site to the demarcated area.
- Rectify transgressions through the implementation of corrective action.

The Consulting Engineers will also have ability to issue site instructions and in some instances, variation orders to the contractor.

They will also be responsible for the appointment of an Environmental Officer (EO) who will be responsible for monitoring all the contractors' activities on site for compliance with the EMPr.

The Consulting Engineers will ensure that there is always a representative on site (Engineer Representative) who will fulfil their duties in their absence.

2.1.3 Environmental Control Officer (To be appointed by SANRAL)

The ECO will be independently appointed by SANRAL. The ECO will be expected to be present on site prior to any site establishment.

The ECO will be responsible for the following:

- Conduct regular site visits to be able to report on compliance to relevant environmental legislation and respond to any environmental issues;
- Report compliance and non-compliance issues to SANRAL;
- Advise the Contractor on environmental issues within the defined work areas;
- Review access and incidents records that may pertain to the environment and reconcile the entries with the observations made during site inspection, monitoring and auditing;
- Recommend corrective action when required for aspects of noncompliance with the EMPr; and
- Take immediate action on site where clearly defined and agreed "no-go" areas are violated or in danger of being violated and to inform SANRAL of the occurrence immediately and to take action.

2.1.4 Contractor (To be appointed SANRAL)

The Contractor will be responsible for the overall execution of the activities during construction phase including the implementation and compliance with recommendations and conditions of the EMPr. The Contractor must therefore ensure compliance with the EMPr at all times and maintain an environmental register which keeps a record of all environmental incidents which occur on the site during construction. The Contractor is also responsible for the implementation of corrective actions issued by the ECO and SANRAL within a reasonable or agreed period of time.

2.1.5 The Authorities

The authorities that should be involved include the DFFE. The authorities may be required to perform the following roles:

- Review Monitoring and Audit reports, if required;
- Review whether there is compliance by the Applicant and Contractor with the terms of the EMPr and permit/license conditions. Whenever necessary, the authorities should assist the Applicant in understanding and meeting the specified requirements; and
- The authorities may perform random controls to check compliance. In case of persistent non-compliance, the Applicant will be required to provide an action plan with corrective measures, and have it approved by the authorities.

2.1.6 Project Environmental Contact Details

Proponent: SANRAL	
Ms. Mirriam Ramoba Regional Manager mosiam@nra.co.za 38 Ida Street, Menlo Park, Pretoria, Gauteng, 0081, South Africa 081 013 2534	
Consulting Engineers	
ROMH Consulting. Building 12, Highgrove Office Park, 50 Tegel Avenue, Highveld, Centurion, 0157.	

Environmental Control Officer: Earthlink Environmental Services	
Ms. Kgakile Mapaulo Project Manager kgakile@earthlinkenvironmental.co.za 572 24th Rd, Withok Estates, Brakpan, 1541 071 878 8295	
Contractor	
Not Appointed yet.	
Post Construction: SANRAL	
Ms. Mirriam Ramoba Regional Manager mosiam@nra.co.za 38 Ida Street, Menlo Park, Pretoria, Gauteng, 0081, South Africa 081 013 2534	

The method of monitoring the implementation of the impact management actions

The frequency of monitoring the implementation of the impact management actions

The time periods within which the impact management actions must be implemented

The Contractor should ensure that his/ her employees and any third party who carries out all or part of the Contractor's obligations are adequately trained with

regard to the implementation of the EMPr, as well as regarding environmental legal requirements and obligations.

Awareness training programmes should be targeted at all levels of employment.

The ECO must conduct regular audits. The audits are to verify the projects compliance with the EMPr and conditions of the EA. Monthly audits must be undertaken until the end of the construction phase and then every 2 months for the rehabilitation phase if so required.

Before any upgrade and rehabilitation activities commence, the appointed independent ECO must first compile a checklist based on the contents of this EMPr and conditions of the EA and communicate it to SANRAL. The ECO must at the request of the DFFE forward audit reports to the Department at a frequency determined by the DFFE, which must be stipulated in the EA.

As per GNR. 326 of the EIA Regulations 2014, as amended, Regulation 34.

(1) The holder of an environmental authorisation must, for the period during which the environmental authorisation and EMPr, and where applicable the closure plan, remain valid—

(a) ensure that the compliance with the conditions of the environmental authorisation and the EMPr, and where applicable the closure plan, is audited; and

(b) submit an environmental audit report to the relevant competent authority.

(2) The environmental audit report contemplated in sub regulation (1) must—

(a) be prepared by an independent person with the relevant environmental auditing expertise.

(b) provide verifiable findings, in a structured and systematic manner, on (i) the level of performance against and compliance of an organisation or project with the provisions of the requisite environmental authorisation or EMPr and, where applicable, the closure plan; and (ii) the ability of the measures contained in the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity;

(c) contain the information set out in Appendix 7; and

(d) be conducted and submitted to the competent authority at intervals as indicated in the environmental authorisation.

(3) The environmental audit report contemplated in sub regulation (1) must determine—

(a) the ability of the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis and to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and

(b) the level of compliance with the provisions of environmental authorisation, EMPr and where applicable, the closure plan.

(4) Where the findings of the environmental audit report contemplated in sub regulation (1) indicate—

(a) insufficient mitigation of environmental impacts associated with the undertaking of the activity; or

(b) insufficient levels of compliance with the environmental authorisation or EMPr and, where applicable the closure plan; the holder must, when submitting the environmental audit report to the competent authority in terms of subregulation (1), submit recommendations to amend the EMPr or closure plan in order to rectify the shortcomings identified in the environmental audit report.

(5) When submitting recommendations in terms of subregulation (4), such recommendations must have been subjected to a public participation process, which process has been agreed to by the competent authority and was appropriate to bring the proposed amendment of the EMPr and, where applicable the closure plan, to the attention of potential and registered interested and affected parties, including organs of state which have jurisdiction in respect of any aspect of the relevant activity and the competent authority, for approval by the competent authority.

(6) Within 7 days of the date of submission of an environmental audit report to the competent authority, the holder of an environmental authorisation must notify all potential and registered interested and affected parties of the submission of that report, and make such report immediately available—

(a) to anyone on request; and

(b) on a publicly accessible website, where the holder has such a website.

(7) An environmental audit report must contain all information set out in Appendix 7 to these Regulations.

Appendix 7 of GNR 326 provides with the objectives of the environmental audit report, and are as follows:

(a) report on—(i) the level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan; and (ii) the

extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieve the objectives and outcomes of the EMPr, and closure plan;

(b) identify and assess any new impacts and risks as a result of undertaking the activity;

(c) evaluate the effectiveness of the EMPr, and where applicable, the closure plan;

(d) identify shortcomings in the EMPr, and where applicable, the closure plan; and

(e) identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan.

Content of environmental audit reports

(1) An environmental audit report prepared in terms of these Regulations must contain—

(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, the closure plan to— (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing 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.

2.2 NON-COMPLIANCE

The mechanism for monitoring compliance with the impact management actions

A copy of the EMPr must be kept on site at all times during the road upgrade period. The EMPr will be binding on all contractors operating on the site and must be included within the Contractual Clauses.

In terms of the Section 28 of the NEMA, *"those responsible for environmental damage must pay the repair costs both to the environment and human health and the preventative measures to reduce or prevent further pollution and/or environmental damage (The 'polluter pays' principle)".*

The Contractors should act immediately when notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment should be recorded in a dedicated register and the response noted with the date and action taken.

It is recommended that the Contractor institute penalties for the following less serious violations and any others determined during the course of work as detailed below:

- Littering on site.
- Lighting of illegal fires on site.
- Persistent or un-repaired fuel and oil leaks.
- Any persons, vehicles or equipment related to the Contractor's operations found within the designated "no-go" areas.
- Excess dust or excess noise emanating from site.
- Possession or use of intoxicating substances on site.
- Any vehicles being driven in excess of designated speed limits.
- Removal and/or damage to fauna, flora or cultural or heritage objects on site.
- Urination and defecation anywhere except at designated facilities.

2.2.1 Provisions for addressing non-conformance.

Ultimately, the key to effective environmental management during the construction phase is ensuring that the requirements of the EMPr are adequately and appropriately implemented on site. Accordingly, monitoring performance and addressing non-compliance are key attributes of any environmental interventions.

The Contractor is deemed NOT to have complied with the EMPr if:

- Within the boundaries of the site there is evidence of contravention of the EMPr confirmed and verified by the ECO;
- Environmental damage ensues due to non-compliance of EMPr requirements;
- The Contractor fails to comply with corrective or other instructions issued by the Engineer within a specific time, and
- The Contractor fails to respond to complaints to the satisfaction of the complainant in line with requirements of this EMPr which could lead to a fine

The cost to be incurred to rectify non-compliances must be incurred by the Contractor ("The polluter's pays principle".

2.2.2 Emergency Preparedness

The Contractor should compile and maintain environmental emergency procedures to ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause environmental impacts, throughout the construction period. Such activities may include, *inter alia*:

- Accidental discharges of polluting substances to water and land.
- Accidental exposure of employees to hazardous substances.
- Accidental fires.
- Accidental spillage of hazardous substances.
- Accidental toxic emissions into the air.
- Specific environmental and ecosystem effects from accidental releases or incidents.

These plans should include:

- Emergency organisation and responsibilities, accountability and liability.
- A list of key personnel and contact details.
- Details of emergency services available (e.g. the fire department, spill clean-up services, etc.).
- Internal and external communication plans, including prescribed reporting procedures where required by legislation.
- Actions to be taken in the event of different types of emergencies.
- Incident recording, progress reporting and remediation measures required to be implemented.
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.
- Training plans, testing exercises and schedules for effectiveness.

A program for reporting on compliance, taking into account the requirements as prescribed by EIA Regulations 2014, as amended

2.2.3 Administration

Before the Contractor begins the upgrade activities, the Contractor should give to the ECO a written method statement setting out the following:

- The type of construction activity.
- Locality where the activity will take place.
- Identification of impacts that might result from the activity.
- Identification of activities that may cause an impact.
- Methodology and/or specifications for impact prevention for each activity or aspect.
- Methodology and/or specifications for impact containment for each activity or aspect.
- Emergency/disaster incident and reaction procedures.
- Treatment and continued maintenance of impacted environment.

The Contractor may provide such information in advance of any or all upgrade activities provided that new submissions are given to the ECO whenever there is a change or variation to the original.

The ECO may provide comment on the methodology and procedures proposed by the Contractor, but he will not be responsible for the Contractor's chosen measures of impact mitigation and emergency/disaster management systems.

2.2.4 House Keeping

The Contractor should undertake "good housekeeping" practices during upgrade. This will help avoid disputes on responsibility and allow for the smooth running of the contract as a whole. Good housekeeping extends beyond the wise practice of construction methods to include the care for and preservation of the environment within which the construction is situated.

2.2.5 Record Keeping

The ECO will continuously monitor the Contractor's adherence to the approved impact prevention procedures and the ECO should issue to the Contractor a notice of non-compliance whenever transgressions are observed. The ECO should document the nature and magnitude of the non-compliance in a designated register, the action taken to discontinue the non-compliance, the action taken to mitigate its effects and the results of the actions. The non-compliance should be documented and reported to SANRAL in a monthly report.

2.2.6 Document Control

The Contractor will be responsible for establishing a procedure for electronic document control. The document control procedure should comply with the following requirements:

- Documents must be identifiable by organisation, division, function, activity and contact person.
- Every document should identify the personnel and their positions, who was responsible for drafting and compiling the document, who reviewed and recommended approval, and who finally approved the document for distribution.
- All documents should be dated, provided with a revision number and reference number, filed systematically, and retained for a five-year period.

The Contractor should ensure that documents are periodically reviewed and revised, where necessary, and that current versions are available at all locations where operations essential to the functioning of the EMPr are performed. All documents must be made available to the ECO and other independent external auditors.

An environmental awareness plan describing the manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work; and risks must be dealt with in order to avoid pollution or the degradation of the environment.

2.3 AWARENESS TRAINING

Contractors should ensure that its employees and any third party who carries out all or part of the Contractor's obligations are adequately trained with regard to the implementation of the EMPr, as well as regarding environmental legal requirements and obligations.

An ECO may be contracted to provide training and to ensure that records of all training interventions are kept in accordance with the record keeping and documentation control requirements as set out in this EMPr.

The environmental training should, as a minimum, include the following:

- Environmental legal requirements and obligations.
- The importance of conformance with all environmental policies.
- The environmental impacts, actual or potential, of their work activities.
- The environmental benefits of improved personal performance.
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements.

- The potential consequences of departure from specified operating procedures.
- The mitigation measures required to be implemented when carrying out their work activities.
- Details regarding floral/faunal species of special concern and protected species, and the procedures to be followed should these be encountered during the construction of main access roads, approach roads or construction camps.
- The importance of not littering.
- The importance of using supplied toilet facilities.
- The need to use water sparingly.
- Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible.
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.

The EO will be responsible for ensuring that everyone on site is given an environmental awareness induction which outlines the requirements of the EMPr as a management tool to protect the environment.

SECTION 3: ENVIRONMENTAL MANAGEMENT MEASURES

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 phase of the project. Therefore, the purpose of an EMPr is to provide management measures that must be implemented by the Proponent, Engineers and Contractors to ensure that the potential impacts of the proposed development are minimised. It must also be ensured that the EMPr is maintained and upheld as a dynamic document in order for the project team to add or improve on issues that might be considered left out or not relevant to the project. In such instances, the approving authority may authorise the ECO to make such changes.

The sections below form the core mitigation measures appropriate to the **pre-construction, construction and operational phases.**

Commented [LC1]: How about you put these in a table form, which it gets to be easy to read and identify, remember we are doing the EMPr for people who are too busy to read , but in a table form, with Aspect/mitigation measures and frequency

3.1 PRE-CONSTRUCTION PHASE

Table 8: Pre-Construction Phase

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
PHASE OF THE DEVELOPMENT: PRE-CONSTRUCTION PHASE				
Legal and policy compliance	All necessary authorisations, permits and licenses must be obtained for the implementation of the activity.	• The development must comply with relevant legislation (municipal by-laws etc.). • All applications for licences in respect of protected trees must be obtained from the DFFE. • GA must be obtained from the DWS. • Mining Permits must be obtained from DMRE	Proponent/ Developer	To be undertaken prior to the start of construction phase. Once-off
Preparation of Method Statements	To control methods of works on site	• Relevant method Statements must be submitted by the Contractor to the SHE Officer and must be adhered to by the Contractor and Project Engineer.	Contractor	Once-off
General	To prevent environmental degradation through educating the construction team	• An environmental incident management reporting procedure must be implemented. • Every effort should be made to avoid potential impacts on the environment. No contamination of wetland resources may occur.	Developer/ contractor	Once- off

3.2 CONSTRUCTION PHASE

Table 9: Construction Phase

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
PHASE OF THE DEVELOPMENT: CONSTRUCTION PHASE				
Dangerous and toxic materials	• Prevention of pollution of soil and ground water resources • Minimise chances of transgression of the acts controlling pollution and ensure safety of workers.	• Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in caged areas or under lock and key, as appropriate, in well-ventilated areas. • Sufficient care must be taken when handling these materials to prevent pollution. Training on the handling of dangerous and toxic materials must be conducted for all staff prior to the commencement of construction. • Storage areas must display the required safety signs depicting "no smoking", No naked lights" and "Danger" containers must be clearly marked to indicate contents as well as safety requirements. • The contractor must supply a method statement for the storage of hazardous materials at tender stage. • All pollutants on site, including waste materials and construction debris must be handled and disposed of in a manner that does not cause contamination of stormwater runoff by, e.g. bunding storage areas that contain hazardous substances, etc. • Good housekeeping practices must be employed to prevent contamination of stormwater runoff. • Clean up spills in bunded areas, remove and dispose of safely from the bunded area as soon as possible after detection.	Contractor and ECO to check if mitigation measures are being properly implemented	Mitigation measures to be monitored daily

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
Oils and Chemicals	• Prevention of pollution of soil and ground water resources • Minimise chances of transgression of the acts controlling pollution and ensure safety of workers	• The contractor must provide method statements for the "handling & storage of oils and chemicals", "fire", and "emergency spills procedures". • These substances must be confined to specific and secured areas, and in a way that does not pose a danger of pollution even during times of high rainfall. • These areas must be imperviously bunded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks. • Drip trays (minimum of 10cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised. • The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing. • The depth of the drip tray must be determined considering the total amount/ volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle. • Spill kits must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spill kits must be made up of material/product that is in line with environmental best practice (example for consideration SUNSORB is a recommended product that is environmentally friendly). • All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils,	Contractor and ECO to check if mitigation measures are being properly implemented	Mitigation measures to be monitored daily

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		and drenched spill kit material). • Construction should preferably take place during the dry season. • All construction vehicles should be kept in good working conditions.		
Stockpiles	• Minimise scaring of the soil surface and land features • Minimise disturbance and loss of soil • Minimise construction footprint • Minimise sedimentation of nearby drainage lines • Maintain the integrity of topsoil for landscaping and rehabilitation • Containment of invasive plant growth • Minimise contamination of storm water run-off	• All stockpiles must be stored on flat developed or to be paved over areas where run-off will be minimised and be surrounded by berms. Stockpiles must also only be stored for the minimum amount of time necessary. • All stockpiled material must be easily accessible without any environmental damage. • All temporarily stockpiled material must be stockpiled in such a way that the spread of materials is minimised. • Stockpiles are to be stabilised prior to the loss of soils due to erosion. • Soils from different horizons must be stockpiled such that topsoil stockpiles do not get contaminated by sub-soil material. • No plant, workforce or any construction related activities may be allowed onto the topsoil stockpiles. • Topsoil stockpiles must be clearly demarcated as no-go areas. • Stockpiles must not be higher than 2m to avoid compaction thereby maintaining the soil integrity and chemical composition (for the topsoil stockpiles that will be used for re-vegetation).	Contractor and ECO to check if mitigation measures are being properly implemented	Mitigation measures to be monitored daily

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
Cement (if Applicable)	• Minimise the possibility of cement residue entering into the surrounding environment • Minimise pollution of soil and ground water resources	• The contractors must provide and maintain a method statement for "cement and concrete batching". The method statement must provide information on proposed storage, washing & disposal of cement, packaging, tools and plant. • The mixing of concrete must only be done at specifically selected sites on mortar boards or similar structures to contain run-off into soils, rocky outcrops, streams and natural vegetation. • Cleaning of cement mixing and handling equipment must be done using proper cleaning trays. • All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility. • Any spillage that may occur must be investigated and immediate remedial action must be taken. • The visible remains of concrete, either solid, or from washings, must be physically removed immediately and disposed of as waste to a registered landfill site. • Cement batching areas must be located in consultation with the Engineer Representative, his/ her EO or ECO to ensure residues are contained.	Contractor and ECO to check if mitigation measures are being properly implemented	Mitigation measures to be monitored daily
Bulk Storage of Fuel	• Prevention of pollution of soil and ground water resources in the immediate and surrounding environments.	• Bulk fuel storage tanks on the site shall be on an impervious surface with an appropriate bunding and be able to contain at least 110% of the volume of the tanks. • Bulk fuel storage tanks shall be located such that they do not pose a high risk in terms of water pollution (i.e. they must be located away from water courses). • Bulk fuel storage tanks shall be placed so that they are out	Contractor and ECO to check if mitigation measures are being properly implemented	Mitigation measures to be monitored daily

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		of the way of traffic, so that the risk of the tanks being ruptured or damaged by vehicles is minimised. • The combined volume of Diesel and/or dangerous goods stored on site must not be greater than 80m3, at any one time.		
Eating areas and camp followers	• Control potential influx of vermin and flies • Neat work place and hygienic environment • Minimise negative social impacts to local residents and businesses	• The contractors must provide and maintain a method statement for construction lay down areas". • The Contractor must, in conjunction with the EO, designate restricted eating areas for eating during normal working hours. Adequate closed refuse bins must be provided and cleaned on a daily basis. • No fires are to be lit outside of a facility designed to contain fires. The adequacy and positioning of these structures must be determined in consultation with the EO. • The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. • Camp followers/ informal traders must not be allowed to congregate outside the construction site. • Litter (even if originating outside the camp but within the site boundary) and concrete bags, etc. must be picked up daily and put into suitably closed bins.	contractor. The ECO to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored as and when required
Toilets and Ablution Facilities	• Minimise potential of diseases on site • Minimise potential to pollute soils, water resources and natural habitats	• The contractor is responsible for providing all sanitary arrangements for his and the sub-contractors team. A minimum of one chemical toilet must be provided per 15 persons. • Sanitary arrangements must be to the satisfaction of the ECO. Toilets must be of the chemical type. The contractor must keep the toilets in a clean, neat and hygienic condition. The contractor must supply toilet paper at all	contractor. The ECO to check if mitigation measures are being properly implemented	Mitigation measures to be monitored as daily

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		toilets at all times. Toilet paper dispensers must be provided in all toilets. • Toilets provided by the contractor must be easily accessible. All toilets will be located within the contractor's camp and not within sensitive areas. Should toilets be needed elsewhere, their location must first be approved by the EO or ECO. • The contractor (who must use reputable toilet-servicing company) must be responsible for the cleaning, maintenance and servicing of the toilets. The contractor (using reputable toilet-servicing company) must ensure that all toilets are cleaned and emptied weekly • Toilets out on site must be secured to the ground and have a sufficient locking mechanism operational at all times. • Ensure proper sanitation is achieved which will encourage the workforce to utilise toilets provided and not the surrounding habitat.		
Solid Waste Management	• To keep the site neat and tidy • Reduce visual impact • Control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding	• The contractors must provide and maintain a method statement for "solid waste management". The method statement must provide information on proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes. • Waste must be separated into recyclable and non-recyclable waste. • Any illegal dumping of waste must not be tolerated, this action will result in a fine and if required further legal action will be taken. This aspect must be closely monitored and reported on; proof of legal dumping must be able to be produced on request.	Contractor. The ECO is to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored daily.

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
	environment • Minimise potential to pollute soils, water resources and natural habitats	• Bins must be clearly marked for ease of management. • All refuse bins must have a secured lid so that animals cannot gain access. • Sufficient closed containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, and builder's wastes generated on the site. • All solid wastes, including chemical wastes that are generated must be removed and disposed of at a licensed waste disposal site. The contractor is to provide proof of such to the EO and ECO. • Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site. • A skip, with a cover, must be used to contain refuse from campsite bins, rubble and other construction material.		
Workshop equipment, maintenance and storage	• Prevent pollution of the environment • Minimise chance of transgression of the acts controlling pollution • Disposal of hazardous substances in an appropriate manner	• All maintenance and washing of vehicles and equipment must take place in an area that is equipped with a bund wall and grease trap oil separator. During servicing of vehicles/equipment, a suitable drip tray must be used, especially where emergency repairs are done outside the workshop/ camp laydown area. Leaking equipment must be repaired immediately/ be removed from site to facilitate repair. All wastes must be collected and removed to an appropriate registered waste site. • Workshop areas must be monitored for oil and fuel spills and such spills must be cleaned and remediated to the satisfaction of the EO or Engineer Representative. Cleaning and remediation must be done with products that are in line with best environmental practice i.e.	Contractor. The ECO to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored daily.

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		SUNSORB • A method statement is required from the Contractor, tendering for the project to show procedures for dealing with possible emergencies that can occur, such as fire, accidental leaks and spillage. • The Contractor must be in possession of an emergency spill kit that is complete and available at all times on site. The Contractor must ensure that senior and other relevant members of the workforce are trained in dealing with spills by using emergency spill kits. • The following must be applied: o All contaminated soil/yard stone shall be removed and disposed of as hazardous waste at a registered facility or placed in containers to be taken to one central point where bio-remediation can be done. o A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site. o All spills of hazardous substances must be reported to the EO, Engineer Representative or ECO. o The contractor must comply with the regulations of the OHSA.		
Crew Camps	• Minimise water pollution • Minimise dust fallout • Minimise unwarranted environmental	• The contractors must provide and maintain a method statement for "Crew camps and construction lay down areas". • Accommodation for members of the workforce is not permitted on site. • Dedicated wash areas must be situated 30m away from watercourses, areas of shallow groundwater.	Contractor. The ECO is to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored as and when required

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
	damage outside the footprint • Maintain a clean and healthy working environment • Minimise impact to surrounding environment	• The contractor's camp must be monitored for dust fallout and dust suppression applied as required. This may include the laying of gravel. • The contractor must provide labourers plastic bags to clean up the contractor's camp and construction site on a daily basis. These areas must then be inspected by the contractor to ensure compliance with this requirement. • The contractor is responsible for cleaning the contractor's camp and construction site of all structures, equipment, residual litter and building materials at the end of the construction period and, the topsoil restored in areas where landscaping is to take place.		
Fires	• Minimise risk of fires • Minimise destruction of natural fauna and flora • Maintain safety on site • Conduct management review of fire preparedness and response before onset of fire season	• The contractors must provide and maintain a method statement for "fires", clearly indicating where and for what fires will be utilised plus details on the fuel to be utilised. • Absolutely no burning of waste is permitted. • Fires within the designated areas must be small in scale so as to prevent excessive smoke being released into the air. • No wood is to be collected, chopped or felled for fires from private or public property as well as from no-go or sensitive areas within the site and any surrounding natural vegetation.	Contractor. The ECO to check if mitigation measures are being properly implemented	Mitigation measures to be monitored as and when required
Crime, Safety and Security	• Reduce the risk of potential incidences • Minimise the	• Staff must regularly be informed of the necessary safety procedures and be competent in the work they are employed to do. • No site staff, other than security personnel will be housed	Contractor. The ECO to check if mitigation	Mitigation measures to be monitored as and when

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
	potential impact on the environment	on site. Security personnel must be supplied with adequate protective clothing, ablution facilities, water and refuse collection facilities, facilities for cooking and heating so that open fires are not necessary. • Ensure that staff is familiar with the Occupational Health and Safety Policy and the Health, Safety, Security and Environmental Policy of the relevant contractor. • All the necessary safety regulations must be abided by including building codes and the fire practice requirements; • 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 the ground, accidents to employees, use of hazardous substances and materials, etc. • 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. • 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, as well as the police and ambulance services must be available at prominent locations around the construction site and the construction crew camps.	measures are being properly implemented	required
Visual Impact	• Minimise littering on site	• The site must be managed properly, and all rubbish and rubble removed to a registered waste disposal facility.	Contractor. The ECO is to check if	Mitigation measures to be

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
	• Prevent adverse health effects on workers and the surrounding community • Maintain a peaceful environment for the community during construction	• Excess soil and bedrock should be disposed of at an appropriate facility. A certificate of disposal must be obtained for any waste that is disposed of. • Refuse bins must be provided on site and these must be emptied regularly. Waste must not remain on site for more than 2 weeks. • The construction camp must be properly screened and located closer to the access road. • Indigenous plants or trees must be retained to provide screens to make the construction site less visually intrusive. • Construction activities must be limited to the daylight hours. • Should overtime/night work be authorised, the Contractor shall be responsible to ensure that lighting does not cause undue disturbance to neighbouring residents. In this situation low flux and frequency lighting shall be utilised.	mitigation measures are being properly implemented.	monitored daily
Noise Impact	• Minimise noise pollution from construction activities • Prevent adverse health effects on workers and the surrounding community • Ensure compliance with local noise regulations and standards	• The Occupational Health and Safety Act's regulations must be followed during all operations during the building period (Act No 85 of 1993). • During certain times of construction, activities that produce noise levels exceeding 85 dBA must be forbidden. • To help mitigate the effects of noise levels, PPE should be made available to on-site individuals working in regions where the threshold exceeds the ambient 8-hour noise levels (75dBA). • Construction work must only be done during regular business hours (weekdays, 7 a.m. to 5 p.m., excluding holidays).	Contractor. The Contractor and ECO is to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored daily.

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
	• Mitigate impacts on nearby sensitive receptors, such as schools, hospitals, and residential areas • Maintain a peaceful environment for the community during construction	• On-site signage should be created to alert the public to construction operations. • If construction must proceed after regular business hours, the neighbours and I&APs must be informed. • The CLO is required to notify the neighbourhoods of any anticipated noise disturbances outside of regular business hours. • Noise levels must be within reasonable bounds. South African National Standard (SANS) must be followed for all created noise and sounds. • Wherever possible, it is necessary to enclose stationary noisy equipment (such as compressors, generators, etc.) with acoustic coverings, screens, or sheds. The usage of portable acoustic shields is required when noisy equipment is not stationary (for example drills, angle grinders, and chipping hammers). • The Contractor is required to take action to prevent workers from lingering and making noise disturbances in the vicinity. When feasible, the Contractor or his subcontractors must transport workers to and from the site using their own vehicles. • In areas where construction will be taking place near residential and/or business property make use of noise reduction techniques such as sound barriers. • Avoid undertaking construction activities after daylight hours. In instances when this is not possible ensure that potentially affected parties are informed. • If blasting is required ensure that potentially affected parties are informed prior to any blasting taking place.		

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
Traffic Impact	• Minimise Traffic during construction • To ensure that public roads around the site are safe and the flow of traffic is not disrupted	• Develop and implement a traffic management plan. The traffic management plan should be inclusive of traffic management measures for alternative routes. • Ensure there is suitable road signage, including the use of the variable messaging • System informing road users of construction activities and potential delays. • Where possible, separate fast- and slow-moving traffic into specific lanes. • During peak periods (morning and evening) stack heavy duty vehicles and allow through during non-peak times. • Do not allow heavy duty vehicles onto alternative routes. • Encourage road users to avoid the affected section of road during peak hours (Particularly the communities who have alternatives routes to consider). • Make use of local radio stations, newspapers, and social media to inform the public well in advance of any road closures or extended delays. • 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	Contractor. The ECO is to check if mitigation measures are being properly implemented	Mitigation measures to be monitored daily
Air Quality Impact	• Minimise Air pollution during construction	• The liberation of dust into the surrounding environment shall be effectively controlled using inter alia, water spraying and/or other dust-allaying agents such as dust nets. • Regular and effective damping down of working areas must be carried out to avoid dust pollution. • Machinery or equipment used on site must not constitute	Contractor. The ECO is to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored daily

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		a pollution hazard regarding air pollution via excessive exhaust fumes. This shall be inspected regularly by the contractor and rectified immediately.		
Degradation and/ or Destruction of wetland Habitats	• Reduce the risk of potential degradation of wetland habitats Minimise the potential impact on the environment	• Any construction activities in or within a delineated buffer zone of a water resource may only take place after the necessary water use license has been obtained. • Where wetlands may be encroached upon by proposed activities, the edge of the wetland must be clearly demarcated in the field with pegs or poles that will last for the duration of the construction phase, color-coded as follows: o RED – Indicating the edge of the wetland (Note: This includes the permanent, seasonal and temporal zones of wetlands, or parts thereof; and no vehicles or building materials are allowed in this zone). These should be placed along the entire length of the site. o ORANGE – Indicating the edge of the buffer zone • Construction machinery and associated vehicles are not allowed to enter wetlands. Strictly no re- fuelling of vehicles or machinery will be allowed to take place in any area close to a wetland. • During and after construction areas of exposed soil can easily erode and subsequently end up in the wetlands. A well-designed storm water system must be put in place to avoid erosion into wetlands. Natural runoff from the natural terrestrial habitat surrounding the wetlands should however not be restricted unnecessarily. • The use of potential pollutants (paint, chemicals, etc.) during construction and operational phases must be	Contractor. The ECO is to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored on regular basis

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		strictly controlled and a high quality of management and supervision concerning such materials must be enforced, especially close to wetland buffer zone areas. • Sanitary facilities must be made available to construction workers to prevent urine and human waste entering the wetlands. If at any point construction activities encroach on wetlands, it is strongly advised that a wetland/aquatic specialist is appointed during all phases to monitor impacts and related mitigation measures regarding wetland habitats.		
Loss of Indigenous Fauna and Flora Diversity Associated with Wetlands	• Reduce the risk of potential loss of indigenous fauna and flora.	• Destruction of natural wetland vegetation must be avoided at all costs. • Development of an alien invasive management plan. Alien and invasive vegetation control must take place throughout all development phases to prevent loss of habitat of indigenous fauna and flora. • Movement of vehicles and construction workers in wetlands and buffer zones must be strictly prohibited. No harvesting of plants or animals is allowed. • Any specimens of protected plant species known to occur in the wetlands and the delineated buffer zone and may potentially be impacted by the construction activities, are to be fenced off for the duration of the activity. • Include environmental awareness aspects into the site induction program to ensure all staff are aware of the location and importance of wetland habitats. • Establish emergency response measures and a clearly defined chain of communication to rapidly deal with any	Contractor. The ECO is to check if mitigation measures are being properly implemented.	Mitigation measures to be monitored on regular basis

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		unforeseen impacts to wetlands, e.g. spills. • No stockpiling of materials may take place within wetland/ watercourse areas and temporary construction camps and infrastructure should be located outside the wetland footprint. • Regular cleaning up of the wetland areas should be undertaken to remove litter. • Design and implement a construction stormwater management plan that aims to minimise the concentration of flow and increase in flow velocity, as well as minimising sediment transport off site. • Where practically possible, the major earthworks should be undertaken during the dry seasons (roughly from April to August) to limit the erosion during rainfall. • Store and handle potentially polluting substance and waste in designated bunded facilities. • Waste should be regularly removed from the construction site by suitably equipped and qualified operators and disposed of in approved facilities. • Locate temporary waste and hazardous substance storage facilities a minimum of 100m from any wetland edge Keep sufficient quantities of spill clean-up material on site.		
Introduction of Alien Invasive Species	• Reduce the risk of potential loss of species.	• Implementation of an Alien Invasive Management Programme. • Ongoing alien plant control must be undertaken, particularly in the disturbed areas as these areas will quickly be colonised by invasive alien species, especially in the riparian zone, which is particularly sensitive to AIP	Contractor. The ECO is to check if mitigation measures are	Mitigation measures to be monitored on a regular basis

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		infestation. • Herbicides must be carefully applied, in order to prevent any chemicals from entering the river. Spraying of herbicides within or near to the wetland areas is strictly forbidden. • Re-instate indigenous vegetation (grasses and indigenous trees) in disturbed areas. • After rehabilitation, re-vegetate any exposed surfaces and mulch re-vegetated areas. Select appropriate species for wetland and terrestrial areas and ensure species diversity is enhanced, with species commonly found in the natural wetland area.	being properly implemented.	
Pollution of Water Resource and Soils	• Reduce the risk of potential loss of species.	• Demarcate wetland areas to avoid unauthorised access. • No washing of any equipment in close proximity to a watercourse is permitted. • No releases of any substances that could be toxic to fauna or faunal habitats within the channels or any watercourses is permitted. • Spillages of fuels, oils and other potentially harmful chemicals must be cleaned up immediately and contaminants properly drained and disposed of using proper solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil must be removed, and the affected area rehabilitated immediately. • Education of workers is key to establishing good pollution prevention practices. Training programs must provide information on material handling and spill prevention and response, to better prepare employees in case of an	Contractor. The ECO is to check if mitigation measures are being properly implemented	Mitigation measures to be monitored on a regular basis

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		emergency. • Signs should also be placed at appropriate locations to remind workers of good housekeeping practices including litter and pollution control. • The proper storage and handling of hazardous substances (hydrocarbons and chemicals) needs to be ensured. All employees handling fuels and other hazardous materials are to be properly trained. Storage containers must be regularly inspected so as to prevent leaks. All contractors and employees should undergo induction which is to include a component of environmental awareness.		
Sedimentation and Soil Erosion	• Reduce the risk of potential loss of species.	• Implement a stormwater management plan • Do not allow surface water or stormwater to be concentrated, or to flow down cut or fill slopes without erosion protection measures being in place. • Exposed soils must be rehabilitated as soon as practically possible to limit the risk of erosion. Erosion control measures must be employed where required. • Riparian vegetation bordering on drainage lines, wetlands and rivers will be considered environmentally sensitive and impacts on these habitats should be avoided. • If erosion has taken place, rehabilitation will commence as soon as possible.	Contractor. The ECO is to check if mitigation measures are being properly implemented	Mitigation measures to be monitored on a regular basis
Destruction, further loss of habitat and fragmentation of	• Reduce the risk of potential loss of habitat.	• Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. • All areas outside of the direct footprint that were disturbed	Contractor. The ECO is to check if mitigation measures are	Mitigation measures to be monitored on regular basis

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
the vegetation Community		by the geological sampling must be rehabilitated and restored to a natural state. • Rehabilitation of the disturbed areas must be made a priority. Any disturbed area must be revegetated with plant and grass species which are endemic to this vegetation type. • All activities must be restricted too within the low/medium sensitivity areas. No unnecessary loss of high sensitivity areas should be permitted. • All construction/operational and access must make use of the existing roads. • All laydown, chemical toilets etc. should be restricted to low/medium sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. • Construction impacts associated with the proposed project must be contained within the footprint of the demarcated areas as indicated on the final approved project layout plan. • Prior to construction, the final road alignment, road reserve and development footprint area must be demarcated on site to ensure that construction impacts are contained within this area. If necessary, these areas may be fenced or, alternatively, nearby sensitive areas are to be fenced to prevent access. • Minimise the impacted area and clear only what is required • Avoid erosion, manage alien invasive species	being properly implemented.	

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		establishment, ensure the re-establishment of natural vegetation • Employ stormwater management measures		
Loss of species of special concern (SSC)	• Reduce the risk of potential loss of species.	• Conduct a site walkdown to identify any SSC within the project area prior to site clearance • Minimise the impacted area and clear only what is required • Tag and avoid all Red Data plants • No removal or relocation of Plant SSC without prior approval from the competent authority • Restricting blasting and operation of machinery to daylight hours	Contractor. The ECO is to check if mitigation measures are being properly implemented	Mitigation measures to be monitored on regular basis

3.3 OPERATIONAL PHASE

Table 10: Operational Phase

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
PHASE OF THE DEVELOPMENT: PRE-CONSTRUCTION PHASE				
Impact of freshwater sources	• Manage water resources	• During routine road maintenance operations, clear all channels located upstream of the road crossings of any debris and sediment build-up, particularly at the culverts and bridge structures where flows maybe impeded; and • Remove any invasive alien plants occurring in the river channels at the river crossings and the road reserve on an ongoing basis.	Developer (SANRAL)	On going

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
Increased impervious area (Hardened surfaces)	• Manage stormwater flows and pollution to watercourses.	• During the operational phase, there is a medium-high risk due to the increased traffic that will occur on the road. This will increase the risk of toxic hydrocarbons being washed into the wetland areas. • The increased area of hardened surfaces will increase flow volumes/ flood-peaks leading to increased erosion potential. • Attenuation of stormwater from the road upgrade is important to control the velocity of runoff towards the stream. Attenuation structures must be placed between the road upgrade and the stream i.e. stormwater must not be directly deposited into the stream. • Address increased runoff volumes at source. • Disturbed area in the watercourse as a result of road maintenance must be rehabilitated as soon as maintenance in an area is complete or near complete and not left until the end to be rehabilitated (progressive rehabilitation). • Bank erosion must be monitored at regular intervals during the operational phase in order to assess whether further riverbank protection/stabilisation works are required. • Ensure the stream banks are well maintained and vegetated to prevent any scouring of the supporting structures. • The grass must be allowed to lengthen and thicken naturally to facilitate reduction in runoff velocity and volume, increase sediment deposition within the buffer zone and increase infiltration of stormwater. • Areas sensitive to erosion must be identified and	Developer (SANRAL)	On going

ENVIRONMENTAL RISK OR ISSUE	MANAGEMENT OBJECTIVE	MITIGATION MEASURE	RESPONSIBILITY	FREQUENCY OF ACTION
		monitored to ensure that erosion risks are minimised. • Watercourse crossings must be regularly checked to ensure they are not being degraded or causing degradation and that, openings (under or at a culvert opening) are kept clear to avoid impeding flows to downstream areas. This minimises erosion. • Stockpiled topsoil must be replaced following construction activities and be shaped to match the natural topography of the site. All stripped topsoil MUST be appropriately replaced on the site.		
Road user safety and traffic accommodation	• improve overall road user safety and accommodate future anticipated traffic volumes	• Ensure the safety and traffic accommodation measures as indicated in the proposed project design are implemented as planned; and • Ensure that a Routine Road Maintenance Programme is implemented along the proposed project route.	Developer (SANRAL)	

SECTION 4: DETAILS OF THE PERSON/ COMPANY WHO PREPARED THE EMPR

Earthlink Environmental Services was appointed as the Independent Environmental Assessment Practitioner (EAP) and has adequate experience within the required Environmental Impact Assessment (EIA) field to facilitate the required Assessment Process. See Appendix G for a full CV. The persons involved in the project include.

ENVIRONMENTAL ASSESSMENT PRACTITIONER

Ms. Chuene is a registered Environmental Assessment Practitioner (EAPASA) with over 10 years of experience in environmental management, compliance, and waste management services. She holds a B.Sc. Environmental and Resource Studies and B.Sc. (Hons) from the University of Limpopo and currently pursuing an MSc in Geography specializing in Waste Management.

Ms. Chuene has experience in overseeing Environmental Impact Management, Biodiversity Management, Waste Management Planning, and Environmental Compliance. My expertise includes facilitating Environmental Authorizations, Water Use Licenses, and Waste Management Licenses for various projects, including renewable energy facilities, mining activities, waste management facilities, roads, bridges, dams, and agricultural developments.

She is the EAP for the proposed project.

SECTION 5: CONCLUSION

This EMP and associated Basic Assessment have been compiled to meet regulatory requirements under the National Environmental Management Act (Act No. 107 of 1998) [NEMA] and its associated 2010 EIA Regulations.

This EMPr comprehensively addresses the potential construction and operational phase's impacts of all relevant aspects related to road upgrade activities on the site and has been informed inter alia through the undertaking of specialist assessments over the site. The EMP allows for continuous improvement through regular monitoring and reporting to IAPs and relevant spheres of Local, Provincial, and National Government.