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PRE-CONSTRUCTION, CONSTRUCTION AND
POST-CONSTRUCTION PHASE
**ENVIRONMENTAL MANAGEMENT
PROGRAMME**

FOR THE

**PROPOSED DEVELOPMENT OF A HARDENED WATER RESERVOIR
AND ASSOCIATED INFRASTRUCTURE AT THE KOEBERG NUCLEAR
POWER STATION LOCATED ON THE FARM DUYNEFONTYN NO.1552,
MELKBOSSTRAND, WESTERN CAPE, CITY OF CAPE TOWN
MUNICIPALITY**



APPLICANT:	ESKOM HOLDINGS SOC LTD.
ENVIRONMENTAL ASSESSMENT PRACTITIONER:	SHARPLES ENVIRONMENTAL SERVICES CC AUTHOR: MADELEINE KNOETZE (EAPASA #3230)
DFFE PROJECT REFERENCE:	14/12/16/3/3/1/2908
SES REFERENCE NUMBER:	CT23/KOEBERG/EMPR/01/24
DATE:	19 January 2024

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APPENDIX 4 OF THE EIA REGULATIONS 2014 (AS AMENDED 2017).

This Environmental Management Programme has been drafted in accordance with Appendix 4 of the Environmental Impact Assessment Regulations 2014 (as amended 2017). The table below shows how the requirements of Appendix 4 have been included within this Environmental Management Programme.

(1) An EMPr must comply with section 24N of the Act and include— (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;	Appendix A
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Appendix B - E
(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;	Appendix C
(d) a 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) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Section 6 - 10
(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;	
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 11 -12 Appendix H
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	
(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 14 Appendix C
(n) any specific information that may be required by the competent authority.	



**COMPLIANCE WITH SECTION 24N OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998,
 AS AMENDED (ACT 107 OF 1998)**

(1) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may require the submission of an environmental management programme before considering an application for an environmental authorisation.	This Environmental Management Programme (EMPr) has been circulated to the Decision-making authority and has been updated based on the comments received by the public during the Public Participation Process.
(1A) Where environmental impact assessment has been identified as the environmental instrument to be utilised in informing an application for environmental authorisation, or where such application relates to prospecting, mining, exploration, production and related activities on a prospecting, mining, exploration or production area, the Minister, the Minister of Minerals and Energy, an MEC or identified competent authority must require the submission of an environmental management programme before considering an application for an environmental authorisation.	
(2) The environmental management programme must contain-	
(a) information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of- (i) planning and design; (ii) pre-construction and construction activities; (iii) the operation or undertaking of the activity in question; (iv) the rehabilitation of the environment; and (v) closure, if applicable;	Sections 7, 8, 9 and 10
(b) details of- (i) the person who prepared the environmental management programme; and (ii) the expertise of that person to prepare an environmental management programme;	Section 4
(c) a detailed description of the aspects of the activity that are covered by the environmental management programme;	Section 5
(d) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);	Section 11 Appendix E
(e) information in respect of the mechanisms proposed for monitoring compliance with the environmental management programme and for reporting on the compliance;	
(f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and	Sections 7, 8, 9 and 10
(g) a description of the manner in which it intends to- (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) remedy the cause of pollution or degradation and migration of pollutants; and (iii) comply with any prescribed environmental management standards or practices	Sections 7, 8, 9 and 10
(3) The environmental management programme must, where appropriate-	
(a) set out time periods within which the measures contemplated in the environmental management programme must be implemented;	Section 6 - 10
(b) contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting area or mining area in question; and	Section 11 and 12 Appendix E
(c) develop 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.	Sections 13 and 14
(4) The Minister of Minerals and Energy may not grant an environmental authorisation, unless he or she has considered any recommendation by the Regional Mining Development and Environmental Committee	Not applicable to the proposed development
(5) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may call for additional information and may direct that the environmental management programme in question must be adjusted in such a way as the Minister, the Minister of Minerals and Energy or the MEC may require.	All comments obtained from the Department of Environmental Affairs & Development Planning has been incorporated into this EMPr.
(6) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may at any time after he or she has approved an application for an environmental authorisation approve an amended environmental management programme.	Not applicable to the proposed development at this stage



(7) The holder and any person issued with an environmental authorisation-	
<i>(a) must at all times give effect to the general objectives of integrated environmental management laid down in section 23 (Of the NEMA);</i>	Section 12 Appendix E
<i>(b) must consider, investigate, assess and communicate the impact of his or her prospecting or mining on the environment;</i>	
<i>(c) must manage all environmental impacts-</i> <i>(i) in accordance with his or her approved environmental management programme, where appropriate; and</i> <i>(ii) as an integral part of the reconnaissance, prospecting or mining, exploration or production operation, unless the Minister of Minerals and Energy directs otherwise;</i>	
<i>(d) must monitor and audit compliance with the requirements of the environmental management programme;</i>	
<i>(e) must, as far as is reasonably practicable, rehabilitate the environment affected by the prospecting or mining operations to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and</i>	
<i>(f) is responsible for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of his or her prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting or mining area to which such right or permit relates.</i>	



1. DOCUMENT DETAILS

SES Project Ref. No:	17
Conditions of Use:	<p>This report is the property of the sponsor, <i>Sharples Environmental Services cc (SES)</i>, who may make allowance to publish it, in whole provided that:</p> <p>Approval for copy is obtained from <i>SES</i>. <i>SES</i> is acknowledged in the publication. <i>SES</i> is indemnified against and claim for damages that may result from publication of specifications, recommendations or statements that is not administered or controlled by <i>SES</i>. That approval is obtained from <i>SES</i> if this report is to be used for the purposes of sale, publicity or advertisement.</p> <p><i>SES</i> accepts no responsibility for failure to follow the recommended program.</p>
Disclaimer	<p><i>*This Environmental Management Programme has been compiled in line with Appendix 4 of Environmental Impact Assessment (EIA) Regulations of 2014, as amended (GNR 326 of 2017). This EMPr has been submitted to the Competent Authority as part of the EIA process followed in terms of the EIA Regulations of 2014, as amended. Even though numerous renditions of this report exist, this report (in its final state), aims to replace any other version of this document, upon authorisation of the proposed development by the Department of Forestry, Fisheries & Environment (DFFE)</i></p> <p><i>*All technical developmental information contained in this EMPr was provided by Eskom Holdings SOC Ltd and SES does not take any responsibility regarding the accuracy of the information.</i></p> <p><i>*This EMPr and the preliminary impacts identified is based on the expected sensitivity of the receiving environment based on the observations made by the appointed Environmental Assessment Practitioner (EAP) and the specialists qualified to make such interpretations.</i></p>

2. ABOUT THIS EMPr

This document is intended to serve as a guideline to be used by *ESKOM Holdings SOC Ltd* during the pre-construction, construction, and post-construction/rehabilitation phases of the proposed development. This document provides measures that must be implemented to ensure that any environmental degradation that may be associated with the proposed development is avoided, or where such impacts cannot be avoided entirely, are minimised and mitigated appropriately.

This Environmental Management Programme (EMPr) has been prepared in accordance with the Appendix 4 of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended (Government Notice Regulation [GNR] 326 of 2017; GNR 517 of 2021), which stipulates the minimum requirements of an EMPr, Section 24N of the National Environmental Management Act, 1998, as amended (Act No. 107 of 1998), and with reference to the "Guidelines for Environmental Management Programmes" published by the Department of Environmental Affairs and Development Planning (DEA&DP, 2005).

In line with the mitigation hierarchy (see Figure 1), the overarching goal of this EMPr is to anticipate and provide measures that must be implemented to ensure that any environmental impact that may be associated with the development is avoided. Where such impacts cannot be avoided entirely, such environmental impacts must be minimised and mitigated appropriately. The mitigation hierarchy was considered during the BAR planning process, to appropriately manage environmental impacts.

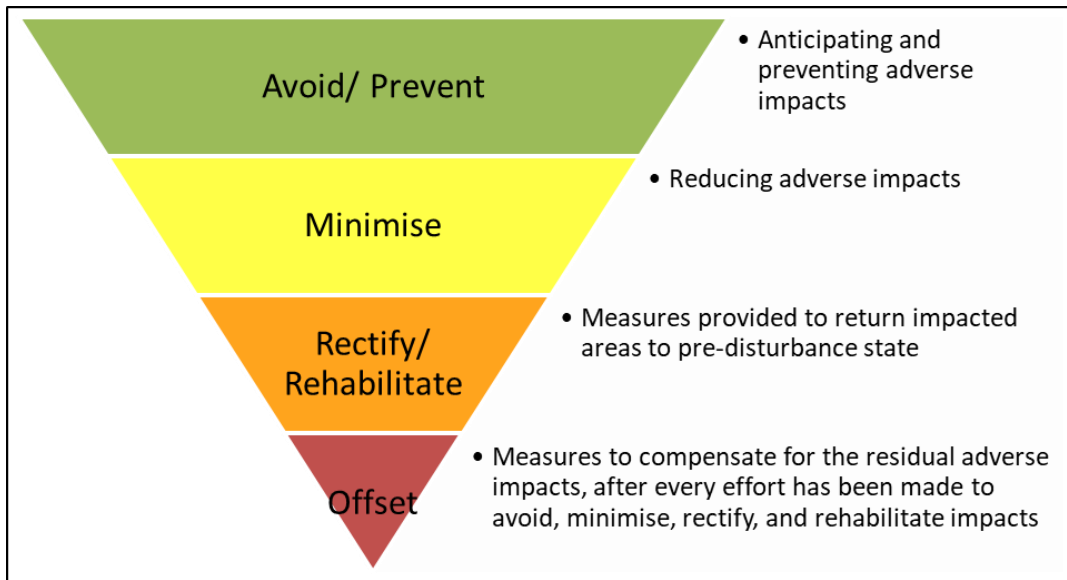


Figure 1. Mitigation hierarchy

It is important to note that not only is the EMPr designed to manage the physical establishment of the development *per se*, but also acts as a tool which can be used to manage the environmental impacts of the proposed development.

The rehabilitation, mitigation, management and monitoring measures prescribed in this EMPr must be seen as binding to the *Proponent*, and any person acting on its behalf, including but not limited to agents, contractors, employees, associates, guests or any person rendering a service to the development site.

2.1. Environmental legislative requirements of the proposed development

The EIA Regulations of 2014, as amended (GNR 326 of 2017; GNR 517 of 2021), as promulgated in terms of the National Environmental Management Act, 1998 (NEMA; Act No. 107 of 1998), as per gives effect to the Constitution of the Republic of South Africa by providing a framework for co-operative environmental governance and the environment. NEMA requires that an environmental authorisation (EA) be issued by a competent authority (CA) before the commencement of an activity listed in terms of the EIA Regulations of 2014, as amended.

Since this development proposal triggered listed activities in terms of the EIA Regulations of 2014, as amended, in terms of Listing Notice 1 and 3 of 2014, as amended, a Basic Assessment Process was undertaken. This EMPr acts as a standalone document submitted with the Basic Assessment Report submitted to the Department of Forestry, Fisheries & Environment (DFFE) for the purpose of obtaining Environmental Authorisation.

The following listed activities will be triggered in terms of the relevant Listing Notices:

Table 1. Listed Activities triggered in terms of Listed Notice 1 and 3 of 2014, as amended.

Activity #	Listing Notice 1. Description of Activity as per GN No. R 327	Reason for Listing
19A	<p>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 —</p> <p>(i) the seashore;</p> <p>(ii) the littoral active zone, an estuary or a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever distance is the greater; or</p> <p>(iii) the sea; —</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving —</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p>	<p>The installation of the piping associated with the hardened water reservoir will require excavation and removal of more than 5 cubic metres of soil within 100 metres inland from the high-water mark of the sea.</p>
Activity	Listing Notice 3. Description of Activity as per GN No. R 324	Reason for listing
2	<p>The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres.</p> <p>i. Western Cape</p> <p>i. A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>ii. In areas containing indigenous vegetation;</p> <p>or</p> <p>iii. Inside urban areas:</p> <p>(aa) Areas zoned for use as public open space; or</p> <p>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.</p>	<p>The activity involves the construction of a reservoir, with a total volume of 10 500 cubic metres within the KNPS area, within an area containing Cape Flats Strandveld vegetation and within the Koeberg Nature Reserve Protected Area in terms of NEMPAA.</p>
12	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purpose undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape</p> <p>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>ii. Within critical biodiversity areas identified in bioregional plans;</p>	<p>Upon development of the hardened water reservoir, more than 300 square metres of the endangered natural vegetation (Cape Flats Strandveld) will be removed, within 100 metres inland from the high-water mark of the sea.</p>

	<p>iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas;</p> <p>iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or</p> <p>v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.</p>	
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2.2. Important caveat to the report

In the past, some developments have had a devastating impact on the environment even though they have had EMPs in place, while other developments have had a low impact even though no management plans have been compiled.

The Implementing Agent and the attitude of the construction team play an integral role in determining the impact a development will have on the environment. The independent Environmental Control Officer (ECO) needs to ensure that all role-players are aware of the constraints that the EMP places on the development and the construction team and are prepared to be actively involved in implementing these constraints. The end result relies on co-operation, mutual respect and understanding of all parties involved.

3. HOW TO USE THIS DOCUMENT

It is essential that this EMP be carefully studied, understood, implemented, and adhered to as far as reasonably possible, throughout all phases of the proposed development. The *Proponent* must retain a copy of this EMP, and an additional copy must be kept on site at all times during the pre-construction, construction and post-construction / rehabilitation phases of the proposed development.

This EMP must be included in all contracts compiled for engineers, contractors and subcontractors employed by the *Proponent*, as this EMP identifies and specifies the procedures to be followed by engineers and other contractors to ensure that the adverse impacts of construction and maintenance activities are either avoided or reduced. Appointed contractors must make adequate financial provision to implement the environmental management measures specified in this document.

This EMP must be seen as a working document, which may be amended as and when needed accommodate changing circumstances on site or in the surrounding environment, or to accommodate requests/ conditions issued by the DFFE. Amendments to this EMP must first be approved by the Competent Authority, in writing, before being implemented.

4. DETAILS OF THE EAP & TECHNICAL/SPECIALIST INPUT

This EMP was compiled by Sharples Environmental Services cc (SES). SES was established in 1998 and has been actively engaged in the fields of environmental planning, assessment and management. SES



advises on private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale residential estates and resorts to golf courses, municipal service infrastructure installations and the planning of major arterials. Our consultants have over 20+ years of combined experience and we operate in the Southern, Eastern and Western Cape regions.

A brief description of the Environmental Assessment Practitioners (EAP) has been included below, as per Table 1, and a detailed Curriculum Vitae has been included in Appendix A.

Table 1: EAP Details.

Role:	Name:	E-Mail Address:	Qualifications:	Registration/ Memberships	YEARS OF EXPERIENCE
Author	Ms. Madeleine Knoetze	madeleine@sesc.net	B.Sc. Environmental Sciences (Geology and Geography) (NMMU)	• IAIA (SA) EAPASA (Reg nr. 2021/3230)	9+ years
Reviewer	Mrs. Betsy Ditcham	betsy@sesc.net	B.Sc. Honours (Wildlife Management) (UP) B.Sc (Zoology and Ecology) (UCT)	IAIA (SA) EAPASA (Reg Nr. : 1480)	14+ years

Table 2 below provides a summary of the specialists appointed verify the sensitivity of the proposed development area.

Table 2: Environmental Specialist Input.

Environmental Theme	Specialist Company Name	Specialist Name	Registration Nr.
Aquatic Biodiversity	Upstream Consulting	Debbie Fordham	SACNASP: 119102
Terrestrial Biodiversity	Nick Helme Botanical Surveys	Nick Helme	SACNASP: 400045/08
Plant Species			
Animal Species	Blue Skies Research	Dr. Jacobus Visser	SACNASP: 128018
Agriculture Sensitivity	Johann Lanz Soil Scientist	Johann Lanz	SACNASP: 400268/12
Cultural Heritage and Archaeological Theme	Agency for Cultural Resource Management (ACRM)	NID to be submitted by: Jonathan Kaplan	ASAPA CRM Membership No. 64 in Good Standing
Palaeontological			

5. DESCRIPTION OF THE ACTIVITY

Eskom Holdings SOC Limited, proposes to develop a hardened water reservoir split between two round hardened water reservoir tanks, located adjacent to each other with a usable water storage capacity of 10 500 m³ in total, thus 5 250 m³ respectively per tank, excluding freeboard. The proposed reservoir site will have an area of approximately 3 700 m² and will consist of two tanks with an internal diameter of 28 m each. All associated infrastructure required to ensure the successful operation of the reservoirs will be housed within the proposed reservoir site footprint. The proposed development will also include the installation of an inlet (feeder) and outlet (conveyance) pipeline, respectively, as well as an electrical line leading from the main power plant to the proposed hardened water reservoir infrastructure.

The purpose of the proposed development is to ensure that there is sufficient back-up water supply at the KNPS to provide core cooling and spent fuel pool make-up in the event of a Loss of Ultimate Heatsink and/or Plant Black-out (which could arise from natural catastrophic events such seismic events).

The proposed development will be located on the following SG-code:

C	0	1	6	0	0	0	0	0	0	0	0	1	5	5	2	0	0	0	0	0
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With the following co-ordinates of the site: 33°40'19.67''S; 18°25'52.61''E

The KNPS is located along the sandy coastline of the West Coast, approximately 27 km north of the Cape Town Central Business District and 1.5 km north of the residential area of Duynfontein. Access to KNPS is via the R27 which runs along the eastern boundary of the property or alternatively via Otto du Plessis Drive, leading from Duynfontein.

6. GENERAL ENVIRONMENTAL MANAGEMENT

The following general management measures are intended to protect environmental resources from pollution and degradation during all phases of the project life cycle. These measures must be implemented as and where applicable, reasonable and practicable during the pre-construction, construction and post-construction rehabilitation and operational (maintenance) phases of the proposed development.

6.1. Code of Conduct

The purpose of the Code of Conduct (CoC) is to minimise the impact of the activities associated with the construction phase on the environment. The rules and regulations prescribed in this CoC are intended to ensure that the impacts on the environment are not prejudiced by the construction activities. Failure to adhere to, or any breach of the conditions within the CoC will result in a fine being levied against the offending or defaulting party / individual.

Labourers appointed during the construction phase must conserve the natural environment, endorsing the principles of sustainable use and minimum impact. They must also be sensitive to the impact of their operations on the environment within which they work and, in doing so, minimise any adverse impacts.

This EMPr forms an integral part of the activities during the construction phase and as such, is legally enforceable. In addition to the restrictions and controls provided for in this EMPr, the environmental controls comprise of the following:

- **Engineers**
Unless otherwise stated by the holder, only a registered engineer must be appointed for the construction phase of the development. The engineer must provide work or services of quality and scope, and to a level, which are commensurate with accepted standards and practices. The engineer must be impartial in decision-making, provision of advice and judgement.
- **Contractors and sub-contractors**
Unless otherwise determined, only appropriately registered contractors must be appointed. It shall be the responsibility of the holder / engineer to ensure that the contractors abide by and comply with the rules and regulations of the Code of Conduct. Contractors shall be responsible for their sub-contractors and employees whilst they are on the development property at all times.
- **Rules and Regulations**
It is of vital importance that engineers, and contractors understand and acknowledge that they are working on a site that has undergone an environmental assessment, and if authorised will require compliance with all relevant permits/licenses and this EMPr. The role players should

agree to conform to all environmental controls specified in this EMP, and any additional environmental permits/licenses, as well as any additional input by the ECO.

In addition to the EMP, the environmental controls comprise of the following:

- **Plan Controls**

A copy of the approved and signed project plans must be available on site during the construction phase of the development. Variations of the building plans must be approved by the engineer / holder prior to being implemented.

- **Site Tidiness**

The contractor must always keep the appearance of the site neat and tidy. Building rubble must be removed from site at regular intervals, and litter must be removed from the site daily (if not, in appropriate receptacles). Refuse drums must be available on site which waste can be placed in. The drums must be emptied on a regular basis, as required, and the waste taken to a licenced local waste disposal facility.

- **Safety**

The contractor must comply with the Health and Safety Act (Act No. 85 of 1993), as amended (OSHA), together with such regulations promulgated thereunder.

6.2. Site Access and Traffic Management

All construction vehicles need to adhere to traffic laws and regulations. Drivers must be sensitised to the fact that they are working in an area with a potentially high volume of foot and vehicle traffic. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users within the KNPS. As far as possible, care must be taken to ensure that the local traffic flow pattern is not significantly disrupted, and vehicle operators therefore need to be educated in terms of "best-practice" operation in order to minimise unnecessary traffic congestion or dangers. These practices include, but are not limited to:

- Not unnecessarily obstructing the access point or traffic lanes used to access the site;
- Considering the load carrying capacity of road surfaces; and
- Adhering to all other prescriptive regulations regarding the use of public roads by construction vehicles.

Adequate signage that is both informative and cautionary to passing traffic must be erected to warn other road users (motorists and pedestrians) about the presence of construction vehicles, particularly at the point where construction vehicles enter/ exit the site warning them of the construction. Signage would need to be clearly visible and include, amongst others, the following:

- Identifying the working area as a construction site;
- Cautioning against relevant construction activities;
- Prohibiting access to the construction site;
- Clearly specifying possible detour routes and / or delay periods;
- Possible indications of time frames attached to the construction activities, and;
- Listings of which contractors are working on the site.

Other mitigation measures include:

- No construction to take place over or during the construction closure period in December – January without prior permission from the relevant authorities.

- ECO must do awareness training with the contractors and all labourers that will be working on site and must highlight the traffic related risks before construction commences.
- Where possible, construction traffic that may obstruct traffic flow on the surrounding roads must be scheduled outside of peak traffic times.
- Ensure appropriate behaviour of operators of construction vehicles.
- If needed, appropriate traffic management measures and/ or points men (traffic marshals) must be utilised to assist vehicles entering/ exiting the site.

6.3. Site Demarcation

The working areas should be clearly demarcated with fencing and signage on site during the pre-construction or construction phases of the development, as appropriate.

- **Construction Working Area**

Prior to the commencement of any land-clearing or construction activities, the ECO must be advised of the project programme providing an indication of when clearance and earthworks will commence.

Prior to the commencement of any land clearance or construction activities, the outer boundary of the development area must be surveyed and pegged. This demarcation boundary is to ensure that land clearing and construction activities are restricted to only the area strictly required for the proposed development, and to prevent unnecessary disturbance of soil surfaces and vegetation outside of the development footprint.

The outer boundary of the working area should be enclosed with, at least, shade netting, droppers & wire, or similar measures – as is feasible and practical. Access point should be temporarily gated. The fencing should be retained and maintained for the duration of the construction period or up until the conclusion of the rehabilitation phase. If changes to the extent of the working areas are required, such changes can only be applied once the approval of the appointed ECO and Site Engineer has been acquired. Construction areas must be demarcated before any clearing and grubbing activities commences.

- **No-Go Areas**

Areas beyond the approved development areas, as stipulated below, must be considered “no-go” areas. This approach aims to avoid disturbance activities from expanding beyond the approved footprint. The following working footprints have been proposed in the Basic Assessment Report compiled for the proposed development:

- A 5 m working area around the proposed reservoir site.
- A 5 m corridor was provided around the inlet pipeline.
- A 10 m corridor was provided around the outlet pipeline.
- A 3 m corridor was provided around the electrical infrastructure connection line to be installed.

In order to limit the impacts of the construction phase, only the areas as specified above must be cleared to ensure there are no unmanaged open areas that could potentially fall subject to alien invasive encroachment, or wind and water erosion.

It is recommended that the working areas be demarcated with a suitable material that can be easily identified and noticed. The method of demarcation is to be determined by the ECO and the appointed Contractor. Danger tape flagging (pieces of danger tape tied to twine or rope) may be utilised as a short-term solution. However, the use of only danger tape is not

recommended for long-term demarcation as this will easily become untidy and blown away by the wind resulting in pollution.

For the purpose of this project, all areas beyond the working areas stipulated above are considered no-go areas.

No-go areas must be considered as off-limits to all construction workers, vehicles and machinery during all phases of the development. No vegetation may be cleared beyond the working areas as stipulated above (unless in accordance with an approved alien invasive management plan and under the supervision of the ECO), and no dumping of any material (waste, topsoil, subsoil etc.) may occur in these areas. Construction workers must be informed of the no-go areas, and if necessary appropriate signage can be used to enforce the demarcation. Any interaction with no-go Areas must be consulted with between the Contractor and ECO prior to any actions.

In accordance with this proposal, the no-go Area must be considered any area beyond the proposed development footprint and the working areas as stipulated above.

- **Demarcation of the Site Camp**

The area chosen for the site camp and associated facilities must be the minimum area reasonably required to accommodate the site camp facilities, and which will involve the least disturbance to the environment. It is recommended that easily accessible, transformed areas must be used for the site camp. Site selection must be done in consultation with the ECO.

6.4. Site Camp and Associated Facilities

- The set up and organisation of the site camp is paramount to ensuring compliance with the requirements of the EA, if approved, and the EMPr. An environmental site file is to be created by the contractor and must be situated within the site camp throughout the construction phase and must be kept by the applicant following the conclusion of the construction phase. The environmental file is to include the following;
 - A copy of the Environmental Authorisation.
 - A copy of the General Authorisation in terms of the National Water Act, if required, or any other relative permits (Workplans and licences).
 - A copy of the approved EMPr.
 - Updated waste slips.
 - Disposal slips or cleaning slips (ablution cleaning).
 - All Environmental Monitoring Reports (EMRs) and ECO instructions.
 - Copies of Environmental induction register/s.
 - The Protocol for Chance Palaeontological Findings.
 - A Complaints Register.
 - Updated method statements.
 - Any and all emergency procedure/s applicable to site activities.
 - An Incident Register.

The following general management measures pertaining to the set-up, operation and closure of a site camp must be applied where appropriate, reasonable and practicable:

6.5. Fencing & Security

The site camp area must be secured to prevent any unauthorised individuals from entering the site camp and possibly getting injured or posing a safety and/or security risk. Adequate signage must be displayed, designating the site office / camp as a restricted area accessible only to personnel appointed to the construction works of the proposed development. If required, the site camp and associated areas may be fenced off along the demarcated boundaries of these areas, preferably with 2m high fence and shade netting or similar. A site register is recommended to record any daily visitors and activities, for record keeping purposes.

• Fire Fighting Equipment

No less than 2 fire extinguishers must be present at the site camp. The extinguishers must be in a working condition and within their service period. A fire extinguisher must always be present wherever any "hot works" (e.g. welding, grinding etc.) are taking place. It is recommended that all construction workers receive basic training in fire prevention and basic fire-fighting techniques and are informed of the emergency procedure to follow in the event of accidental fires. Open fires and smoking should be prohibited on site. However, it is noted that despite this, incidents may arise where fires are created after hours by security, and labour may attempt to smoke on site. In these cases, measures should be taken to ensure that activities are managed appropriately. Therefore, should a fire be created on site after hours, the following procedure must be followed:

- Ensure that the security is aware that creating fires within the site boundaries are prohibited.
- Should a fire be permitted on site, it must be ensured that:
 - A metal barrel is used to contain the fire within, outside of the proposed site.
 - It may not be positioned close to any vegetation, no-go area, natural areas or flammable material.
 - Do not leave fire unattended.
 - Monitor and extinguish any embers that may escape.

Should the contractor choose to, he/she may designate a smoking area within the site camp, of which the contractor is solely responsible for the management of this activity on site, and any incidents that may occur. It must contain the following features:

- Appropriate signage.
- A barrel/bucket filled to 50% capacity with sand, for disposal of used cigarettes.
- An appropriately weighted lid, that cannot be easily displaced by volatile weather conditions.
- The bin and designated area must be positioned in such a manner that it is not directly affected by heavy winds.
- This bin must be emptied as is necessary and must not be allowed to reach 75% capacity.

In the case of accidental fires, the contractor must (if required/significant) alert the Local Authority's Fire Department as soon as a fire starts prior to the fire becoming uncontrollable.

• Waste Storage Area

Sufficient bins for the temporary storage of construction related waste must be provided inside the site camp and/or at the working area and must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Sufficient signage and awareness must be created to ensure that these bins are properly used.

• Hazardous Substances Storage Area

Fuels, chemicals, lubricants and other hazardous substances must be stored in a demarcated, secured, bunded and clearly sign-posted area within the site camp. Sufficient signage and awareness must be created to ensure that these bins are properly used. It must be ensured that all hazardous storage

containers and storage areas comply with the relevant SABS standards to prevent leakage. Ensure that when substances are transferred, this is done on an impermeable and/or bunded surface, to contain any spillage. Spillage, should it occur, must be disposed of appropriately.

Any accidental release of a hazardous substance during the construction and operational phase of the proposed development, must be reported to the relevant authorities, including the Department of Environmental Affairs and Development Planning's Directorate: Pollution and Chemicals Management, in terms of Section 30(3) of the NEMA.

- **Potable Water**

An adequate supply of potable water must be provided to construction workers at the site camp. It is the Contractor's duty to ensure that the labour has adequate access to potable water throughout construction phase, and to monitor weather conditions, to ensure that labour has enough drinking water on hotter days. Should enough potable water not be available on warmer days, construction activities must cease, until conditions are safe to continue. To conserve water, it is recommended that buckets of water kept within the site camp and are reserved for the use of cleaning tools and machinery.

- **Ablution Facilities**

Chemical toilets must be kept at the site camp, on a level surface and secured from blowing over, and must be located in such a way so as to ensure that the toilets will not cause any form of pollution. The supply toilet facilities must comply with the requirements of the SABS and the OSHA.

The ablution facilities must not be linked to a river system/drainage lines/the ocean in any way. Toilets must be serviced regularly and kept in an orderly state. The contractor must ensure that no spillage occurs when the toilets are cleaned, serviced or moved. The toilet facilities must be emptied on a weekly basis, by an appropriately registered service provider. Proof of this weekly servicing must be obtained and filed in the Environmental File on site. Performing ablutions outside of the provided toilet facilities is strictly prohibited and the ECO would need to regularly inspect the state of the chemical toilets to ensure compliance.

- **Eating & Rest Area**

A dedicated area within which construction workers can rest and eat during breaks must be provided within the site camp. Seating, shaded areas and waste bins must be provided.

- **House-Keeping**

The site camp and associated site camp facilities must be kept neat and orderly at all times, in order to prevent potential safety risks and to reduce the visual impact of the site during construction.

6.6. Protection of Fauna

Construction workers are to be sensitised to the fact that they may encounter fauna during the construction period. This must be included in the environmental awareness training completed with all site personnel before any construction commences. Environmental Awareness Training must educate labour on conduct in terms of faunal management throughout construction phase, including but not limited to:

- No person/s may harm, kill, capture or keep any fauna.
- Appropriate access control must be put in place to reduce the risk of animal species gaining access to the development area.
- Where possible, avoid interactions, particularly with fauna that can inflict harm, if such fauna is identified on site contact local SPCA other animal protection and removal services.

- No domestic animals are permitted on the sites.
- Maintain good housekeeping, so that fauna cannot hide amongst waste and material.

If any fauna is encountered by construction workers, the ECO is to be notified. If the ECO is not on site, the site manager is to be informed. Rescued fauna must be released into a nearby area of similar habitat away from any construction. Contact details for animal rescue services and/or snake wrangler, from the local area, should be available on site, in case of an emergency.

Use shade cloth over existing fence line (boundary of working area), to stop animals from wandering onto site.

6.7. Indigenous Vegetation Clearing and Protection.

The following measures must be implemented:

- It is important that clearing activities are kept to the minimum and take place in a phased manner. This allows animal species to move into safe areas and prevents alien invasive encroachment, and wind and water erosion of the cleared areas. Blanket clearing of vegetation must be limited to the approved development footprint.
- Any alien vegetation that is cleared must be disposed of in accordance with the Alien Invasive Management Programme and in consultation with the ECO. Chipping of alien invasives must occur immediately and must not be stored on site for more than 90-days.
- Workers are NOT allowed to collect any flora species. All flora remains the property of the landowner and must not be disturbed, upset or used without their expressed consent.
- A monitoring programme shall be in place, not only to ensure compliance with this EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts such as increased surface runoff. The monitoring must be regular and additional visits must be taken when there is potential risk to the aquatic habitat.

Where indigenous vegetation must be cleared for the development, the following measures must be implemented:

- An Independent Environmental Control Officer will oversee compliance with all the prescribed environmental requirements and mitigation measures listed here and will be on site regularly.
- Only the areas required to accommodate the construction and access to the construction site must be cleared/trimmed of vegetation, as long as the vegetation has not been identified as an SCC.
- Vegetation outside of the construction footprint and within any no-go areas must not be cleared, unless permitted in accordance with the alien invasive management plan, and under the supervision of the ECO.
- Land clearing and earthmoving activities should not be undertaken during strong winds or heavy rainfall events, where possible.
- Trees and shrubs that are directly affected by the operations may be felled or cleared but only by the expressed written permission of the ECO, and under the applicable permits obtained in terms of the Nature Conservation Ordinance (19 of 1974, amended 2000) and/or the National Forests Act (Act 84 of 1998, amended 2009).
- Stripped vegetation should be temporarily stored during operations and to be used later to stabilise slopes/soils. This excludes alien invasive species.
- Ensure any open spaces/bare areas are kept clear of alien plant species through the adoption of an Alien Invasive Management plan.
- No unpermitted/uncontrolled fires are permitted on site.
- Rehabilitation of vegetation of the site must be done as described in the Rehabilitation Plans.

- To limit adverse impacts to the surrounding environment, the contractor and labourers must take great care if cement is to be mixed on site. Cement is to be mixed on thick plastic sheets or in large buckets that are bunded. Any spillage must be cleaned up immediately. Cement water must also to be contained in the above manner and allowed to dry out and then removed from site. Cement water, which is highly alkaline, poses a definite threat to the soil and seed banks, should the water disperse into surrounding areas.

6.8. Alien Invasive Species Control

Several exotic invasive and other weed species were noted on the site. The existing infestations and any further spread of these species pose a negative risk to the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014).

Removal of species must take place throughout the construction and operational phases.

6.9. Topsoil and Subsoil Management

Topsoil must be removed from any area where physical disturbance of the surface will occur, including within the footprint of the development site (working area) and possibly within the site camp, ablution area, refuelling area and temporary waste storage area. Topsoil removal and stockpiling must be undertaken only after the ECO has been consulted with. The following soil management measures must be implemented:

- Topsoil & subsoil that has been excavated must be stockpiled separately, along & adjacent to the excavation pits and must be covered with a suitable cover crop or tarpaulin.
- Excavated topsoil and subsoil must be stockpiled for the duration of the active construction period and utilised for the final landscaping and rehabilitation of disturbed areas on site.
- The topsoil & subsoil storage area must be located on a level area outside of any surface drainage channels outside the riparian zone, and at a location where it can be protected from disturbance and river flow/floods during construction and where it will not interfere with construction activities.
- Topsoil and subsoil stockpiles must be adequately protected from being blown away or eroded by storm water. If necessary, shade cloth or other suitable measures must be used to stabilise and protect the stockpile from wind/water erosion. Topsoil stockpiles must not be covered with tarpaulin, as this may smother and decrease the virility of topsoil.
- Stockpiles may not exceed 2 m in height.
- Handling of topsoil must be minimised as much as possible, and the location of the topsoil berm must be chosen carefully to avoid needing to relocate the topsoil berm.
- Ideally, topsoil is to be handled twice only, once to strip and stockpile, and once to replace, level, shape and scarify.
- No stockpiling of topsoil is to take place within close proximity to any watercourse; in other words, stockpiles must be located outside the 1:50 year flood level of any watercourse.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads.
- Topsoil stockpiles must not exceed 1.5 m in height and must not be compacted.
- If soil stockpiles will be stored for an extended period of time, the stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding, (or application of herbicides if agreed with the ECO).

- Soil material that will not be re-utilised on site may be removed from site and taken to an appropriate site for re-use or disposal.
- Note that the topsoil must be the final layer applied to a rehabilitated/ re-landscaped site, after subsoil/ spoil material has been placed and shaped on the site.

6.10. Integrated Waste Management Approach

It is recommended that an integrated waste management system is adopted on site. The system must be based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Separate waste bins/skips that are weather- and animal proof must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. These bins/skips must be emptied, and the waste taken to a registered recycling facility. The receipts from the facility must be kept on file and must be available on request.

The non-recyclable and non-reusable waste (e.g. builder's rubble, etc.) generated on site must be disposed of at a landfill site licensed in terms of the applicable legislation. The receipts from the facility must be kept on file and must be available on request.

Chemical toilets present a risk to the surrounding environment and must be managed accordingly. Chemical toilets must be kept within the site camp (not be linked to the storm water drainage system), on a level surface and secured from blowing over. Chemical toilets must be regularly emptied by a registered cleaning company and the waste disposed of at an appropriate wastewater disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets.

Hazardous substances such as diesel, oil and detergents will be present on site throughout the construction phase of the proposed development. Hazardous substances pose a greater risk to the surrounding environment than general substances and therefore need to be managed accordingly. A designated storage area within the site camp that is clearly demarcated must be set aside for the storage of hazardous substances and is to be treated as a no-go zone to unauthorised personnel. Appropriate signage, Material Safety Data Sheets (MSDSs), recently serviced fire extinguishers and spill kits should accompany the hazardous substances. Appropriate storage of hazardous substances is important while drip trays should always be utilised when decanting of hazardous substances and when refilling chemical/ fuel storage tanks. If any spills do occur, the solid must be excavated and disposed of as hazardous waste.

Cement and concrete batching will be permitted on site, but may only take place on designated impermeable, bunded surfaces, as agreed with the ECO. Used cement bags should be disposed of as hazardous waste on site.

6.11. Erosion Control and Stormwater Management

Stormwater must be managed in accordance with the Municipal Stormwater Management By-law and based on Sustainable Drainage Systems (SUDS). The SUDS systems attempt to maintain or mimic the natural flow systems as well as prevent the wash-off of urban pollutants to receiving waters. Further to this, the EA holder or appointed contractor must ensure that:

Where necessary, Stormwater Management Plans must be developed for the site and should include the following:

- The management of stormwater during construction.
- The installation of stormwater and erosion control infrastructure.

- The management of infrastructure after completion of construction.
- Temporary drainage works are implemented, where/when required, to prevent sediment-laden surface water from draining into river systems in proximity to the site. Stormwater must be prevented from entering or running off site.
- Sheet runoff from access roads and the walkways is slowed down by the strategic placement of berms.
- Diversion channels should be constructed ahead of the open cuts, and above emplacement areas and stockpiles to intercept clean runoff and divert it around disturbed areas into the natural drainage system downstream of the site.

As much indigenous vegetation must be maintained and encouraged to minimise erosion;

- All soil compacted because of construction activities as well as ongoing operational activities falling outside of project footprint areas should be ripped and profiled; and
- To ensure that site is not subjected to excessive erosion and capable of drainage runoff with minimum risk of scour, their slopes should be profiled at a maximum 1:3 gradient.
- Rehabilitation is necessary to control erosion and sedimentation of all eroded areas (where works took place).
- It is important that the rehabilitation of site is planned and completed in such a way that the runoff water will not cause erosion.
- A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision.

The scale and nature of the erosion and stormwater control measures implemented on site must be appropriate to the conditions on site, and sufficient to achieve the desired outcomes (soil preservation, prevention of flooding, stormwater control) to the satisfaction of the ECO and consulting engineer.

The prevention of soil erosion can be initiated by designating specific areas for stockpiling of raw materials with consultation of the ECO. No stockpiling is to occur on or near slopes or water resources and all stockpiling areas must be approved by the ECO before stockpiling occurs.

- Stockpiles need to be effectively managed and maintained as they have the potential to contribute to runoff and erosion. To prevent this, the following management measures must be implemented.
- Stockpiles of topsoil & spoil material must be protected from wind & water erosion.
- Stockpiles of earth material may not be located within any storm-water drainage pathways and must be outside of the reach of potential flood waters.
- Any erosion runnels/ gulleys/ channels that form on site must be infilled with appropriate material, compacted, rehabilitated as needed and appropriate erosion control measures put in place to prevent recurrent erosion at that site. Rehabilitation of erosion channels must be ongoing during the construction phase and not left until the end of the construction period.
- It may be necessary to implement small-scale erosion protection measures at the construction site, to prevent soil erosion. Such measures may include the use of shade netting, geo-fabric, brush-packing or similar barriers in areas susceptible to erosion and along exposed slopes. The storm water management plan must adhere to the principles of sound storm water management as well as the Municipal Stormwater Management By-law and based on Sustainable Drainage Systems (SUDS). The storm water management system must be implemented on site and must be properly maintained to ensure that contaminated run-off from the construction site is prevented from flowing into the watercourse/ocean.

Cleared areas and any other area susceptible to erosion should be provided with a suitable cover and stabilised as soon as possible via the implementation of appropriate erosion control measures. This may include use of cut-off drains, temporary/permanent drainage channels, brush-packing, mulching, planting or sodding, use of environmentally benign soil binders, use of geo-textile or other coverings. The appropriate measures should be selected by the contractor in consultation with the Engineer & ECO.

6.12. Excavations and Earthworks

Any major earthworks with bulldozers and heavy machinery must be under constant supervision. Operators must be aware of all the environmental obligations, as there is always the potential to inflict damage to the sensitive areas. Any unnecessary or excessive heavy machinery movement must be kept to a minimum i.e. only what is absolutely necessary. Areas to be excavated must be clearly demarcated. Areas which have already been excavated and entail fairly significant earthworks, must be similarly demarcated to avoid the spreading of construction activities beyond the approved working areas.

All excavated material must be stored on a flat surface away from any drainage line, sloped areas or area susceptible to erosion. The location must be decided in consultation with the ECO. Stored material must be protected from wind and water erosion, and this may entail covering the material with suitable shade cloth material or similar (if and when necessary). The shade cloth may need to be weighed down in such a manner that any stream flow is directed away from the stockpile, reducing the risk of erosion.

Whenever any excavation is undertaken, the following procedures shall be adhered to:

- Topsoil must be handled as described in this EMPr.
- Excavations must take place only within the approved demarcated site.
- Excavations must follow the contour lines, where possible and/or applicable.
- Do not open large extents of excavations which cannot be managed and closed on a daily basis.
- Excavations should be closed overnight, over weekends, holiday periods, and during any other planned site closure periods, where feasible.
- Excavations must be temporarily fenced shade cloth or barrier fencing to obstruct visual impacts and to prevent the harm to animals or unauthorised persons that may fall into excavations.
- Excavations that are left open overnight must be covered with a rigid material to prevent harm to faunal species.
- The construction site will not be left in any way to deteriorate into an unacceptable state.
- Once excavations have been filled with overburden and coarse natural materials and profiled with acceptable contours (including erosion control measures), the previously stored subsoil and topsoil shall be returned to its original depth over the area.
- Rehabilitation of the site shall take place according to the Rehabilitation Programme and must occur concurrently with the construction phase.

6.13. Visual Impact.

The proposed development has the potential to cause a visual impact during the construction and operational periods. To minimise the potential visual impact, all working areas, storage facilities, stockpiles, waste bins, elevated tanks and the site camp should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Waste must be managed according to this EMPr. Good housekeeping practices on site must be maintained to ensure

the site is kept neat and tidy. The site camp may require visual screening via shade cloth or other suitable material. The use of reflective materials and excessive lighting should be avoided, and construction vehicles must enter and leave the site during working hours (07:30-17:30).

6.14. Noise Management.

Additional noise is expected during the construction period due to construction activities. It is important that noise complaints register should be opened and that all excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. This is to be done by ensuring that all equipment is in good working condition and fitted with mufflers/exhaust silencers in necessary. Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate, and all affected parties must be informed of the excessive noise factors.

6.15. Dust Management.

Although the generation of dust is synonymous with construction sites, care needs to be taken to prevent excessive dust from impacting the surrounding environment and community. Majority of the dust causing activities will take place during the construction period. Exposed surfaces, such as stockpiles and cleared areas should be provided with a suitable cover as soon as possible or wetted down. Construction vehicles should maintain low speeds of 20-40km/h and must ensure that tarpaulins are used to cover any loads transported. Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall rates in non-residential areas may not exceed 1200 600mg/m²/day, measured using reference method ASTM D1739.

A Complaints Register must be available at the site office for inspection by the ECO, in case of complaints, such as those related to dust. This should form a part of your Environmental Site File.

6.16. Heritage Resources

In the event that any heritage resources, including evidence of graves, human remains, archaeological material and paleontological material, are uncovered during construction activities; these must be immediately reported to Heritage Western Cape. Burials must not be disturbed or removed until inspected by a professional archaeologist. In case of the unexpected uncovering of fossil material in the surficial cover-sands and soil, or buried archaeological material, or unmarked graves, the Fossil Finds Procedure (FFP) must be followed.

A series of test pits must be dug across the proposed footprint area prior to construction work commencing. This could also form part of a geotechnical investigation of sub-surface sediments / formations. Excavations that extend into light, orange-coloured sands of the Springfontyn Formation may encounter undisturbed fossils (bone and shell), and Stone Age artefacts. It is important to establish the archaeological significance of buried sub-surface deposits before bulk earthworks commence, as it will enable the archaeologist and palaeontologist to develop an appropriate mitigation plan.

6.17. Site Closure and Rehabilitation

Upon completion of the construction phase, and after each maintenance event, all disturbed areas, including the working area (disturbance corridor), temporary access road, and all areas utilised for the site camp and associated site camp facilities, if applicable, may require rehabilitation as follows:

- On completion of the construction operations, the site camp area must be cleared of all site camp facilities, ablution facilities, fencing, signage, waste and surplus material.
- All areas within the working area and site camp that have become devoid of vegetation or where soils have been compacted due to construction activities must be scarified or ripped to improve filtration and reduce run-off.
- All demarcation fencing, including all droppers, wires, netting and barrier tape must be removed from site and taken to an appropriate site for re-use or disposal.
- Surfaces must be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the ECO. Any soil contaminated with hydrocarbons (oil, fuel, etc) or other hazardous substance must be collected and disposed of as hazardous waste at a licenced disposal facility.
- All construction waste is to be removed from the site and disposed of at an appropriate facility. Burying or burning of waste or rubble on site is strictly prohibited.
- Topsoil removed and stockpiled before construction, must be replaced by spreading it evenly over the areas from which it was removed. This topsoil (and the seedbank it contains) will facilitate the re-vegetation of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Site Manager may require that the soil be analysed and any deleterious effects on the soil arising from the activity, be corrected and the area be seeded with a vegetation seed mix to his or her satisfaction. This *must* be done in consultation with the ECO.
- Disturbed areas, especially areas where excavations have taken place, must be shaped as appropriate (original topography must be restored where possible), and covered with a layer of stockpiled topsoil as soon as possible.
- Any topsoil, subsoil or other excavated material that cannot be utilised during site rehabilitation must be removed from the site and disposed of at an appropriate disposal site.
- The disturbed, newly rehabilitated surfaces (particularly steeper slopes and areas recently covered with topsoil) must be protected from wind & water erosion using mulch, brush packing or other appropriate erosion protection measures. Brush-packing/mulching is done by covering the exposed surface with organic plant material such as branches, plant cuttings and leafy material. Ideally the vegetation removed from site at the start of the construction must be utilised. Brush-packing/mulching plays a valuable role in erosion control, while also promoting re-vegetation of the site by retaining moisture in the soil, introducing seeds and/or trapping wind-blown seeds and providing organic material (compost) to promote new plant growth.
- Final landscaping and rehabilitation of the site must be done to the satisfaction of the ECO and must adhere to all conditions/requirements of the Environmental Authorisation.

7. ENVIRONMENTAL IMPACT MANAGEMENT: PLANNING AND DESIGN PHASE

No direct environmental impacts are associated with the planning and design phase. However, poor planning or inappropriate design decisions in this phase may result in environmental impacts arising during subsequent phases of the project.

Planning and design activities must therefore take into account the environmental constraints and opportunities identified during the Environmental Impact Assessment process, in order to avoid or minimise the potential future impacts of the development. Proper planning is also essential to ensure that adequate provision is made to implement the environmental requirements of this EMPr, and to ensure that the development is compliant with additional conditions which may be included in the Environmental Authorisation.

The environmental management objectives (goals) during this phase are to:

- Appoint an Independent Environmental Control Officer.
- Complete the detailed design of the structures and detailed site layout plan.
- Compile and adopt a suitable and acceptable Stormwater Management Plan.
- Update the EMPr (if necessary).

These environmental management objectives, as well as the management actions that must be implemented in order to achieve the desired objective and avoid/minimise potential impacts are discussed in more detail below.

7.1. Objective 1: Appointment of an Environmental Control Officer and Environmental Auditor

Impact Management Objective: To appoint a suitably qualified and experienced environmental control officer, environmental auditor.		
Potential impact to avoid	Failure to appoint an ECO and Environmental Auditor will result in non-compliance with the requirements of the EMPr.	
Impact Management Outcome	The requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
Environmental Auditor & Control Officer: <ul style="list-style-type: none"> A suitably qualified and experienced Environmental Auditor must be appointed before any activities commence on site. A suitably qualified and experienced Environmental Control Officer (ECO) must be appointed before any activities commence on site. The appointed ECO must adhere to the requirements stated in Section 11 of this EMPr. The appointed ECO must be advised of the construction start date, at least two weeks in advance, prior to the commencement of any construction activities on site, so that the ECO can perform a pre-commencement inspection, ensure any pre-construction conditions of the environmental authorisation are completed, and plan for environmental awareness training of construction workers (see Section 14 for Environmental Awareness Plan and Appendix N for Environmental Awareness Training Booklet). 	Eskom Holdings SOC Limited	During design phase
Performance Indicator	<ul style="list-style-type: none"> A qualified ECO and Environmental Auditor is appointed prior to the commencement of any construction activities (including pre-construction set-up activities) on site. 	

7.2. Objective 2: Detailed Design, Site Layout Plan

Impact Management Objective: To compile a detailed design and site layout plan that adheres to the recommendations of the BAR Report and any additional conditions which may be included in the Environmental Authorisation.		
Potential impact to avoid	<ul style="list-style-type: none"> Substantial deviation from the conceptual layout plan may result in: Non-compliance with the Environmental Authorisation during construction. Triggering of additional listed activities not authorised in the Environmental Authorisation. An increase in the severity of the impacts identified and assessed in the BAR or may result in new impacts not previously assessed and not provided for in the EMPr, resulting in environmental degradation. Visual disturbance. Poor stormwater management as a result of poor planning, can exacerbate impacts and result in additional non-compliances. 	
Impact Management Outcome	Development is compliant with recommendations of the BAR and the EMPr.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General:	Eskom Holdings SOC Limited	During design phase

<ul style="list-style-type: none"> The final detailed design & layout must adhere to the conceptual layout assessed in the BAR process. If the final detailed design differs significantly from that assessed during the BAR, the revised layout must be assessed by an ECO and escalated to the Environmental Auditor, who should liaise with the CA regarding an amendment, prior to proceeding. 		
Performance Indicator	Detailed designs and site layout plans are approved, prior to the commencement of construction.	

7.3. Objective 3: Legislative compliance

Impact Management Objective: Legislative compliance		
Potential impact to avoid	Commencement of activities without all relevant permits/permissions/licences/approvals including registered servitudes, permits to remove specific vegetation, etc. as well as commencing without implementation of specialist recommendations, and compliance with EMPr pre-construction activities, can result in penalties, time delays and excessive costs. All stemming from poor planning.	
Impact Management Outcome	All permits, permissions, licences, approvals, and specialist input are acquired, and the proposed development is compliant with the respective conditions.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<p>General</p> <ul style="list-style-type: none"> Ensure all relevant permits/licenses/approvals are in place and are valid prior to commencing with works. These include: <ul style="list-style-type: none"> Environmental Authorisation Servitudes registrations A Water Use Licence, if deemed applicable. Ensure that the Contractor has accepted the approved EMPr and Environmental Authorisation (and any other relevant permits/licenses, etc), as a part of their Tender Document, to ensure that they are fully aware of their responsibilities in terms of the implementation of these documents. Ensure that the Contractor has provided method statements for activities intended to be undertaken, and these are checked and approved by the ECO as well as the Engineer. Inform ECO of planned works ahead, so as to ensure inductions are undertaken timeously. Involve ECO in selection of site camp location. Ensure that a site layout plan is received, this plan must indicate the total clearance areas, site camp. <p>Programme of Works:</p> <p>Ensure that the construction programme is pre-planned, and all affected landowners are notified of the estimated date, extent and conclusion of works on their property or affecting their access. The removal of trees should only be done in cooler months of the year when there is less heat- and water stress on the trees.</p>	Eskom Holdings SOC Limited	During design phase



<p>Unplanned/Planned Shutdown:</p> <p>Should site need to be closed, ensure the following is undertaken:</p> <ul style="list-style-type: none"> • All waste is removed from site. • All stockpiled soils, etc. is removed from site or is banded efficiently and covered with tarp, to minimise dispersion. • Ensure all excavations are backfilled, and recommended rehabilitation is commenced at the very least. • Ensure heavy machinery is stored safely. • Contact the ECO to undertake an inspection and advise on any appropriate measures that need to be undertaken. • It is important to note that the Environmental Authorisation and approved EMPr is a legal and binding document, therefore regardless of reason for shutdown compliance with these conditions must be met, or the Competent Authority must be informed of the reason and estimated duration of shutdown. 		
Performance Indicator	The project does not incur delays, excessive costs and penalties due to unobtained permits and non-compliance with required permits, permissions, licences, and approvals.	

8. ENVIRONMENTAL IMPACT MANAGEMENT: PRE-CONSTRUCTION PHASE

Proper set-up during the pre-construction phase can set the foundation for good environmental management during the active construction phase to follow and can avoid potential impacts from arising at a later date.

The Impact Management Objectives for this phase of the project relate to:

- Identification and Demarcation of no-go areas and working areas.
- Establishment of site camp and associated site facilities.
- Pre-construction ECO visit.

8.1. Objective 1: Identify & demarcate no-go and working areas

Impact Management Objective: Demarcation of no-go and working areas.	
Potential impact to avoid	<ul style="list-style-type: none"> • Insensitive location of working areas and site facilities may result in environmental impacts during the construction phase. • Failure to accurately demarcate working areas may result in works exceeding the approved assessed footprint, resulting in non-compliance and potential penalties and delays.
Impact Management Outcome	<ul style="list-style-type: none"> • Future construction activities will be restricted to within the designated areas & all areas indicated as no-go areas, will be protected from disturbance. • Excavating into potentially fossil-bearing deposits during the pre-construction phase might damage some fossils
IMPACT MANAGEMENT ACTIONS	

Mitigation measure	Responsible party	Time period
<p>General:</p> <ul style="list-style-type: none"> • Inform ECO of planned works ahead, so as to ensure inductions are undertaken timeously. • Involve ECO in selection of site camp location. • Ensure all labour and sub-contractors undergo environmental inductions. • Ensure flora permits are in place timeously – allow at least 1 or 2 months before commencement. • Following the set rules regarding finding fossils found in this EMPr APPENDIX I. • Environmental Awareness and Training (EAT) – Ensure all labour are informed and plant operators are aware of risks, issues, dos and don'ts within the proposed development areas. • Ensure permits/licenses applicable, are obtained prior to commencement of construction works on site. <p>Permits and other approvals</p> <ul style="list-style-type: none"> • A series of test pits must be dug across the proposed footprint area prior to construction work commencing. This could also form part of a geotechnical investigation of sub-surface sediments/Formations. Excavations that extend into light orange-coloured sands of Springfontyn Formation deposits, may encounter undisturbed fossils (bone & shell), and Stone Age artefacts. It is important to establish the archaeological significance of buried sub-surface deposits before bulk earthworks commence, as it will enable the archaeologist and palaeontologist to develop an appropriate mitigation action plan. • Permits to recover fossils and archaeological material should be applied for (by the monitoring specialist) in advance of the Construction Phase commencing. • If possible, geotechnical information together with the proposed locations and depths of excavations for foundations and/or infrastructure should be provided prior to the commencement of construction. This may enable a better estimation of the time(s) when monitoring would be necessary. • Protocols for dealing with palaeontological/palynological (fossil pollens) monitoring and possible further mitigation must be included in the Environmental Management Programme (EMPr) (Appendix F). • Relevant Heritage permit(s) (HWC) should be applied for well ahead of construction. <p>Working Corridor</p> <ul style="list-style-type: none"> • Ensure the relevant ECO is present and consulted for demarcation. • A maximum working corridor of 10 m is to be maintained in non-sensitive areas. • Engineer needs to confirm the route after on-site specialist input. • Where possible, and especially in sensitive areas utilise the smallest possible working corridor which is in all cases below the specified maximums. • Demarcate/fence off the working corridor with temporary fencing (e.g. poles and shade cloth) to: <ul style="list-style-type: none"> • contain potential overflow into the surrounding sites; • obstruct visual impacts; • Prevent harm to fauna that may fall into open excavations, therefore ensure all excavations are covered or closed overnight. • The temporary fencing must be retained and maintained on a daily basis for the duration of the construction period. • Contain disturbance to the demarcated construction area. 	<p>Environmental Control Officer (ECO) and Contractor (General)</p>	<p>Pre-construction phase (prior to arrival of construction equipment, machinery, or workers on site)</p>

<ul style="list-style-type: none"> • Areas outside the working areas/corridors as described in the EMPr must be considered no-go areas. <p>Landowners:</p> <ul style="list-style-type: none"> • Notify landowners of the construction programme to ensure that they are aware that construction activity may bring about delays/obstructions as well as ensuring that they are aware of any risks. • Ensure clear signage is erected on the access road. • The planning & construction phases of the project must not restrict the day-to-day agricultural activities nor negatively impact the existing cultivars of the productive farm portions that the project will intersect with. • Ensure that landowners are notified before private access roads are crossed and this is done in a timeous and practical manner in order to ensure access is always available. 			
Performance Indicator	No-go areas, working areas and areas for site camp facilities have been identified and appropriately demarcated to the satisfaction of the ECO, before construction activities commences on site. No fossils have been disturbed.		



8.2. Objective 2: Establish Environmentally Sensitive Site Camp & Site Facilities

Impact Management Objective: To set up and equip the site camp and associated site facilities in a manner that will promote good environmental management.		
Potential impact to avoid	<ul style="list-style-type: none"> Failure to properly demarcate and set up site facilities may result in disorganised construction activities and unnecessary disturbance to the site. Failure to provide the necessary site facilities and/or failure to equip these facilities with the necessary equipment/materials may impede good environmental management & compromise ability to respond to emergencies. 	
Impact Management Outcome	Site camp facilities do not impact significantly on environment. The equipment required to implement the provisions of the EMPr are provided on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<p>General:</p> <ul style="list-style-type: none"> The site camp and associated site facilities must be set-up and managed in accordance with the general environmental management measures specified in Section 6 of this EMPr. The site camp must be strategically set up in a manner that will promote good environmental management during construction/ demolition, and to respond to potential emergencies (including fires, spillage of hazardous substances etc.) that may arise. The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Frequent stormwater outlets must be maintained (if necessary), to prevent erosion at discharge points. A sweep of the proposed development footprint must be done prior to the site establishment in order to ensure that no animals are hurt during site clearance activities. <p>Site Camp Establishment:</p> <ul style="list-style-type: none"> The construction area (of the reservoir) including the construction camp is to be cordoned off (by through reasonable measures). If in an area that contains vegetation, utilise disturbed areas only, and: Ensure site selected is inspected and approved by ECO. Utilise disturbed or transformed areas for site camp establishment. Site camp facilities must be the minimum area reasonably required to accommodate the site camp facilities and must not be allowed to impact areas not within the designated footprint. Ensure the site camp is positioned on a levelled area and is easily accessible. Ensure site camp is fenced off with appropriate fencing and shade cloth, to block out activities within. Ensure access to site is at one point, unless to existing points of entry/exit are identified. Ensure access onto site is controlled. Ensure there is 24hr security. Designate specific areas for specific purpose, including storage areas, machinery storage areas, parking areas, waste disposal areas, etc. Infographics must be available on site in public areas, including information on safety measures, potential harmful fauna (ie. snakes common to the areas, and emergency contact information, including, but not limited to: Snake catchers, Ambulance; Fire Department; the closest hospital, veterinarian (ie: for anti-venom, etc). 	Contractor / Eskom Holdings SOC Limited	Pre-construction phase (prior to start of construction activities)

- Must contain a spill-kit.
- Potable chemical toilets:
- Plan positioning of Potable Toilets for labour working along the route.
- Consider designating a vehicle for the transportation of labourers to toilets. The vehicle can be equipped with a spill-kit.
- Ensure chemical toilets are positioned on levelled areas and are protected from wind and rain that could result in them blowing over and spilling waste contents.
- Ensure toilets are rented from a registered company, with whom arrangements should be made for cleaning of these toilets on a weekly basis.
- Disposal slips/cleaning slips from this company must be obtained following every cleaning and must be filed in the Environmental File.
- Ensure an adequate quantity of toilets are provided at each working area.
- Hazardous substances including oil/fuel etc. should be:
- Stored in bunded areas, on hardened/impermeable surfaces, where the barrels/drums/containers are protected from the natural elements.
- Hazardous substances storage area must be treated as a no-go zone to unauthorised personnel.
- Appropriate signage indicating what kind hazardous/flammable materials are stored.
- Material Safety Data Sheet (MSDSs) must be available.
- A fire extinguisher and contact details for the fire department and other emergency numbers must be positioned in close proximity.
- A spill kit must be positioned inside the hazardous substances storage area.
- Spill kits must be available on site at all times.
- Where fuelling does occur on site, a drip tray must be used to contain any spilled fuel.
- All construction vehicles must be equipped with drip trays at all times.
- No vehicle maintenance activities may occur on site for the duration of the construction phase.
- Where emergency maintenance is required, such maintenance must be communicated with the independent Environmental Control Officer appointed to oversee the alignment of the construction works with the applicable environmental legislation.
- May only be decanted/filled on the aforementioned surface or with the use of drip trays.
- If any spills do occur, the solid must be excavated and disposed of as hazardous waste at an appropriately registered facility.

Waste Management:

- Designate areas for temporary waste storage, this area should be:
- Protected from wind/rain displacement.
- Should be on a levelled surface.
- An appropriate number of skips/bins must be made available on site, to accommodate for waste separation of the various types of waste generated.
- Waste bins/skips must be weather and animal proof. Ensure weighted covers are positioned on skips/bins, to ensure that animals cannot get into the bins as well as to avoid waste dispersion.
- Label bins appropriately.
- No waste/excavated soil/ etc. intended to be removed from site may remain on site for more than 90-days.
- Ensure that disposal is undertaken when waste has reached 75% capacity of the bin/skip.



<ul style="list-style-type: none"> • The waste must be disposed of at a registered waste disposal facility. The disposal receipts from the facility must be kept in the Environmental File. • Ensure waste receptacles are available where works are being undertaken, this can take the form of black bin bags, etc. however it must: <ul style="list-style-type: none"> • Be sufficient hold the waste without tearing/spilling. • It must be removed from site on a daily basis and re-established at the start of every day, when works occurs in that area. • Request that the foreman responsible for the labour team in a specific area, is responsible for ensuring that this waste receptacle is utilised, removed and established daily. <p>Environmental File:</p> <ul style="list-style-type: none"> • An environmental file is to be created by the contractor and be situated within the site camp throughout the construction phase and with the applicant thereafter. The environmental file is to include the following: <ul style="list-style-type: none"> ○ Copies of all approvals, including Environmental Authorisation, Water Use Licence and any other license/permit/approval. ○ A copy of the approved EMPr ○ Copies of waste disposal slips ○ Copies of chemical toilet cleaning/servicing slips ○ Disposal slips or cleaning slips (ablution cleaning) ○ All EMR's (Environmental Monitoring Reports) and ECO instructions ○ Copies of Environmental Induction Register/S ○ A Complaints Register ○ Updated method statements ○ Material Safety Data Sheets for all hazardous substances utilised on site. ○ Copies of audit reports ○ Risk Management, Prevention and Emergency Preparedness Plan ○ An Incident Register ○ Copy of induction registers. ○ Copies of purchase orders for rehabilitation material etc. 		
<p>Performance Indicator</p>	<p>Appropriate, well organised, and properly equipped site facilities are available on site prior to commencement of construction activities. The location and set up of the facilities don't impact on the natural resources.</p>	

8.3. Objective 3: Pre-Construction ECO and Environmental Site Officer (ESO) Inspection and Due Diligence

It is essential that the appointed ECO and ESO be advised of the intended construction start date before construction activities commence on site, in order for the ECO to conduct an initial site inspection to assess the pre-commencement condition of the site. The ECO can also advise on the appropriate siting and demarcation of the site facilities, and the identification and demarcation of the no-go areas. The ECO may also conduct the first round of environmental awareness training at this stage, if any construction workers/sub-contractors are present on site.



Impact Management Objective: Environmental Control Officer and Environmental Site Officer to conduct an inspection prior to the commencement of construction activities on site.		
Potential impact to avoid	<ul style="list-style-type: none"> Failure to appoint ECO or to notify ECO of commencement prior to commencement may result in non-compliance with the EA. If a pre-commencement ECO inspection is not performed, the Construction Contractor may be held liable for environmental degradation that took place prior to the Contractor commencing work on site. 	
Impact Management Outcome	<ul style="list-style-type: none"> Good environmental management is promoted and enforced by the ECO during the full pre-construction and construction phases. Site facilities are appropriately located on site. Construction workers receive environmental awareness training before commencing work on site. 	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> The appointed ECO must be advised of the construction start date, before any activities commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training (see Section 14 and Appendix I), of construction workers. The ECO must ensure all relevant items are in place in terms of Section 7 and 8 of this EMPr, where necessary, and all relevant pre-construction requirements have been complied with in terms of the EA. Ensure the project timeframe has taken the relevant requirements of the EA and EMPr, into account. The ECO is to take photographs of the site prior to the establishment of ALL facilities (including the site camp), for record purposes. The ECO is to ensure that the Environmental File is in place on site, with all the relevant content, and emergency numbers for the relevant authorities are available. The ECO is to consult with the Contractor regarding relevant dates for environmental inductions (with regard to new labour). If it is recommended that an ESO is appointed, as per the EA, this must be undertaken. 	Contractor	Start of construction phase
Performance Indicator	A pre-commencement site inspection is conducted by the appointed ECO before construction activities commence on site.	

9. ENVIRONMENTAL IMPACT MANAGEMENT: CONSTRUCTION PHASE

A number of potential environmental impacts may arise during the construction phase of the development. These impacts have been identified and assessed during the Environmental Impact Assessment process. Environmental Management objectives and actions that will prevent the identified potential impacts from arising – or where avoidance is not possible, that will minimise and mitigate the impacts – are provided in this section.

The environmental management actions and mitigation measures prescribed in this section must be implemented throughout the construction phase and must be implemented in conjunction with the general management measures specified in Section 6 of this EMPr, as well as any other conditions which may be stated in the Environmental Authorisation. The Environmental Control Officer must monitor and enforce the implementation of the relevant environmental management measures and may provide guidance on the implementation of these environmental management measures as and when required.

The environmental management objectives (goals) for the Construction phase are:

- Erosion, Earthworks and Land clearance

- Loss of vegetation and disruption to ecological processes: Fynbos vegetation
- Disturbance and displacement of faunal habitat and faunal species of conservation concern
- Creation of multiple job opportunities & capital expenditure
- Air Quality Impact Control
- Noise Impact Control

The environmental management actions that must be implemented in order to achieve the desired objectives and avoid/minimise potential impacts are discussed in more detail in the sections below.

9.1. Objective 1: Erosion, Earthworks and Land Clearance

Impact Management Objective: To prevent soil loss, and destruction to heritage on site and prevent ground water contamination		
Potential impact(s) to avoid	Susceptibility of some areas to erosion because of construction related disturbances due to of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion, during heavy rainfall events, after completion of the activity. Stockpiled soils and materials can be displaced in heavy rainfall and windy conditions, resulting in sediment dispersal. Likely loss of heritage material findings, such as the discovery of fossil deposits, during excavation and trenching.	
Impact Management Outcome	Stormwater systems are not impacted significantly.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<p>General:</p> <ul style="list-style-type: none"> • Any significant spills or leak incidents must be reported in terms of the National Environmental Management Act, 1997 (Act 107 of 1998) and the Water Act, 1998 (Act 36 of 1998). • Tanker delivery drivers must be present during delivery of fuel with the emergency cut off switch. • In the event of the pump dispenser or the hoses being knocked over or ripped off, the fuel supply must be cut off by shear-off valves. • An Emergency Response Plan must be in place for the site, this must clearly describe emergency procedures and include emergency contact numbers. • The Applicant must report any significant incidents that could potentially lead to soil, groundwater pollution and soil. • Monitoring for and removal of weeds, invasive aliens and other non-desirable vegetation must take place regularly, as once alien, or weedy seedlings are established, their control will become more difficult. • Be mindful of rainfall events, and plan construction works during dry season. • Ensure programme of works includes rehabilitation after each section has been backfilled, to avoid bare surfaces remaining exposed for extended periods of time. • Ensure ALL works on site, remain within the development footprint (this includes stockpiling, if necessary, on site). <p>Stockpiling:</p>	Contractor	Construction phase

- Ensure stockpiles do not exceed 2m's in height.
- Prohibit stockpiling of material close to slopes.
- Ensure stockpiles are banded, and if necessary, cover with shade cloth to avoid loss of material.
- Separate topsoil and subsoils during excavations.
- When backfilling, ensure subsoils are backfilled first, and top-soil thereafter.
- If topsoil is of poor-quality purchase new topsoil to ensure rehabilitation will be successful.
- Remove alien invasives/weeds established on stockpiled soils prior to re-instatement.
- Continue with weed management throughout construction, in line with the EMPr.

Excavations:

- Topsoil & subsoil that has been excavated for the pipeline must be stockpiled separately, along & adjacent to the excavation pits and must be covered with a suitable cover crop or tarpaulin.
- Ensure excavations are undertaken as per specifications.
- Ensure that excavations are not left open overnight. If it is necessary to do so, the working corridor demarcation must be checked by the safety officer to ensure that there is no potential for encroachment by fauna or people. The excavation may need to be covered using metal sheeting or other somewhat rigid cover.
- Integrate shoring measures if pit walls are collapsing.
- Whenever any excavation is undertaken, the following procedures shall be adhered to:
- Topsoil shall be handled as described in this EMP.
- Excavations shall take place only within the approved demarcated site.
- The construction site will not be left in any way to deteriorate into an unacceptable state.
- The excavated area must serve as a final depositing area for waste rock and overburden during the rehabilitation process.
- Once excavations have been filled with overburden, rocks and coarse natural materials and profiled with acceptable contours (including erosion control measures), the previously stored topsoil shall be returned to its original depth over the area.

Exposed surfaces:

- Implement weed management measures as detailed in the EMPr.
- After backfilling an area, immediately commence with rehabilitation, as detailed in the EMPr, and continue with weed management.
- Ensure dust creation is controlled, as detailed in the EMPr.
- No surface should be left exposed for extended periods of time.
- On completion of construction, the surface of the processing areas especially if compacted due to hauling and dumping operations shall be scarified to a depth of at least 200 mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area.
- The area shall be fertilised, if necessary, to allow vegetation to establish rapidly. The site shall be seeded with suitable grasses and local indigenous seed mix. If excavated material is to be utilised for reestablishment, this may not contain alien invasive species, or other waste products, as approved by the ECO.
- Excavations may be used for the dumping of construction wastes. This shall be done in such a way as to aid rehabilitation.
- Waste (non-biodegradable refuse) will not be permitted to be deposited in the excavations.



- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the activity, be corrected and the area be seeded with a vegetation seed mix to his or her satisfaction. This must be done in conjunction with the ECO.
- Final rehabilitation must comply with the requirements mention in the Rehabilitation Plan.
- During rehabilitation, the subsoil must be replaced before replacing the topsoil.

Alien invasive management:

- Ensure that alien invasive species are identified, and measures are taken to consistently remove alien invasive species from within the development footprint – implement weed management plan/alien invasive management plan as per EMPr.
- Stockpiled alien invasive species cleared from site, should be contained and removed from site as soon as possible, so as to not allow dispersal.
- Indigenous vegetation must be utilised where possible.
- Implement rehabilitation plan.

Erosion Management

- Suitable measures must be implemented in areas that are susceptible to erosion. Areas must be rehabilitated, and a suitable cover crop planted once construction is completed.
- Topsoil must be stripped and stockpiled separately and replaced on completion.
- If natural vegetation re-establishment does not occur, a suitable grass must be applied.
- Be mindful of weather conditions that may cause runoff.
- Utilise silt fences, if necessary, at demarcated working corridor fence line, to capture runoff.

Soil Aspects:

- Sufficient topsoil must be stored for later use during decommissioning, particularly from outcrop areas.
- Topsoil shall be removed from all areas where physical disturbance of the surface will occur.
- All available topsoil shall be removed after consultation with the botanist and horticulturalist prior to commencement of any operations.
- The removed topsoil shall be stored on high ground within the site footprint outside the 1:50 flood level within demarcated areas.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads.
- The stockpiled topsoil shall be protected from being blown away or being eroded. The application of a suitable grass seed/runner mix will facilitate this and reduce the minimise weeds.

Soil Contamination

- Ensure all machinery utilises drip trays.
- Ensure all machinery is maintained prior to allowing them to be utilised on site.
- Utilise spill-kit for contaminated soil and dispose of at a registered site.
- If cement is to be mixed, ensure this is done on a bunded impermeable surface, and transferred so that there is no interaction with natural ground.
- No contaminated soil may be utilised during backfilling.



Waste Management

- Utilise waste receptacles on site.
- Do not litter on site.
- Remove waste receptacles positioned outside of site camp, at the end of every day.
- Do not allow food wrappers or food items to build up in any waste receptacles as this will attract scavenging fauna, and other pests.

Stormwater and Erosion Control

- Stormwater Management Plans must be developed for the site and should include the following:
- The management of stormwater during construction.
- The installation of stormwater and erosion control infrastructure.
- The management of infrastructure after completion of construction.
- Temporary drainage works may be required to prevent stormwater to prevent silt laden surface water from draining into river systems in proximity to the site. Stormwater must be prevented from entering or running off site.
- To ensure that site is not subjected to excessive erosion and capable of drainage runoff with minimum risk of scour, their slopes should be profiled at a maximum 1:3 gradient.
- Diversion channels should be constructed ahead of the open cuts, and above emplacement areas and stockpiles to intercept clean runoff and divert it around disturbed areas into the natural drainage system downstream of the site.
- Rehabilitation is necessary to control erosion and sedimentation of all eroded areas (where works will take place).
- Existing vegetation must be retained as far as possible to minimise erosion problems.
- It is important that the rehabilitation of site is planned and completed in such a way that the runoff water will not cause erosion.
- Visual inspections will be done on a regular basis with regard to the stability of water control structure, erosion and siltation.
- Sediment-laden runoff from cleared areas must be prevented from entering rivers and streams.
- No river or surface water may be affected by silt emanating from the site.

Site Office / Camp Sites

No site offices or camp sites will be constructed on the site under current operating conditions, existing structures will be used.

Operating Procedures in the Site

- Construction shall only take place within the approved demarcated site.
- The Contractor must ensure that an emergency preparedness plan is in place in order to fight accidental fires or veld fires, should they occur. The adjacent landowners/users/managers should also be informed or otherwise involved.
- Enclosed areas for food preparation should be provided and the Contractor must strictly prohibit the use of open fires for cooking and heating purposes.
- The use of branches of trees and shrubs for fire-making must be strictly prohibited.
- The Contractor should take all reasonable and active steps to avoid increasing the risk of fire through their activities on-site. No fires may be lit except at places approved by the ECO.
- The Contractor must ensure that the basic fire-fighting equipment is to the satisfaction of the Local Emergency Services.



<ul style="list-style-type: none"> • The Contractor must supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other relevant areas with tested and approved fire-fighting equipment. • Fires and “hot work” must be restricted to demarcated areas. • A braai facility may be considered at the discretion of the Contractor and in consultation with the ECO. The area must be away from flammable stores. All events must be under management’s supervision and a fire extinguisher will be immediately available. “Low-smoke” fuels must be used (e.g., charcoal) and smoke control regulations, if applicable, must be considered. • The Contractor must take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains. <p>Fossil finds:</p> <p>If fossils are discovered immediately stop construction and consult with the appropriate heritage body or ECO. The contact details, as well as the detailed steps to be followed are found on APPENDIX I of this EMPr.</p> <p>Specialist recommendations</p> <ul style="list-style-type: none"> • Fossils and Stone Age artefacts are protected by law. Should anything of a palaeontological/palynological nature be found on site by the Contractor (or any other party), e.g. bones not previously visible, work is to be stopped in that area immediately, and the Environmental Control Officer (ECO) notified. Failure to do so will result in a penalty and this must be carefully explained to workers during the Environmental Education Programme undertaken by the ECO. No palaeontological or archaeological material may be removed from the site without a permit from Heritage Western Cape. • Bulk earth works and excavation for foundations/infrastructure should be monitored by a palaeontologist or archaeologist with appropriate palaeontological knowledge. The frequency of this to be worked out with the contractor to minimize time spent on site. • Should palaeontological and/or archaeological material be encountered, the ECO will advise on demarcation of this area and notify the specialist (palaeontologist/archaeologist with appropriate experience) to view material and ascertain whether further study of the area will be required. • Should a specialist confirm a genuine fossil or sub-fossil and recommend further study of the area, work in the applicable area is to cease until further notice. Heritage Western Cape is to be informed immediately by the ECO. • Should any human remains be disturbed, exposed or uncovered during excavation, work in that area must stop and the find shall immediately be reported the South African Police Service and the monitoring specialist. If suspected that the remains are older than 60 years, the SAHRA (021 462 4502) must be informed and established protocols followed. • The removal of discovered palaeontological remains, by a contracted specialist shall be at the applicant’s cost and will include the cost of any dating. • All palaeontological and archaeological material must be lodged in an appropriate Iziko Museums of South Africa collection. 		
<p>Performance Indicator</p>	<p>No soil and / or groundwater contamination incidences and potential fossil find disturbed</p>	



9.2. Objective 2: Loss of vegetation and disruption to ecological processes

Impact Management Objective: Reduce the impacts caused by land disturbance and impacts on surrounding indigenous vegetation.		
Potential impact(s) to avoid	Prevention of vegetation loss immediately outside the development site/ no-go areas	
Impact Management Outcome	The disturbance of indigenous vegetation and faunal species is minimised.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<p>General:</p> <ul style="list-style-type: none"> Demarcate and fence off the construction site boundaries upon site establishment and limit all activities to inside these boundaries. The authorised hard surface (reservoir) footprints must be surveyed and pegged out on site prior to any site development. No areas of Medium Terrestrial Biodiversity sensitivity natural or partly natural vegetation may be disturbed outside the pegged out and authorised development footprints. <p>Clearance of vegetation:</p> <ul style="list-style-type: none"> Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences. No clearing outside of footprint to take place. Such measures include a survey of the route before commencement in order to microsite the route to avoid large or important fynbos species and may require hand excavation in certain areas to reduce the footprint so as not to significantly disturbance. Topsoil must be striped and stockpiled separately during site preparation and replaced on completion where revegetation will take place. Any site camps and laydown areas requiring clearing must be located within already disturbed areas. Avoid fynbos corridor where possible. <p>Alien Invasive Vegetation:</p> <ul style="list-style-type: none"> No areas of Medium sensitivity natural or partly natural vegetation may be disturbed outside the pegged out and authorised development footprints. Alien species must be removed from the site as per the National Environmental Management: Biodiversity Act (No. 10 of 2004) requirements. A suitable weed management strategy must be implemented in the construction phase and carried through the operational phase. Weeds and alien species must be cleared by hand before the rehabilitation phase of the areas. Removal of alien plants are to be done according to the Working for Water Guidelines. The Contractor is responsible for the removal of alien species within all areas disturbed during construction activities. Disturbed areas include (but are not limited to) access roads, construction camps, site areas and temporary storage areas. In consultation with relevant authorities, the Engineer may order the removal of alien plants (when necessary). Areas within the confines of the site are to be included. 	Contractor	Construction phase

<ul style="list-style-type: none"> • All alien plant material (including brushwood and seeds) should be removed from site and disposed of at a registered waste disposal site. Should brushwood be utilised for soil stabilisation or mulching, it must be seed free. • After clearing is completed, an appropriate cover crop may be required, should natural re-establishment of grasses not take place in a timely manner. • <p>Fires</p> <ul style="list-style-type: none"> • The Contractor must ensure that an emergency preparedness plan is in place in order to fight accidental fires or veld fires, should they occur. The adjacent landowners/users/managers should also be informed or otherwise involved. • Enclosed areas for food preparation should be provided and the Contractor must strictly prohibit the use of open fires for cooking and heating purposes. • The use of branches of trees and shrubs for fire-making must be strictly prohibited. • The Contractor should take all reasonable and active steps to avoid increasing the risk of fire through their activities on-site. No fires may be lit except at places approved by the ECO. • The Contractor must ensure that the basic fire-fighting equipment is to the satisfaction of the Local Emergency Services. • The Contractor must supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other relevant areas with tested and approved fire-fighting equipment. • Fires and "hot work" must be restricted to demarcated areas. • The Contractor must take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains. <p>Soil Aspects</p> <ul style="list-style-type: none"> • Sufficient topsoil must be stored for later use during decommissioning, particularly from outcrop areas. • Topsoil shall be removed from all areas where physical disturbance of the surface will occur. • All available topsoil shall be removed after consultation with the botanist and horticulturalist prior to commencement of any operations. • The removed topsoil shall be stored on high ground within the site footprint outside the 1:50 flood level within demarcated areas. • Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads. • The stockpiled topsoil shall be protected from being blown away or being eroded. The application of a suitable grass seed/runner mix will facilitate this and reduce the minimise weeds. <p>Dust</p> <ul style="list-style-type: none"> • To manage complaints relation to impacts on the nearby communities, a dust register will be developed. • If required, water spray vehicles will be used to control wind cause by strong winds during activities on the works. • No over-watering of the site or road surfaces. • Wind screens should be used to reduce wind and dust in open areas. 		
<p>Performance Indicator</p>	<p>Construction team limit disturbance to the surrounding vegetation.</p>	



9.3. Objective 3: Disturbance and displacement of Faunal habitat and faunal species of conservation concern

Impact Management Objective: Reduce the impacts caused by land disturbance and impacts on the faunal habitat and faunal species of conservation concern		
Potential impact(s) to avoid	<ul style="list-style-type: none"> • Permanent loss of faunal habitat cover due to construction activities. • Increased susceptibility to erosion caused by construction activities. • Disturbance and displacement of faunal species, their processes. 	
Impact Management Outcome	The disturbance of faunal habitat and faunal species is minimised.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<p>General:</p> <ul style="list-style-type: none"> • Ensure contact numbers for emergency assistance is available. • Reptiles such as lizards are less mobile compared to mammals, and some mortalities could arise. • Should vegetation regrowth be significant prior to the commencement of the construction phase of the proposed development, it is recommended that a faunal search and rescue be conducted before construction commences, although experience has shown that there could still be some mortalities as these species are mobile and may thus move onto site once construction is underway. • A reptile handler should be on call for such circumstances. • Respective permits to be obtained beforehand (if applicable). • No animals are to be harmed or killed during the course of operations. • Should vegetation regrowth take place prior to the commencement of the construction phase, it will be important that clearing activities are kept to the minimum and take place in a phased manner. This allows animal species to move into safe areas and prevents wind and water erosion of the cleared areas. • Workers are NOT allowed to collect any flora or snare any faunal species. All flora and fauna remain the property of the landowner and must not be disturbed, upset or used without their expressed consent. • No domestic animals are permitted on the sites. • Trees and shrubs that are directly affected by the operations may be felled or cleared but only by the expressed written permission of the ECO. • Where landscaping will be done, indigenous vegetation must be used as far as reasonably possible. • Materials used during construction must be sourced and transported responsibly to minimise the risk of further introductions of new IAPs and contamination of the site, and especially the areas surrounding the site. • Should animals wander onto site, the animals must be captured and released into the adjoining nature reserve grounds. • The site is to be always kept clean and tidy so as to not attract the animals to the site. 	Contractor	Construction phase
Performance Indicator	Construction team limit disturbance to the surrounding vegetation and faunal species.	

9.4. Objective 4: Job creation

Impact Management Objective: To create employment opportunities with potential for skills transfer, for members of the local community.		
Potential impact(s) to be promoted.	A number of temporary job opportunities for skilled and unskilled labour will be created during the construction phase of the development. Potential transfer of skills from more experienced workers to less experienced workers. Increase in business for local businesses within the construction industry.	
Impact Management Outcome	Social benefits from the employment opportunities created during the construction phase.	
IMPACT MANAGEMENT ACTIONS		
Promotion measure	Responsible party	Time period
Positive, therefore no mitigation necessary. It should be noted that this impact will benefit the local community and address the issue of unemployment within the Western Cape, and South Africa, particularly for unskilled labourers, although temporary. Improving quality of life. The applicant is recommended to source local labour, contractors and sub-contractors, as well as utilise local materials and suppliers.	Eskom Holdings SOC Ltd.	Construction phase
Performance Indicator	A substantial proportion of the construction team is from the local community, with preference given to historically disadvantaged individuals and, where appropriate, unskilled labourers. Skills transfer from experienced to less experienced workers is actively encouraged on site.	

9.5. Objective 5: Air Quality Control

Impact Management Objective: Minimise the effect on air quality from dust and emissions complaints.		
Potential impact(s) to be avoided.	<ul style="list-style-type: none"> Generated dust from exposed soil, and ground disturbance. Construction vehicles emitting exhaust fumes 	
Impact Management Outcome	<ul style="list-style-type: none"> Minimise the incidence of dust. Minimised emission related complaints. 	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General: <ul style="list-style-type: none"> Dust suppression methods, such as non-potable water spraying must be used during the construction phase of the proposed development. 	Contractor	Construction phase

<ul style="list-style-type: none"> • Stockpiles and spoil heaps must be covered with tarpaulins or straw to prevent fugitive dust. • All construction vehicles must be appropriately maintained to minimise exhaust Emissions. • All mitigation measures described in the EMPr relating to dust and vehicle emissions must be adhered to. • All spills or accidents involving such materials are to be recorded by the Contractor. • Contractor to provide details to ECO. • Vehicular speed must be controlled at all times with no indiscriminatory driving permitted by any construction vehicles, or the general public. • During high wind conditions, the ER will evaluate the situation and make recommendations as to whether dust damping measures are adequate, or weather working will cease altogether until the wind speed drops to an acceptable level. • Exposed soil and material stockpiles shall be protected against wind erosion and the location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors. • The Contractor shall implement dust suppression measures (e.g. water spray vehicles (must be used in line with the Water Use By-Laws), covering of material stockpiles, chemical soil binders, shade cloth erected on fencing etc.) if and when required. Straw, brush packs and chipping must be considered prior to the use of water spray vehicles. • Plastic, shade cloth or other suitable material may be used for covering stockpiles. Topsoil stock piles are not to be covered with plastic or shade cloth but hessian or similar to prevent composting occurring. 		
Performance Indicator	No air quality complaints, good visibility and no fume complaints.	

9.6. Objective 6: Noise and Visual Impact Control

Impact Management Objective: Minimised noise complaints		
Potential impact(s) to be avoided.	<ul style="list-style-type: none"> • Noise from construction vehicles and machinery. 	
Impact Management Outcome	<ul style="list-style-type: none"> • Avoid excessive noise due to construction activities 	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<p><u>Noise</u></p> <ul style="list-style-type: none"> • All construction vehicles must be equipped with muffled reverse sirens (which are to the standard of the Occupational Health & Safety Act (Act 85 of 1993). • No constructions activities are permitted between 17:00 and 7:00 unless previously agreed upon between the Contacting team and the Municipality. • Construction workers are to remain within the designated site boundary at all time. • Eating areas are to be located away from any residential units/homesteads and tourists' attractions within proximity to the current working areas. • All equipment to be adequately maintained and kept in good working order to reduce noise. 	Contractor/ ECO	Construction phase

<ul style="list-style-type: none"> Noise levels must comply with the SANS 100103 – 0994 (recommended noise levels), as well as the Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013. All mitigation measures relating to noise control as described in the EMPr must be adhered to. <p>Visual</p> <ul style="list-style-type: none"> A clean site policy must be adopted at all time during the construction phase. Where possible, storage and disposal of waste must take place in a sustainable manner, where clearly marked recycle bins must be provided to workers at the site camp. The visual impact experienced during the construction phase would be relatively short term and be mitigated by good housekeeping and regular removal of rubble on the site. An approved EMPr must be adhered to in order to minimize the visual impacts of construction phase activities. An ECO must be appointed. The EMPr must be enforced and monitored by the ECO. The site must be kept clean and tidy at all times. No stockpiles may exceed 2m in height. 		
Performance Indicator	No noise or visual impact complaints.	

10. ENVIRONMENTAL IMPACT MANAGEMENT: POST CONSTRUCTION REHABILITATION PHASE & OPERATIONAL PHASE

After all construction activities have ceased, the sites must be cleared of all construction related equipment, materials, facilities and waste. In addition, all disturbed surfaces – including disturbed areas around the structures and all areas utilised for site facilities – must be stabilised, rehabilitated and provided with a suitable cover. All temporary access roads constructed must be rehabilitated and access must be restricted from the public.

The environmental management objectives (goals) for this phase are:

- Soil & Groundwater management
- Alien invasive species clearance and management
- Visual Impact
- Climate change impacts

10.1. Objective 1: Alien invasive species clearance and rehabilitation

Impact Management Objective: Alien invasive species controlled and reduced		
Potential impact(s) to be avoided	<ul style="list-style-type: none"> • The spread of alien invasive species to other areas. • Increased fire risk • Potential loss to biodiversity • Environmental degradation from the change of vegetation structure and soil chemistry. 	
Impact Management Outcome	Limited infestation and establishment of alien invasive species population and limit fire risks	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • Spread of alien invasive vegetation associated with the soil disturbance caused by construction. • The risk of spreading of invasive alien vegetation is expected to be very low significance after the proposed mitigation measures are implemented found in Appendix K. • After the clearing of any invasive alien vegetation, follow-up clearances must be undertaken twice a year for three years, with a view to becoming standard practice. • Any disturbed areas must be rehabilitated with suitable indigenous flora as soon as possible. • Removal of weedy or invasive plant material is to be done by hand and in accordance with applicable and recognised methods. No machinery may be used. • Areas that have been cleared must be considered for replanting with the locally indigenous species. Clearing must take place before invasive alien plants flower and set seed. All cleared material is to be removed from site to a suitable refuse facility. • If herbicides are to be used, the following should be considered: Only registered herbicides are to be used. • Herbicide application must be done in such a way as to prevent over-spray and spray drift. Herbicide application should not be undertaken during windy conditions. • No water will be collected from any natural sources for mixing of herbicide or cleaning of equipment. 	<ul style="list-style-type: none"> • Developer / Eskom Holdings SOC Ltd. 	<ul style="list-style-type: none"> • Operational phase

<ul style="list-style-type: none"> • Alien invasive vegetation management around the site is to take place in accordance with the Alien Vegetation Management Programme provided in the Environmental Management Programme. • The Vegetation Rehabilitation Plan included in the Environmental Management Plan must be implemented on site until successful rehabilitation has been confirmed by the ECO. <p>Fires:</p> <ul style="list-style-type: none"> • Operational Fire extinguishers need to be present on site. • During construction and operational activities no uncontrolled fires are allowed. • Ensure emergency numbers are readily available with a working cell-phone on site, the foreman responsible the team is to ensure that he has these emergency numbers, and can contact emergency services immediately, Melkbosstrand Fire Department contact number: 021 4447308. 		
Performance Indicator	Limited alien species, protected indigenous vegetation, limit fire risks.	

10.2. Objective 2: Visual impact

Impact Management Objective: Visual Impact		
Potential impact(s) to be avoided.	Unightly views of the new hardened water reservoir and associated piping	
Impact Management Outcome	<ul style="list-style-type: none"> • Development remains fire wise. • Development protected from wildfires. • Implementation of the National Veld and Forest Fire Act (Act No. 101 of 1998) • No unnecessary disturbance to the view. 	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<p>General:</p> <ul style="list-style-type: none"> • Utilise natural colours and non-reflective material for the new infrastructure. • Rehabilitate the area where the construction may have impacted. • Follow the rehabilitation plan and ensure that all alien invasives are cleared and indigenous cover is successful. • The reservoir blends in with to the vista. • Re-vegetation and landscaping with plant species indigenous to the Cape Flats Dune Strandveld biome must be undertaken, where possible, to minimise the visual effects of the reservoir. • The Applicant must ensure that the vegetation is reinstated and monitor vegetation growth to ensure regrowth until its fully established. 	Developer / Eskom Holdings SOC Ltd.	Operational phase
Performance Indicator	<ul style="list-style-type: none"> • No alien vegetation present. • No dead vegetation present. 	

11. MONITORING COMPLIANCE

This EMPr, once approved by the competent authority (DFFE), must be seen as binding to the Holder, and any person acting on the Holder's behalf, including but not limited to agents, employees, associates, contractors and service providers.

The Holder and all other persons who may be directly involved in the development are also bound by their general Duty of Care, as stated in Section 28 of the National Environmental Management Act, 1998:

Duty of Care:

"Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment"

11.1. Environmental Authorisation (EA) Holder / Proponent

It is the EA Holders responsibility to ensure that all agents/contractors/subconsultants appointed to provide services to establish the proposed development, are fully aware of the EMPr, Environmental Authorisation and any other relevant licenses/permits, which must be considered prior to actioning any activity on site. The EA Holder may choose to hold the Contractor responsible for any fines incurred as a result of non-compliant activities during implementation, however this must be done through the agent and by legal procedure. The EA Holder must ensure that:

- **Financial allowances are incorporated into the Bill of Quantities, to accommodate for the requirements of the licenses and EMPr.**
- **An appropriately experienced/qualified Environmental Control Officer (ECO) is appointed to monitor compliance, prior to commencement of site establishment activities.**
- **An appropriately experienced/qualified Environmental Auditor is appointed to audit compliance, prior to commencement of site establishment activities.**

11.2. Contractor

It is the Contractors responsibility to be aware of the requirements of the EMPr, Environmental Authorisation and any other relevant permits/licences and ensure that all labour, appointed sub-contractors/consultants are also made aware of these documents. The Contractor is required to ensure that as per EMPr, EA conditions, and other permits or licences:

- **Time allowances/considerations are given to accommodate all relevant activities, when compiling the project programme of works.**
- **Financial allowances are made to meet all relevant requirements.**
- **All activities are implemented in an environmentally conscience manner, in line with the EMPr.**
- **Produce method statements for approval by the ECO and Site Engineer, prior to implementing activities.**

- **Construction Phase Record Keeping**

A copy of the approved EMPr, the Environmental Authorisation and any relevant construction method statements must be kept on site at all times during pre-construction, construction and rehabilitation activities. The ECO Reports must be retained by the Holder for a period of at least 5 years and must be provided to the Competent Authority upon request.

The set up and organisation of the site camp is paramount to ensuring compliance. An environmental file is to be created by the contractor and be situated within the site camp throughout the construction phase and with the applicant thereafter. The environmental file is to include the following;

- **A copy of the Environmental Authorisation**
 - **A copy of General Authorisation or any other relative permits**
 - **A copy of the approved EMPr**
 - **Updated Waste slips**
 - **Disposal slips or cleaning slips (ablution cleaning)**
 - **All EMR's (Environmental Monitoring Reports) and ECO instructions**
 - **Copies of Environmental induction register/s**
 - **The Protocol for chance Palaeontological Findings**
 - **A complaints register**
 - **Updated method statements**
 - **Any and all emergency procedure/s applicable to site activities**
 - **An Incident Register**
- **Method Statements**

The Competent Authority and/or the ECO may require the Holder or Construction Contractor to submit Method Statements for one or more construction-related activity, or any aspect of the management of the site, before the activity is undertaken or during the performance of the activity, if the activity is causing or may cause significant environmental damage, or pose a health and safety risk.

Method Statements need not be complex and lengthy, but must clearly state **how**, **when** and **where** the activity concerned will be undertaken, and must specify **who** will be responsible for undertaking each component of that activity. Method Statements must be prepared by the Construction Contractor and submitted to the ECO for approval before undertaking the activity concerned.

The ECO and / or Competent Authority have the authority to request method statements for activities, including but not limited to:

- Establishment of site camp and stockpile area.
- Cement/ concrete batching, disposal and emergency contingencies.
- Topsoil and sub-soil storage/ stockpiling.
- Storage of fuels and hazardous chemicals and emergency contingencies.
- Waste management system.
- Storm water management and control.
- Alien invasive plant species management.
- Fire Control & Fire Emergency Plan.
- Emergency preparedness plan / emergency response procedure.
- Post-construction rehabilitation.

The ECO has the authority to prevent activities from being undertaken until such time as a satisfactory Method Statement has been submitted to the ECO and approved by the ECO.

11.3. ECO Monitoring

The appointed ECO is responsible for undertaking regular site visits to monitor and report on the implementation of the EMPr and adherence to the conditions of the Environmental Authorisation during the pre-construction, construction and post-construction rehabilitation phases. The ECO is not required to monitor the site during the operational (maintenance) phase of the development.

Frequency of ECO visits:

- The ECO must conduct **monthly** site visits during the construction phase, in addition to the start-up and closure inspections.
- The ECO must conduct a site visit 3 months after practical completion of the construction period.
- The ECO has the discretion to undertake additional visits if he / she feels this is justified due to the actions of the contractors, and to make *ad hoc* visits in order to ensure compliance.

Monitoring Reports:

- Must be produced **monthly** and submitted to the Competent Authority, Engineer, Proponent and Contractor.

- **ECO Inspections - Photographic Records**

The condition of the surrounding natural environment must be monitored regularly in order to ensure that construction and management activities are not impacting negatively on the condition of the landscape and any sensitive ecosystems. The most effective way to achieve this is by means of a detailed photographic record. In this way, a record of any shift in ecosystem condition can be maintained and potential impacts be detected at an early stage. It is thus recommended that fixed-point photo-monitoring sites could be set up, and photographs must be taken at these sites during each ECO inspection. Where necessary, the entire working area must be well documented and photographed.

- **ECO Inspections - Written Records**

The following record-keeping during the pre-construction, construction and rehabilitation phases of the development is recommended:

- The ECO must complete an ECO Checklist after each ECO site visit.
- The ECO must compile an ECO monitoring report and submit this to the Holder, the Contractor and the Competent Authority (the latter only if required by the Competent Authority). The monthly reports must be a summary of the ECO inspections from the preceding month, and must highlight the key concerns/ issues on site, instances of non-compliance with the EA and EMPr, all instructions issued to the contractor, actions taken and aspects that still require attention.
- All ECO reports and ECO instructions must be retained on file at least for the duration of the construction period (retaining reports for a period of at least 5 years is recommended, in the event that the Competent Authority must request information).
- A record (minutes) of construction site meetings, liaison site meetings between the ECO and resident engineer or contractor, monitoring reports, ECO instructions and ECO observations must be clearly documented and filed on a master file off-site for safe keeping.
- It is recommended that a site register (incident register) be kept on site at the site office for the recording of any environmental incidents (e.g. fires, spills etc.), observations which are contrary to the stipulations within the EMPr, and any other contravention deemed necessary for the attention of the resident engineer. Actions taken to remedy the incidents must also be recorded.
- A complaints register must be kept on site in which complaints by any member of the public must be logged.

The ECO must compile a final post-construction audit report, within 6 months of completion of each construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.

11.4. ESO Monitoring

Due to the nature of this development, an Environmental Site Officer (ESO) must be appointed. The site officer will be responsible for implementing and monitoring the site activities daily. This individual must be appointed by the Main Contractor. The ESO will be responsible for actively managing activities on-site. The ESO must:

- Have a site diary wherein they report all environmental incidents daily;
- Ensure that all environmental filing relevant to the project is up to date;
- Keep proper Incident reports on record of all incidents, including all remediation action-documents. These reports and documents must be made available to the ECO, Site Contractor, Site Engineer and the DFFE when required;
- Be present and give report on all incidents at all site meetings for the project.

Auditing by Environmental Auditor

An environmental auditor is to be appointed by the applicant. As per Section 34 of the EIA Regulations (GN R326 of 2017), the duty of an Environmental Auditor is to be independent and is responsible for:

- Ensuring compliance with the conditions of the environmental authorisation and the EMP; and
- Submit an environmental audit report to the relevant competent authority, which provides verifiable findings, in a structured and systematic manner, as per Appendix 7 of GN R326.
- Any amendments to the EMP, which must be recorded in Appendix J.

The Environmental auditor must undertake an audit as per Appendix 7 of GN R326 at the following stages;

- At 50% completion of the project timeline.
- At practical completion of the construction period.
- 3 months after practical completion of the construction period.

12. PENALTIES, CLAIMS AND DAMAGES

The contractor will be responsible for all costs incurred in the rehabilitation of the site and for ensuring that all procedures required to rehabilitate the site are implemented. If third parties are called to the site to perform clean up and rehabilitation procedures, the contractor will be responsible for all costs. The competent authority may impose penalties on the Holder or any of the contractors if conditions contained in this EMP are contravened. This would be based on an agreement or contract between the Holder and the contractor.

Penalties could be imposed in terms of Chapter 11 of the Western Cape Bill on Planning and Development as published in the Extraordinary Provincial Gazette No 5183, 3 October 1997, and would be applicable for any action which leads to damage to the natural environment. Please note that the payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

In cases where severe environmental damage occurs, the competent authority law enforcement division may take legal action against the responsible parties. The reasons for this could include, among others:

- Not implementing the conditions of the EMP;
- Spillage that results in environmental damage;
- Incorrect handling and storage of construction materials and chemicals;
- Sensitive areas that are not clearly demarcated;
- Performing ablutions in areas other than facilities provided for such actions; and

- Occurrence of unattended and out of control fire.

The Contractor shall comply with the environmental specifications and requirements on an ongoing basis and any failure on his part to do so will entitle the ECO to issue the contractor with penalty / fine as described in the following section.

The following offences, level of severity and value of the financial fines have been drafted according to the sensitivities on the proposed site, the mitigation measures proposed, and the construction methods proposed. It must be noted that the level of severity is at the discretion of the ECO and any offences or fines will be recorded in the ECO's monitoring report. The fineable offences are not limited to the table below, additional offences may be applied by the ECO with prior agreement with the EA holder.

The following fine structure shall apply:

Table 3: Fines and offences

Finable Transgression	Min Fine	Max Fine
Failure to notify the ECO of the commencement of construction or pre-construction activities, prior to the commencement of such activities.	R1 000	R2 000
Failure to comply with the provisions relating to the demarcation of the working area, site camp and associated facilities, and the maintenance of the demarcated boundaries.	R1 000	R5 000
Failure to comply with the provisions relating to the demarcation of all "no-go" areas, and the maintenance of the demarcated boundaries.	R2 000	R5 000
Failure to provide secured ablution facilities (1:30 ratio) on site.	R500	R15 000
Failure to comply with the provisions relating to the clearance of vegetation on site.	R2 000	R5 000
Clearance of indigenous vegetation (regardless of the density of alien vegetation present) outside of the demarcated boundaries of the working area and site camp.	R2 500	R15 000
Failure to apply herbicide to alien vegetation when required to do so.	R500	R2 000
Failure to adhere to designated access routes and/or the driving of vehicles through undeveloped vegetation outside of the demarcated working area or site camp.	R1 000	R5 000
Movement of vehicles and/or construction workers in no-go areas;	R1 000	R10 000
Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, within designated "no-go" areas.	R1 000	R10 000
Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, outside of the areas demarcated for such parking/storage.	R500	R5 000
Failure to comply with the provisions relating to the management of topsoil and subsoil.	R1 000	R5 000
Excessive excavation of material in areas not depicted for such purpose / activity on the approved design plans.	R2 500	R10 000
Failure to comply with the provisions relating to waste management on site i.e. recycling of wastes.	R500	R5 000
Failure to comply with the provisions relating to the storage, use and management of hazardous substances and fuels on site and/or the spillage of hydrocarbons or hazardous substances on site leading to environmental damage.	R1 000	R10 000
Mixing cement or concrete on bare ground and/or failure to comply with any other provision regarding cement/ concrete batching.	R1 000	R5 000
Failure to provide adequate fire-fighting equipment (in working order) on site at all times and/or failure to comply with the provisions relating to fire prevention and/or the occurrence of unattended or out of control fires.	R500	R5 000
Refueling of vehicles, machinery or equipment outside of the designated refueling area.	R500	R2 000

Maintenance of vehicles, machinery or equipment outside of the designated maintenance yard, except in emergencies.	R500	R2 000
Failure to undertake refueling or repairs over a drip tray or other impermeable bunded surface to collect spilled hydrocarbons (fuels, lubricants, oils etc.) and other hazardous substances; failure to provide drip trays under fuel burning equipment (including pumps and generators) where there is a risk of hydrocarbon leakage.	R500	R2 000
Failure to produce a required method statement/s to the engineer's and ECO's satisfaction prior to undertaking the activity concerned and/or failure to adhere to an approved method statement.	R1 000	R5 000

The above does not absolve the transgressor from being prosecuted in terms of the **National Environmental Management Act (Act 107 of 1998)** which may result in further penalties and other actions by State Departments.

13. EMERGENCY PREPAREDNESS

13.1. Emergency response procedures

The potential environmental risks that may arise as a result of construction activities, or during the maintenance of the structures must be identified, and appropriate emergency response procedures must be compiled for each emergency scenario. Potential environmental emergencies that require an emergency response include, but are not limited to, unplanned fires, sewage spills, spills of hazardous chemicals, snake bites etc.

The construction contractor is responsible for identifying potential significant environmental risks that may arise as a result of pre-construction, construction and rehabilitation activities, and the contractor must formulate emergency response procedures for these potential incidents.

The ECO, contractor and the EA Holder are responsible for ensuring that all construction workers appointed to the project are aware of the emergency procedures and are properly trained on how to identify and respond to an emergency incident during construction.

Please note that this EMPr only applies to the labourers, contractors, site managers, and engineers appointed, unless specified otherwise, to fulfil the requirements of the proposed development.

An emergency procedure must clearly indicate who will take charge during an emergency, and the roles and responsibilities of workers and authorities during an emergency.

The construction contractor is responsible for ensuring that the requirements of the Occupational Health & Safety Act (Act 85 of 1993) (OHS Act) are adhered to during the construction phase. The Holder is responsible for ensuring compliance with the OHS Act during the undertaking of operational and maintenance activities.

All workers on site during the construction and operational phase must be properly educated about possible emergency incidents that may arise, how to avoid such incidents and how to respond in the event of an incident. "Refresher" training sessions on emergency procedures must be held if needed.

All workers must ideally be given basic fire-awareness training, as well as be advised on basic firefighting and safety techniques. Fire-fighting equipment must be available on-site during construction and operational activities.



All workers must be trained on how to respond in the event of a spill of a hazardous substance (fuel, chemicals etc.), if hazardous substances are to be used on site.

A spill kit for containing and/or neutralising spills of hazardous substances (e.g. hydrocarbons) must be available on site at all times, when hazardous substances are present.

Any incidents of pollution or spillage of hazardous materials during construction must be reported to the ECO as soon as possible. The ECO must then (depending on the nature of the spill) notify the relevant authorities, if needed. During the operational phase of the development, the EA Holder is responsible for notifying the relevant authorities of any pollution incidents that arise.

A first aid kit must be available on site at all times.

Emergency contact numbers (including the fire department, police and ambulance) must be prominently displayed on site at all times and regularly updated.

All emergency incidents must be recorded in a site incident log. The cause of the incident, the measures taken in response to the incident and the efficacy of those measures must also be recorded. This information must be used to inform future emergency preparedness planning, and to avoid prevent similar incidents from arising again.

13.2. Emergency preparedness

The following measures must be implemented, as appropriate, to ensure effective responses to emergencies:

- All workers on site during the construction and operational phase must be properly educated about possible emergency incidents that may arise, how to avoid such incidents and how to respond in the event of an incident. "Refresher" training sessions on emergency procedures must be held if needed.
- All workers must ideally be given basic fire-awareness training, as well as be advised on basic firefighting and safety techniques. Fire-fighting equipment must be available on-site during construction and maintenance activities.
- All workers must be trained on how to respond in the event of a spill of a hazardous substance (fuel, chemicals etc.), if hazardous substances are to be used on site.
- A spill kit for containing and/or neutralising spills of hazardous substances (e.g. hydrocarbons) must be available on site at all times, when hazardous substances are present.
- Any incidents of pollution or spillage of hazardous materials during construction must be reported to the ECO as soon as possible. The ECO must then (depending on the nature of the spill) notify the relevant authorities, if needed. During the operational phase of the development, the Holder is responsible for notifying the relevant authorities of any pollution incidents that arise as a result of maintenance activities.
- A first aid kit must be available on site at all times.
- Emergency contact numbers (including the fire department, police and ambulance) must be prominently displayed on site at all times and regularly updated.
- All emergency incidents must be recorded in a site incident log. The cause of the incident, the measures taken in response to the incident and the efficacy of those measures must also be recorded. This information must be used to inform future emergency preparedness planning, and to avoid prevent similar incidents from arising again.

14. ENVIRONMENTAL AWARENESS PLAN

Environmental Awareness Training must be conducted prior to the commencement of construction activities. It is the Holder's responsibility to familiarise himself/herself with the content and requirements of this EMPr. The Holder is also responsible to ensure that the contractor and all labourers working on site during the construction phase are familiar with the content of this EMPr.

The following actions must be taken to ensure that all relevant parties are aware of their environmental role and duties:

- This EMPr must be kept on site at all times.
- The provisions of this EMPr and the conditions of the Environmental Authorisation must be explained in detail to all staff during Awareness Training.
- Training booklets will be handed out to all labourers and must be explained to them.
- Weekly checks to be done by the Holder's environmental representative who must be on site at all times.
- The ECO to conduct frequent site visits.
- Monthly monitoring reports to be compiled by the ECO. These reports will be circulated to all parties involved (including the Holder, contractor and the competent authority where required).

The Construction Contractor must make allowance for all construction site staff, including all subcontractors that will be working at the site, to attend environmental awareness training sessions (undertaken by the ECO) before commencing any work on site. During this training, the ECO will explain the EMPr, and the conditions contained therein. Attention will be given to the construction process and how the EMPr fits into this process. Other items relating to sound environmental management which must be discussed and explained during the environmental awareness training sessions include:

- The demarcated "no-go" areas;
- General dos and don'ts of the site;
- Making of fires;
- Waste management, use of waste receptacles and littering;
- Use of the toilets provided;
- Use and control of construction materials and equipment etc.;
- Control, maintenance and refuelling of vehicles;
- Methods for cleaning up any spillage;
- Access and road safety;
- Emergency procedures (e.g. in case of fire, spillage etc.);
- General "best practice" principles, with regards to the protection of environmental resources.

Environmental awareness training and education must be ongoing throughout the construction phase and must be undertaken regularly if deemed necessary (especially if it becomes apparent that there are repeat contraventions of the conditions of the EMPr), or as new workers come to site. Translators must be utilised where needed.

APPENDIX A – CURRICULUM VITAE OF EAPS

CURRICULUM VITAE

MADELEINE KNOETZE

PERSONAL

Profession: Senior Environmental Assessment Practitioner

Nationality: South African

Languages: English & Afrikaans (read, write and speak) – Fluent

Driver's License: Code B

EAPASA Registration: No. 3230

SUMMARY

Madeleine holds a Bachelor of Science in Environmental Sciences from the Nelson Mandela Metropolitan University obtained in 2014. She has 8 years' experience in the environmental field, she has proven competency in the compilation of environmental assessments, water use licence applications, legal compliance, on-site monitoring, rehabilitation reporting, aquatic impact assessments and Geographic Information Systems (GIS). To date she has completed numerous environmental assessments, management plans, licencing applications, aquatic assessments and audits within the private and governmental spheres. Madeleine is registered with EAPASA as a certified Environmental Practitioner (EAPASA #3230).

WORK EXPERIENCE

October 2022 – Present: Sharples Environmental Services cc, Cape Town, WC

Environmental Assessment Practitioner

- Basic Assessments Reports;
- Environmental Impact Assessments;
- Environmental Management Programmes;
- Legislative documentation;
- Administration.

February 2015 – September 2022: Exigent Engineering Consultants CC, Johannesburg, GTN

Environmental Assessment Practitioner and GIS Specialist

- Management and compilation of GIS database;
- Advanced GIS Applications;
- Environmental Impact Assessments;
- Water Use License Applications;
- Environmental Monitoring/Auditing
- Stakeholder Engagement
- Rehabilitation and Monitoring Programmes

- Ecological and Wetland Assessments
- Project Management

TERTIARY EDUCATION

2014: Nelson Mandela Metropolitan Municipality

- Bachelor of Science Degree specialising in Environmental Sciences.

ACCREDITATION / ASSOCIATION

- EAPASA Registration: No. 3230
- Member IAIA South Africa

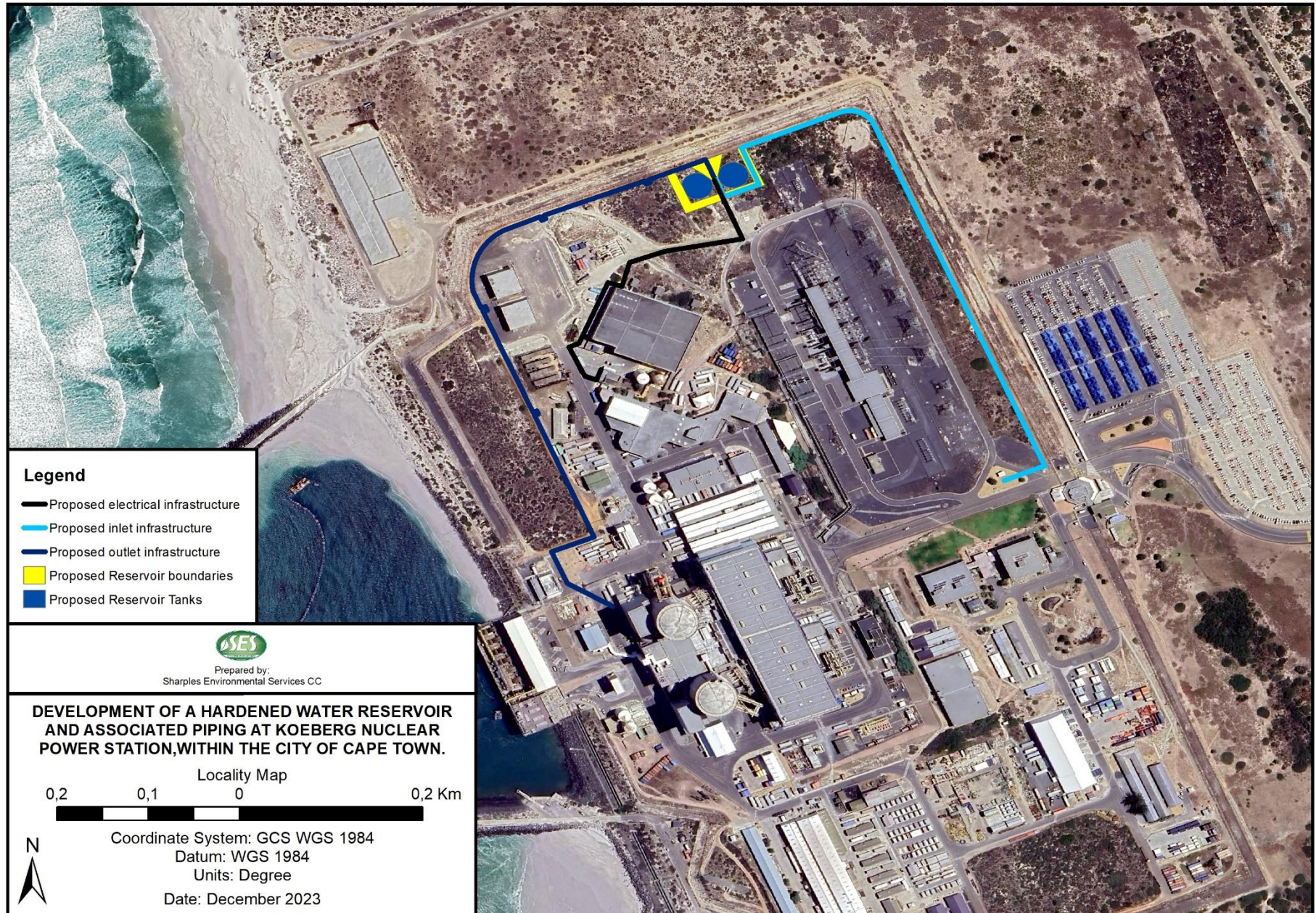
KEY PROJECTS

2023	Plettenberg Bay	Private Developer (ongoing)
	<ul style="list-style-type: none"> • Scoping Report for a proposed mixed-use development in Kranshoek, Bitou Local Municipality. 	
2023	Plettenberg Bay	Private Developer (ongoing)
	<ul style="list-style-type: none"> • Scoping Report for the proposed Kurland housing development on Erf 920, Kurland, Bitou Local Municipality. 	
2023	Plettenberg Bay	Private Developer (ongoing)
	<ul style="list-style-type: none"> • Basic Assessment for the proposed Kurland Bulk Water infrastructure scheme in Bitou Local Municipality. 	
2022/2023	Cape Town	Allweld on behalf of Eskom (ongoing)
	<ul style="list-style-type: none"> ▪ Basic Assessment for the proposed construction of a reservoir located within the Koeberg Nuclear Power Station. 	
2022/2023	Oudtshoorn	Department of Infrastructure (ongoing)
	<ul style="list-style-type: none"> ▪ Basic Assessment for the proposed re-establishment of Trunk Road (TR75/1) near Oudtshoorn. 	
2022/2023	Mossel Bay	Confuel (Pty) Ltd
	<ul style="list-style-type: none"> ▪ Basic Assessment for the proposed establishment of a truck stop and associated infrastructure on Erf 56 and 57, Mossdustría 	
2022/2023	De Aar	Mulilo Renewable Energies (ongoing)
	<ul style="list-style-type: none"> ▪ Scoping and Environmental Impact Assessment for the proposed Hercules solar cluster near De Aar, Northern Cape. 	
2022	Northam	Spitskop Energy
	<ul style="list-style-type: none"> ▪ Scoping and Environmental Impact Assessment for the proposed Spitskop photovoltaic power plant located near Northam, Limpopo. 	
2022	Dealesville	Antlia Energy
	<ul style="list-style-type: none"> ▪ Basic Assessment for the proposed Good Hope 1 and 2 photovoltaic power plants located near Dealesville, Free State (Fell under the ambit of GN113). 	
2022	Richards Bay	
	<ul style="list-style-type: none"> ▪ Scoping Report for the proposed Thermal Energy Power Plant and associated infrastructure development in Richards Bay, KwaZulu-Natal. 	

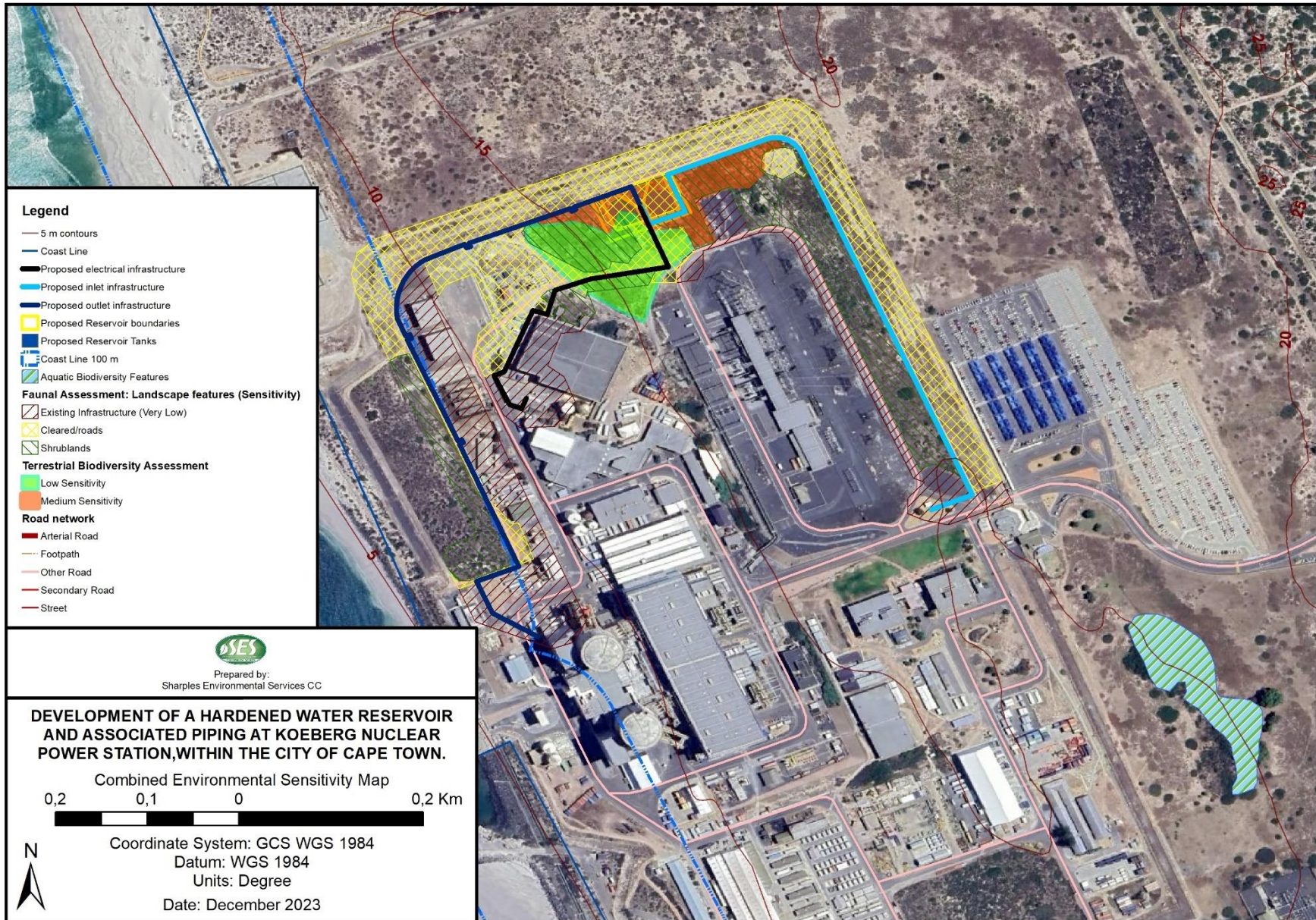
- | | | |
|------------------|---|--|
| 2022 | Midrand | Central Developments |
| | <ul style="list-style-type: none"> Environment Control Officer for the external infrastructure associated with the proposed Extension 56 and 57 of Louwlandia, Midrand, Gauteng. | |
| 2021/2022 | Piensaarsrivier | MDV Developments |
| | <ul style="list-style-type: none"> Basic Assessment for the proposed Filling Station on Erf 425 and Erf 426 in Piensaarsriver, Bela-Bela Local Municipality. | |
| 2022 | Johannesburg | Central Developments |
| | <ul style="list-style-type: none"> Basic Assessment and Water Use Licence Application for the construction of the Proposed Residential Development on Holding 194 of Erand Agricultural Holdings and Portion 1687 (A Portion of Portion 9) of the Farm Randjesfontein No.405-Jr, City of Johannesburg. | |
| 2021/2022 | Pretoria | Snowy Owl Developments |
| | <ul style="list-style-type: none"> Basic Assessment for the Proposed Development of a Sewer Line for the Proposed Sammy Marks Township, City of Tshwane. | |
| 2021/2022 | Johannesburg | Central Developments |
| | <ul style="list-style-type: none"> Part 2 Amendment of the Environmental Authorisations Amendments to the proposed Northgate Mixed Use Development in North Riding, City of Johannesburg. This project included the complex integrated design mapping, the compilation of an Operational Stormwater Management Programme. | |
| 2020/2022 | Johannesburg | Central Developments |
| | <ul style="list-style-type: none"> Part 2 Amendment of the Environmental Authorisation of the proposed Blue Hills housing development located in the City of Johannesburg. | |
| 2020 | Derdepoort | Central Developments |
| | <ul style="list-style-type: none"> Environment Control Officer for the external infrastructure associated with the residential developments located on Erf 452, Derdepoort, Gauteng. | |
| 2020 | Johannesburg | Central Developments |
| | <ul style="list-style-type: none"> Environment Control Officer for the external infrastructure associated with the proposed Northgate Mixed Use Development in North Riding, City of Johannesburg. | |
| 2020 | Pretoria | Central Developments |
| | <ul style="list-style-type: none"> Environment Control Officer for the external infrastructure associated with the residential developments at Bronberg X9 and X13, Gauteng. | |
| 2019 | Empangeni | Accurate Trading |
| | <ul style="list-style-type: none"> Basic Assessment for the proposed Filling Station and associated infrastructure of Erf 3961, Empangeni. | |
| 2018/2019 | Richards Bay | City of uMhlathuze Local Municipality |
| | <ul style="list-style-type: none"> Environment Control Officer for the internal infrastructure associated with the Aquadene housing development, Richards Bay, KwaZulu-Natal. | |
| 2018/2019 | Empangeni | City of uMhlathuze Local Municipality |
| | <ul style="list-style-type: none"> Basic Assessment Report for the proposed Upgrade of Water Supply Infrastructure for Khoza water supply area phase 1: Empangeni. General Authorisation obtained for the proposed project. | |

- 2018/2019** Richards Bay City of uMhlathuze Local Municipality
- Basic Assessment Report for the proposed upgrade of the rural roads in Mandlazini – Phase 2, Richards Bay, KwaZulu-Natal.
 - General Authorisation obtained for the proposed project.
- 2018/2019** Melmoth Mthonajani Local Municipality
- Basic Assessment Report for the proposed upgrade of the Melmoth Sanitation Scheme (Phase 3): Outfall Sewers and Water Treatment Works, Melmoth, KwaZulu-Natal.
 - Water Use Licence for the proposed project.
- 2016-2019** Esikhaleni City of uMhlathuze Local Municipality
- Basic Assessment Report for the proposed upgrade of the rural roads in Mandlazini – Phase 2, Richards Bay, KwaZulu-Natal.
 - General Authorisation obtained for the project (2016-2017).
 - Environmental Control Officer (including water quality surveyor) and the required DAFF permitting and further monitoring (2018-2019).
- 2016/2017** Melmoth Mthonajani Local Municipality
- All mapping for the Mthonajani Local Municipality Land Use Management Scheme, KwaZulu-Natal.
- 2015-2016** Richards Bay City of uMhlathuze Local Municipality
- Basic Assessment Report for the proposed upgrade of the Richards Bay Outfall Sewer and Nkonging pump station, Veld en Vlei, KwaZulu-Natal.
 - Water Use Licence Technical Documentation completed for the proposed project.
- 2015-2017** Mkuze Private
- Scoping Report and Environmental Impact Assessment for the proposed agricultural development near Mkuze, KwaZulu-Natal.
 - Environmental Control Officer for the project 2017.
- 2015/2016** Richards Bay uMhlathuze Water
- Basic Assessment Report for the proposed Installation of a Diesel Generator at the Existing Mhlathuze Transfer Pump Station, Richards Bay.
- 2015** Hammarsdale SANRAL
- Water Use Licence Application for the proposed interchange upgrade along the N3 highway, near Hammarsdale, KwaZulu-Natal.
- 2015** Gauteng Gautrain
- Province wide mapping of all public transport infrastructure for the purpose of sensitivity mapping required to evaluate the environmental feasibility of future expansions of the Gautrain Transport network.

APPENDIX B – LAYOUT PLAN



APPENDIX C – MAP OF ENVIRONMENTAL SENSITIVITIES



APPENDIX D - SCREENING TOOL

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number: DFFE Ref: 14/12/16/3/3/1/2908

Project name: Proposed Hardwater Reservoir and Associated Infrastructure

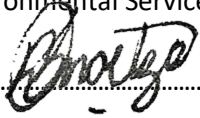
Project title: Proposed development of a Hardened Water Reservoir and Associated Infrastructure at the Koeberg Nuclear Power Station. Located on the farm Duynfontyn no. 1552, Melkbosstrand, Western Cape, Cape Town Municipality.

Date screening report generated: 17/01/2024 13:30:05

Applicant: ESKOM HOLDINGS SOC LTD

Compiler: Sharples Environmental Services CC

Compiler signature:


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Application Category: Services|Water services|Storage|Reservoirs

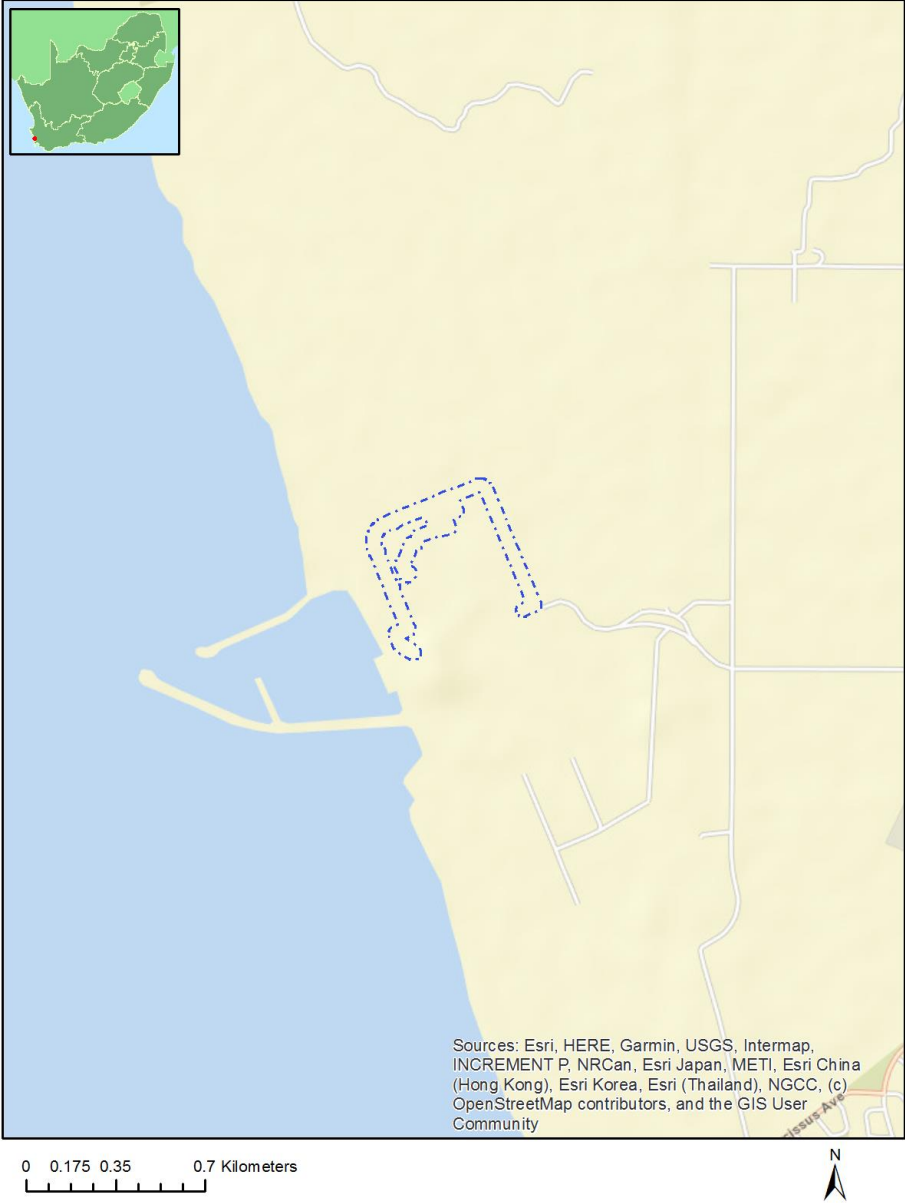
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Proposed Project Location

Orientation map 1: General location

General Orientation: Proposed Hardwater Reservoir and Associated Infrastructure



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1		1552	0	33°39'58.74S	18°26'41.65E	Farm
2		1552	0	33°40'1.47S	18°26'42.67E	Farm Portion
3		34	0	33°40'7.57S	18°26'42.53E	Farm Portion
4		1375	0	33°40'46.11S	18°25'53.62E	Farm Portion

Development footprint¹ vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	12/12/20/2109/AM2	Solar PV	Approved	22.8
2	12/12/20/2109/AM1	Solar PV	Approved	22.8
3	12/12/20/2217	Wind	Approved	21.4
4	12/12/20/2638/AM2	Wind	Approved	14.5

¹ “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

5	12/12/20/2109/AM3	Solar PV	Approved	22.8
6	12/12/20/2217/AM2	Wind	Approved	21.3
7	12/12/20/2109	Solar PV	Approved	22.8
8	12/12/20/2638	Wind	Approved	14.5
9	12/12/20/2217/AM3	Wind	Approved	21.3
10	12/12/20/2638/AM3	Wind	Approved	14.5

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

Services | Water services | Storage | Reservoirs.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2023_Q3_Metadata.pdf
Main Electricity Transmission Substation	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Distribution_Transmission.pdf
Main Electricity Distribution Substation	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Distribution_Transmission.pdf
South African Protected Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SAPAD_OR_2023_Q3_Metadata.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme		X		

Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme			X	
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

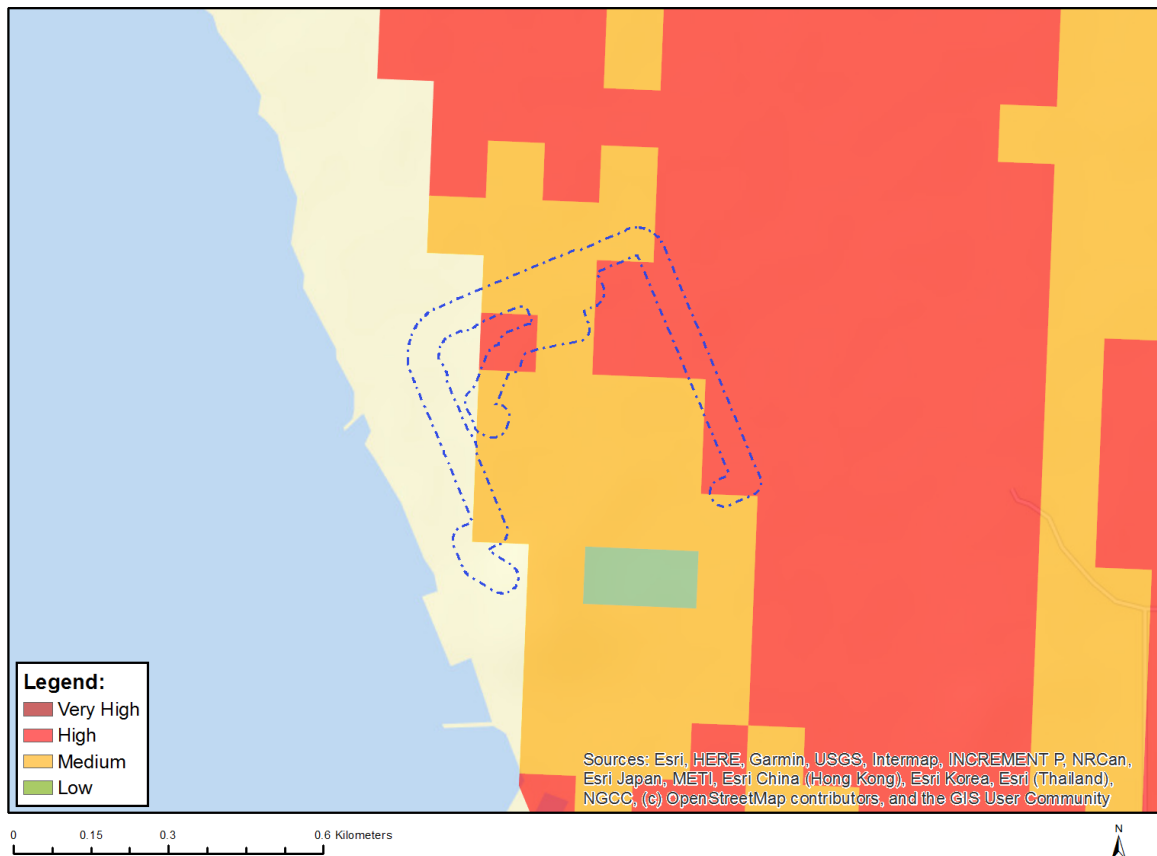
Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Civil Aviation Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Civil_Aviation_Installations_Assessment_Protocols.pdf
8	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
10	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

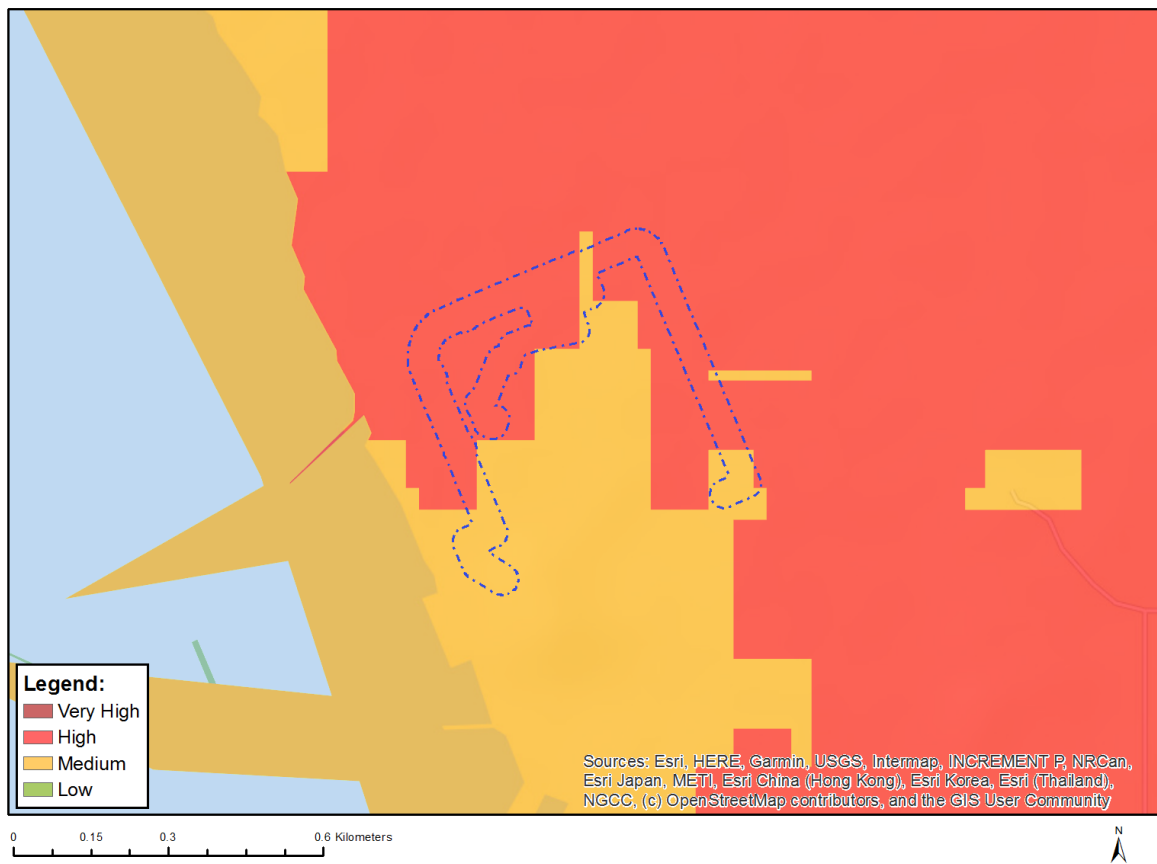


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



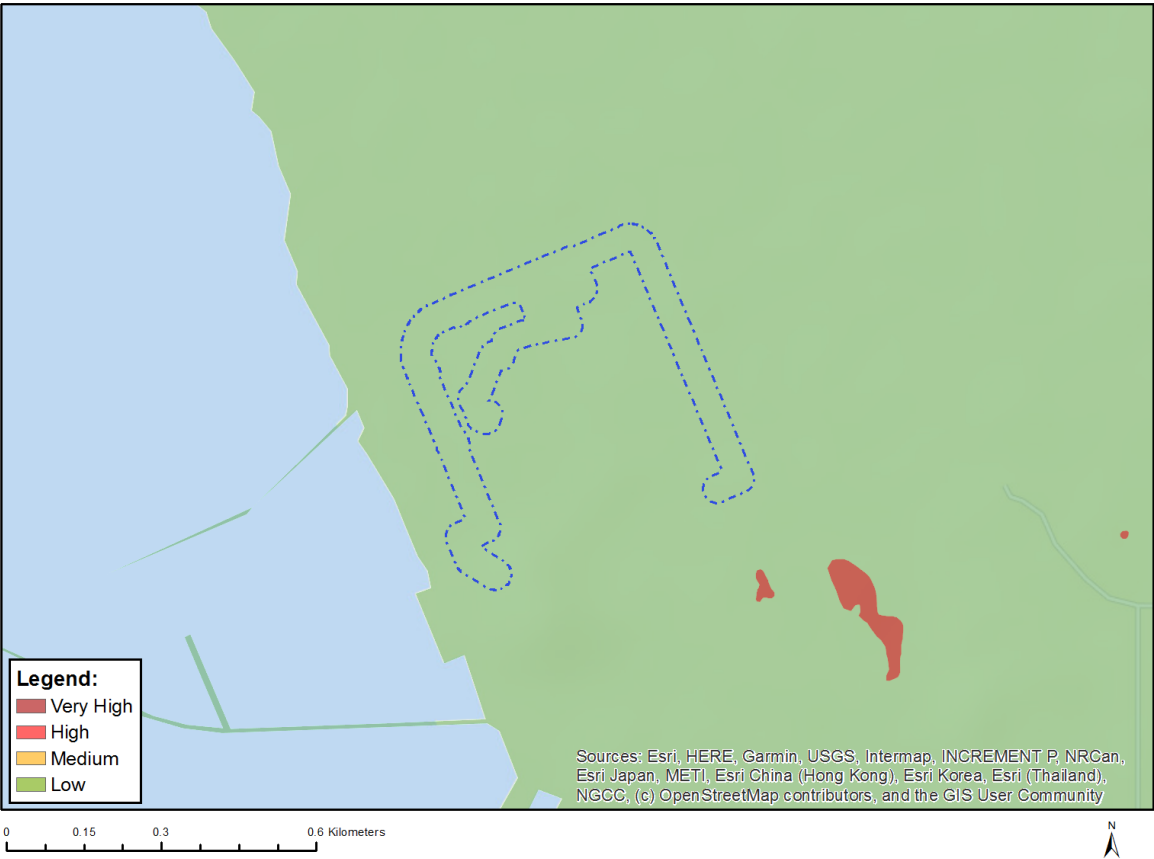
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus maurus
High	Aves-Afrotis afra
High	Aves-Circus ranivorus
Medium	Invertebrate-Pachysoma aesculapius
Medium	Invertebrate-Bullacris obliqua

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

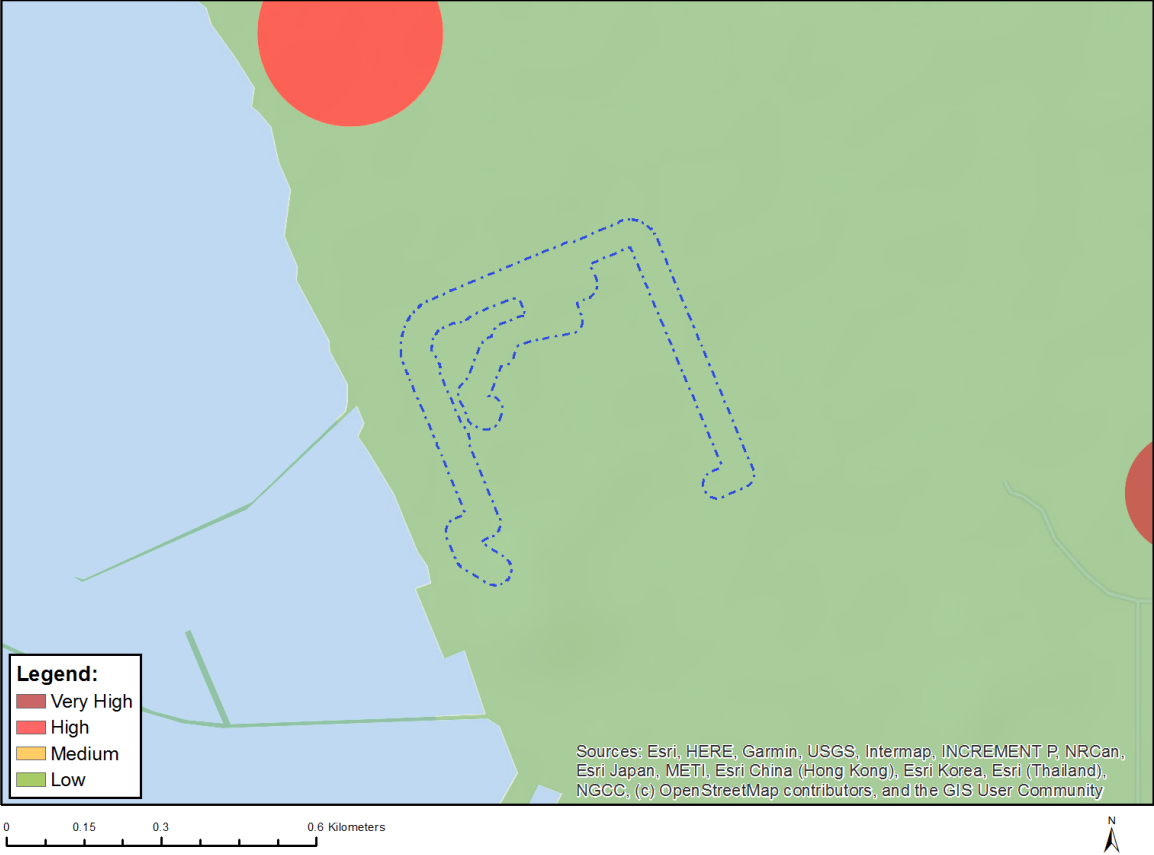


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

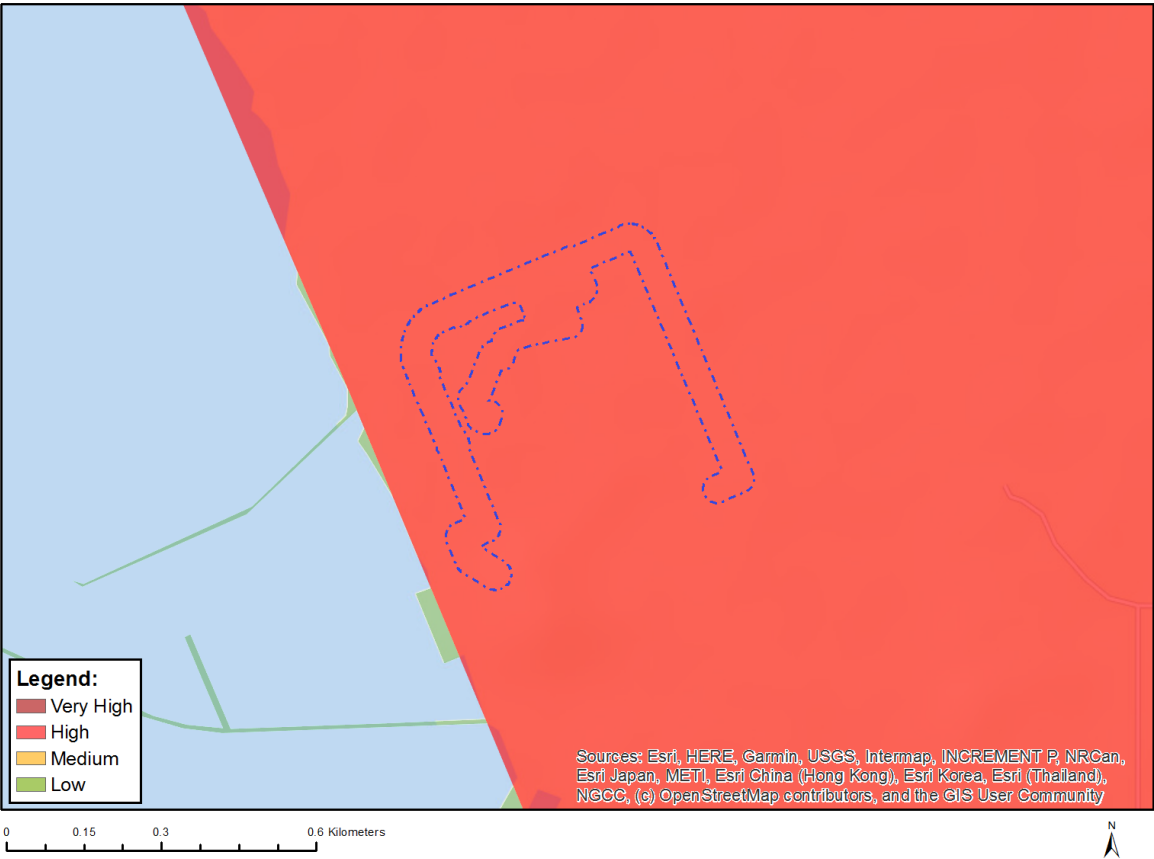


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

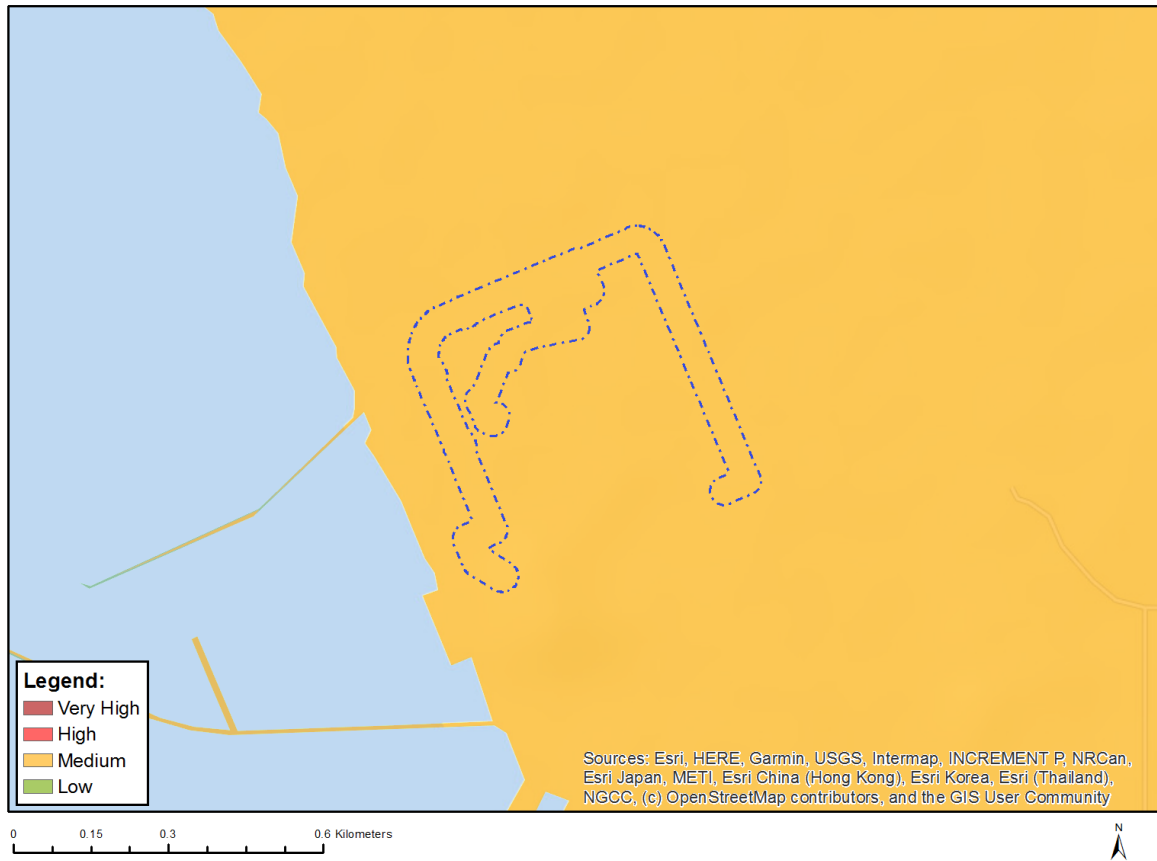


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
High	Dangerous and restricted airspace as demarcated

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

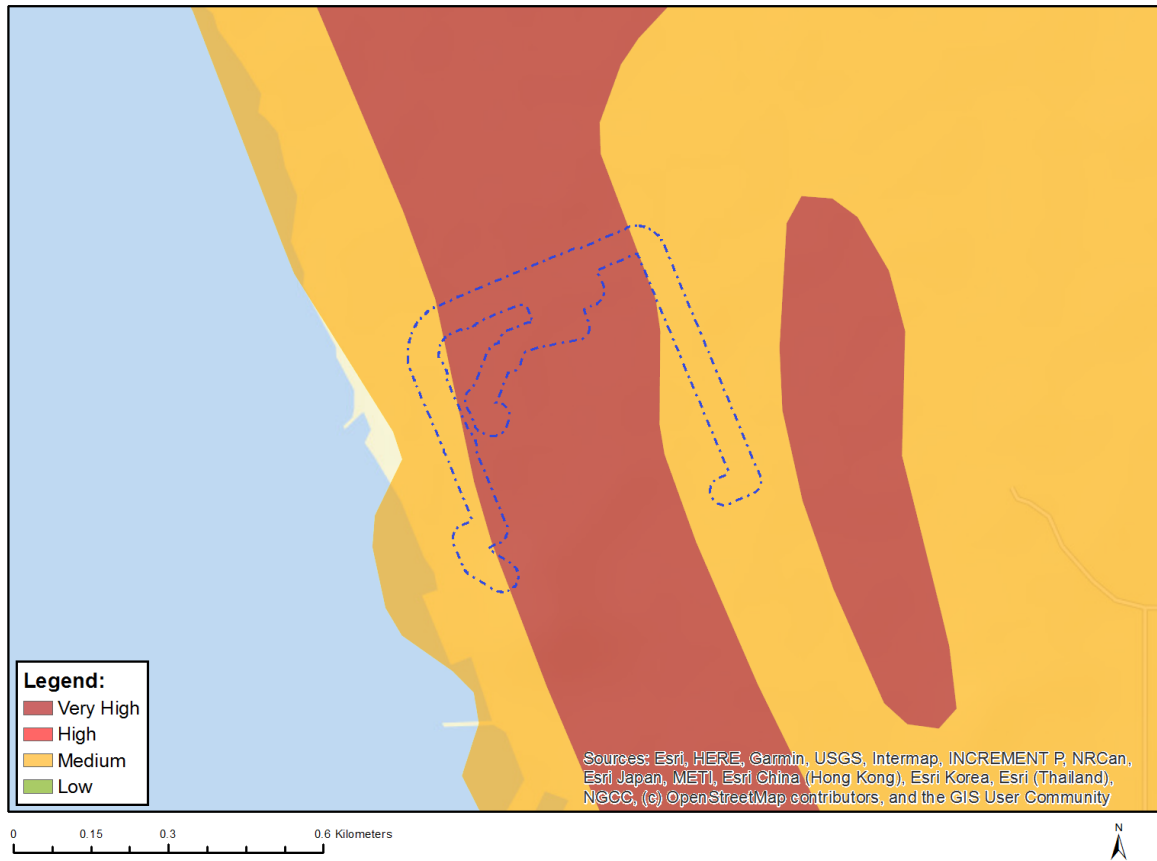


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Military and Defence Site

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

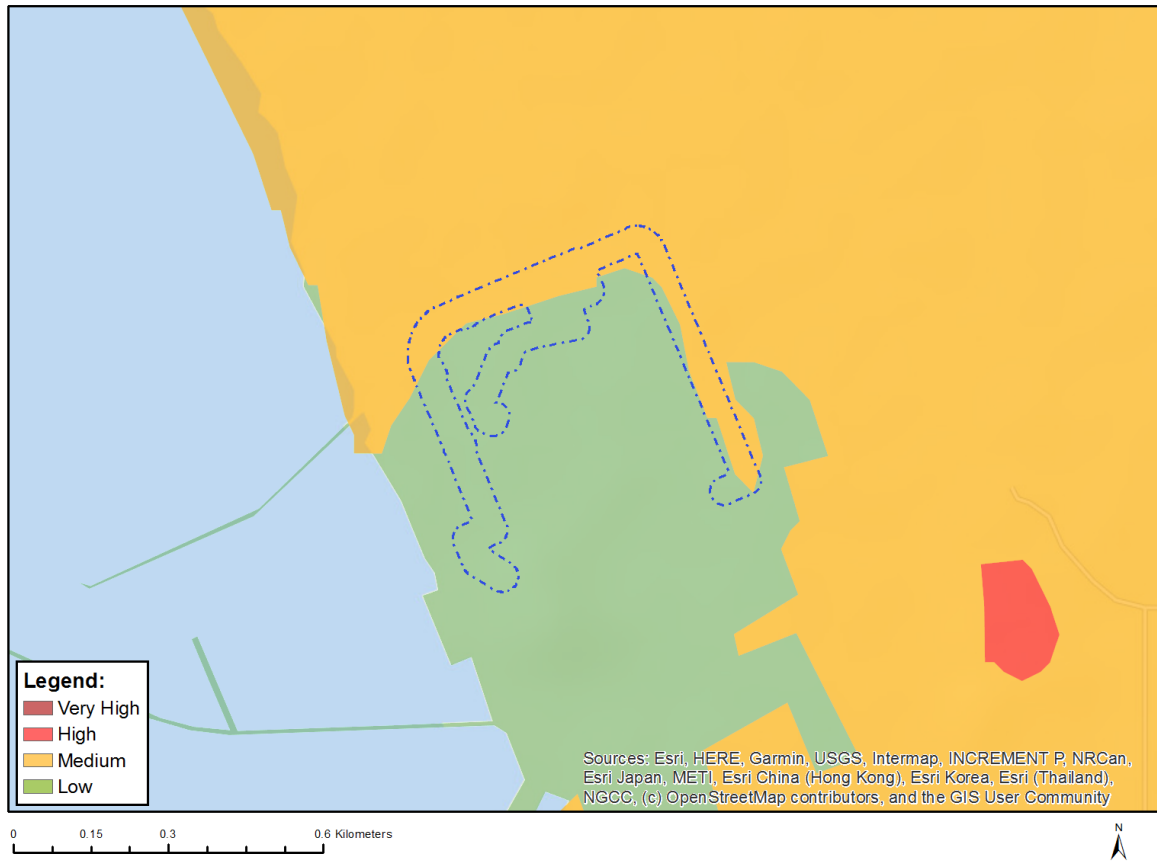


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Lampranthus stenus
Medium	Lampranthus tenuifolius
Medium	Cleretum clavatum
Medium	Ruschia geminiflora
Medium	Lessertia argentea
Medium	Psoralea glaucina
Medium	Indigofera platypoda
Medium	Indigofera psoraloides
Medium	Lebeckia plukenetiana
Medium	Podalyria sericea
Medium	Thesium litoreum
Medium	Leucospermum hypophyllocarpodendron subsp. canaliculatum

Medium	<i>Leucospermum hypophyllocarpodendron</i> subsp. <i>hypophyllocarpodendron</i>
Medium	<i>Leucospermum tomentosum</i>
Medium	<i>Manulea corymbosa</i>
Medium	Sensitive species 878
Medium	Sensitive species 816
Medium	<i>Hermannia procumbens</i> subsp. <i>procumbens</i>
Medium	<i>Galenia crystallina</i> var. <i>maritima</i>
Medium	<i>Isolepis venustula</i>
Medium	<i>Cannomois arenicola</i>
Medium	<i>Elegia prominens</i>
Medium	<i>Cynanchum zeyheri</i>
Medium	Sensitive species 985
Medium	<i>Gnidia spicata</i>
Medium	<i>Metalasia capitata</i>
Medium	<i>Steirodiscus tagetes</i>
Medium	<i>Cotula duckittiae</i>
Medium	<i>Cotula eckloniana</i>
Medium	<i>Oncosiphon africanum</i>
Medium	<i>Agathosma corymbosa</i>
Medium	<i>Agathosma glabrata</i>
Medium	<i>Cliffortia ericifolia</i>
Medium	<i>Cliffortia hirta</i>
Medium	<i>Cliffortia longifolia</i>
Medium	<i>Limonium purpuratum</i>
Medium	<i>Muraltia macropetala</i>
Medium	<i>Muraltia mitior</i>
Medium	Sensitive species 158
Medium	<i>Phylica plumosa</i> var. <i>squarrosa</i>
Medium	<i>Argyrobium velutinum</i>
Medium	<i>Xiphotheca reflexa</i>
Medium	Sensitive species 599
Medium	Sensitive species 654
Medium	<i>Lachnaea grandiflora</i>
Medium	<i>Cotula pusilla</i>
Medium	<i>Caesia sabulosa</i>

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Koeberg Private Nature Reserve
Very High	EN_Cape Flats Dune Strandveld

APPENDIX E - ROLES & RESPONSIBILITIES

ROLES & RESPONSIBILITIES

Duties and Responsibilities of the Holder

The Holder is ultimately responsible for ensuring that the environmental management measures specified in this EMPr, as well as any other conditions specified by the competent authority, are implemented and adhered to during the construction and operational phase (maintenance activities) of the proposed development.

The Holder or delegated party is responsible for monitoring and maintenance during the operational phase. The Holder must ensure that all appointed service providers, contractors and maintenance workers are capable of complying with all statutory requirements of this EMPr and the conditions of the Environmental Authorisation. The Holder is responsible for ensuring that this EMPr and the conditions of the Environmental Authorisation are implemented and adhered to during construction.

The Holder or appointed consultant is responsible for identifying emergency situations that may arise during operational and maintenance activities and must formulate appropriate emergency response procedures for these emergency scenarios.

Duties and Responsibilities of the Contractor

The "Construction Contractor" is the entity responsible for undertaking the physical construction of the residential development. The construction contractor is responsible for ensuring that all environmental management measures specified in this EMPr and in the EA are implemented during the pre-construction, construction and post-construction rehabilitation phases, unless agreed otherwise with the Holder. The contractor will be responsible for all costs incurred, in relation to any non-compliances which may occur during implementation of construction activities/rehabilitation activities. The contractor must therefore make adequate financial provision for the implementation of all prescribed measures, in accordance with the Bill of Quantities and the EMPr.

It is strongly recommended that the Construction Contractor appoint an Environmental Site Officer (ESO), who will act as the Contractor's representative to enforce compliance with the conditions of this EMPr, throughout all phases of construction.

In addition to the above, the Construction Contractor is responsible for the following:

- Identify emergency situations that may arise as a result of construction activities and formulate appropriate emergency response procedures.
- Ensure that all construction workers, including sub-consultants and service providers, undergo environmental awareness training prior to commencing work on site, or as soon as possible thereafter.
- Compile the required method statements, which must be to the satisfaction of the ECO, before commencing with the activity to be governed by the method statement.
- Respond to concerns or issues identified by the ECO, as relates to environmental management, and implement the appropriate management or remediation measures, at the Contractor's own expense (unless agreed otherwise).
- Any damage to the surrounding environment (site camp location and outskirts of working corridor) must be noted by the contractor with photo evidence. Any damage identified

throughout the operational phase of the proposed extension will be the contractor's responsibility to repair.

- Should third parties be called to the site to perform clean up and rehabilitation procedures, the Construction Contractor will be responsible for all associated costs.

Note that failure to comply with the requirements and conditions of this EMPr and the Environmental Authorisation may result in fines or other penalties being levied against the Construction Contractor by the Competent Authority.

Duties And Responsibilities of the ECO

The appointed ECO is responsible for undertaking regular site visits to monitor and report on the implementation of the EMPr and adherence to the conditions of the Environmental Authorisation during the pre-construction, construction and post-construction rehabilitation phases. The ECO is not required to monitor the site during the operational (maintenance) phase of the development.

Competency of the ECO

The ECO must be independent of the Environmental Auditor, Holder, Engineer, Construction Contractor and their service providers. The appointed ECO must be suitably qualified and experienced and must be able to demonstrate that he / she is of sufficient competency to undertake the required task. The ECO must preferably be a resident in close proximity to the development area to ensure quick response if required. The ECO must work in close co-operation with the Construction Contractor, resident engineer or EO (where applicable) and all contractors in order to identify potential problems before they occur, and provide suitable guidance as to how the identified problems (environmental impacts) can be avoided.

Duties of the ECO

The duties of the ECO include, but are not limited to:

- Conduct a pre-construction site inspection to ascertain the pre-commencement condition of the site (i.e. the status quo);
- Conduct environmental awareness training, which must include;
 - A brief description of the surrounding environment
 - Importance of the EMPr
 - Roles and responsibilities
 - Identified environmental risks
 - Mitigation measures to be implemented
 - No-go areas
 - Emergency procedures (Hydrocarbon spill)
- Undertake regular site visits to monitor compliance with all mitigation, monitoring and management measures contained in the EMPr and the Environmental Authorisation, during the pre-construction, construction and rehabilitation phases of the development;
- Evaluate the achievement of the performance indicators associated with each impact management objective specified in this EMPr;
- Liaise with site contractors, engineers and other members of the development team with regard to the requirements of the EMPr;
- Provide guidance as and when required regarding the implementation of the environmental management measures contained in the EMPr and EA, so as to assist the Holder and contractor in remaining compliant with these measures;
- Assist in finding environmentally acceptable solutions to construction problems;
- Ensure that the working areas, site camp facilities, access roads and no-go areas are properly demarcated;
- Ensure that proper topsoil management practices are adhered to on site;
- Ensure that proper waste management & pollution prevention strategies are practised on site;
- Examine method statements, where required;
- Recommend additional environmental protection measures, should this be necessary;
- Furnish contractors with verbal warnings in case of contravention of the EMPr;
- Recommend that the competent authority furnish errant contractors with predetermined fines, when verbal and / or written warnings are ignored;
- Ensure satisfactory rehabilitation of disturbed areas on site, after construction is complete;
- Keep detailed records of all site activities that may pertain to the environment, and produce monthly compliance-monitoring reports (ECO Reports) for submission to the Holder, and the Competent Authority at regular intervals during the construction phase;
- Submit a final post-construction inspection report, within 6 months of completion of the construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.
- All ECO Reports and Inspection Reports must be submitted to the Holder and Competent Authority.

Frequency of ECO visits

The ECO must conduct monthly site visits during the construction phase, in addition to the start-up and closure inspections.

The ECO must conduct a site visit 3 months after practical completion of the construction period.

The ECO has the discretion to undertake additional visits if he / she feels this is justified due to the actions of the contractors, and to make *ad hoc* visits in order to ensure compliance.

Authority of the ECO

The ECO has the authority to recommend to the decision-making authorities that they suspend all works (or part thereof) occurring on site, should any action being undertaken on site not comply with the

environmental requirements, and where such actions pose a serious threat to any element of the surrounding environment.

The ECO has the authority to issue instructions to the Construction Contractor and/or Holder, regarding measures that must be implemented on site in order to ensure compliance with the EMPr and Environmental Authorisation, and/or to prevent environmental degradation or pollution from occurring.

The ECO has the authority to issue verbal and written warnings to contractors. Should verbal and written instructions and/or warnings be ignored, the ECO has the authority to request the Competent Authority to issue pre-determined fines or other penalties.

The ECO has the authority to report incidents of non-compliance to the Competent Authority at any time.

Duties and Responsibilities of the Environmental Auditor

In accordance with the requirements of the Environmental Impact Assessment Regulations, 2014 (as amended), the Holder of the Environmental Authorisation must, for the period that the Environmental Authorisation is valid, appoint a suitably qualified independent person to conduct an environmental audit to audit compliance with the conditions of the Environmental Authorisation and the EMPr.

The Holder is responsible for appointing, managing and remunerating the appointed auditor. The auditor may **not** be the appointed ECO.

The appointed auditor is to be provided with the completed EMR's and Checklists, as well as any other crucial information that may be relevant or requested (incident report, waybills etc) in order to effectively report on the level of compliance with the conditions of the environmental authorisation and the EMPr. The appointed auditor must undertake environmental audits at the following stages;

- At 50% completion of the project timeline.
- At practical completion of the construction period.
- 3 months after practical completion of the construction period.
- Or according to the frequency specified in the Environmental Authorisation.

Following each audit, the environmental auditor must submit an audit report to the Competent Authority (in this instance the DFFE) Environmental auditing and environmental audit reports must adhere to the requirements of the amended 2014 Environmental Impact Assessment Regulations, in particular Section 34 (*Auditing of Compliance with Environmental Authorisation, Environmental Management Programme*) and Appendix 7 (*Objective and Content of Environmental Audit Report*)

The audit report must provide verifiable findings on the level of compliance with the provisions/conditions of the Environmental Authorisation and the EMPr and must also comment on the ability of the measures contained in this EMPr to sufficiently avoid, manage and mitigate environmental impacts.

Where the findings of the audit report indicate that the impact management measures stated in the EMPr are insufficient to adequately address environmental impacts, recommendations as to how the EMPr must be amended so as to address the identified shortcomings must be made and submitted to the competent authority together with the audit report.

APPENDIX F - PROTOCOL FOR CHANCE FOSSIL FINDS

Responsible Heritage Resources Agency	HERITAGE WESTERN CAPE (Contact details: Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za)
ECO protocol	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (N.B. safety first!), safeguard site with security tape / fence / sandbags if necessary.
<p>2. Record key data while fossil remains are still <i>in situ</i>:</p> <p>Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo</p> <p>Context – describe position of fossils within stratigraphy (rock layering), depth below surface</p> <p>Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (e.g. rock layering)</p>	
<p>3. If feasible to leave fossils <i>in situ</i>:</p> <p>Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation</p> <p>Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume</p>	<p>3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only):</p> <p>Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock)</p> <p>Photograph fossils against a plain, level background, with scale</p> <p>Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags</p> <p>Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist</p> <p>Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation</p>
<p>4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</p>	

APPENDIX G - EMPR REVIEW AND AMENDMENT REGISTER

EMPR REVIEW AND AMENDMENT REGISTER

Review Date	Description of Review and/or Amendment	Signature



APPENDIX H - ALIEN INVASIVE MANAGEMENT PROGRAMME

Invasive alien plants have a significant negative impact on the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. Landowners are under legal obligation to control alien plants occurring on their properties. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014).

Category 1a and 1b listed invasive species must be controlled and eradicated. Category 2 plants may only be grown if a permit is obtained, and the property owner ensures that the invasive species do not spread beyond his or her property. The growing of Category 3 species is subject to various exemptions and prohibitions. Some invasive plants are categorised differently in different provinces. For example: the Spanish Broom plant is categorised as a category 1b (harmful) invasive plant in Eastern Cape and Western Cape, but it is a category 3 (less harmful) invasive plant in the other seven provinces.

Alien control programmes are long-term management projects and a clearing plan, which includes follow up actions for rehabilitation of the cleared area, is essential. This will save time, money and significant effort. Collective management and planning with neighbours allow for more cost-effective clearing and maintenance considering aliens seeds as easily dispersed across boundaries by wind or water courses. All clearing actions should be monitored and documented to keep track of which areas are due for follow-up clearing. Alien grasses are among the worst invaders in lowland ecosystems adjacent to farms but are often the most difficult to detect and control.

Several exotic invasive and other weed species were noted within the site, ranging from a few scattered individuals to dense infestations, in particular Black Wattle, Blackwood & Port Jackson Willow trees are common and abundant. The dense localised infestations of these tree species have a noticeable and definite impact to the habitat present and are a significant source of degradation. A weed management programme, as part of the construction contract including an after-care period will be required, until such time as natural vegetation has become adequately re-established. A two year after-care period is recommended.

Alien species recorded include *Ricinus communis* (castor-oil plant, category 2), *Prosopis glandulosa* (honey mesquite, 1b), *Schinus molle* (pepper tree), *Opuntia ficus-indica* (prickly pear, 1b), *Trichocereus cf spachianus* (torch cactus) and *Nicotiana glauca* (wild tobacco, 1b). As indicated above, four of these are Category 1b and 2 invaders. In terms of the National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004) Alien and Invasive Species List (2016), category 1b invasive species require compulsory control as part of an invasive species control programme. Also, the harbouring of category 2 species, such as *Ricinus communis*, is prohibited without a permit. The presence of these species is not problematic yet but requires attention to curb future problems.

Invasive alien and weed species within the demarcated working corridor must be removed in accordance with the regulations contained in the National Environmental Management: Biodiversity Act (NEM:BA, Act 10 of 2004), the Invasive Species Regulations (October 2014), the Conservation of Agricultural Resources Act (CARA, Act 43 of 1983) and the Duty of Care principle contained in NEMA, Section 28. Removal of species should take place throughout the construction, operational, and maintenance phases, in accordance with the following:

- In consultation with the ECO, the Contractor must control the establishment of alien invasive species along the working corridor on an ongoing basis during construction and follow-up clearance to be conducted for a 2-year period.
- The Contractor is responsible for the removal of alien species within all areas disturbed during construction activities. Disturbed areas include (but are not limited to) access roads, construction camps, site areas and temporary storage areas.
- In consultation with relevant authorities, the Engineer may order the removal of alien plants (when necessary) within the confines of the site are to be included.
- In consultation with the ECO, any alien vegetation (including brushwood and seed-bearing material) that is cleared must be disposed of at an appropriately registered waste disposal facility.
- Removal of alien vegetation are to be done according to the Working for Water Guidelines.
- The following control measures may be used to ensure that the introduction and spread of alien invasive vegetation is minimised:
 - Seedlings and saplings can be removed through hand pulling and hoeing, treated with herbicide through a foliar spray or basal stem treatments.
 - Mature trees can be felled, or ring barked or treated with herbicide by means of frilling or cut stump treatment.
 - Herbicide should not be applied in wet or windy conditions.
 - Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used;
 - Footprint areas should be kept as small as possible when removing alien plant species; and
 - After clearing is completed, an appropriate cover crop may be applied as provided in Rehabilitation Programme, should natural re-establishment of indigenous vegetation not take place in a timely manner.

APPENDIX I - REHABILITATION PROGRAMME

REHABILITATION PROGRAMME

Rehabilitation Objective

The overall objective of the rehabilitation plan is to minimize adverse environmental impacts associated with the activity whilst maximizing the future utilization of the site. Significant aspects to be borne in mind in this regard is, revegetation of undeveloped footprint and stability and environmental risk. The depression and immediate area of the working area must also be free of alien vegetation. Additional broad rehabilitation strategies / objectives include the following:

- Rehabilitating the worked-out areas to take place concurrently within prescribed framework established in the EMPr.
- All infrastructure, equipment, plant and other items used during the construction period will be removed from the site.
- Waste material of any description, including scrap, rubble and tyres, will be removed entirely from the site and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on site.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.
- Final landscaping and rehabilitation of the site must be done to the satisfaction of the ECO and must adhere to all conditions/ requirements of the Environmental Authorisation.

Topsoil and Subsoil Replacement

Topsoil and subsoil will be stripped and stockpiled separately and only used in rehabilitation work towards the end of the operation. This is in contrast to the gravel activity where rehabilitation and topsoil replacement was earmarked at the completion of each phase.

Stripped overburden will be backfilled into the worked-out areas where needed. Stripped topsoil will be spread over the re-profiled areas to an adequate depth to encourage plant regrowth. The vegetative cover will be stripped with the thin topsoil layer to provide organic matter to the relayed material and to ensure that the seed store contained in the topsoil is not diminished. Reseeding may be required should the stockpiles stand for too long and be considered barren from a seed bank point of view. Stockpiles should ideally be stored for no longer than a year.

The topsoil and overburden will be keyed into the reprofiled surfaces to ensure that they are not eroded or washed away. The topsoiled surface will be left fairly rough to enhance seedling establishment, reduce water runoff and increase infiltration.

Revegetation

All prepared surfaces will be seeded with suitable grass species to provide an initial ground cover and stabilize the soil surface. The following grass seed that is commonly available and suitable.

The overall revegetation plan will, therefore, be as follows:

- Stabilise disturbed soil and rock faces.
- Minimize surface erosion and consequent siltation of natural water course located on site.
- Control wind-blown dust problems
- Enhance the physical properties of the soil.
- Re-establish nutrient cycling.
- Re-establish a stable ecological system.

Every effort must be made to avoid unnecessary disturbance of the natural vegetation during operations.

Visual Impacts Amelioration

The overall visual impact of the proposed activities will be minimised by the following mitigating measures:

- Confining the footprint to an area as small as possible
- Re-topsoiling and vegetating all disturbed areas.

Monitoring and Reporting

Adequate management, maintenance and monitoring of rehabilitation success will be carried out annually for at least 2 years by the EA Holder to ensure successful rehabilitation of the property until a closure certificate is obtained.

To minimise adverse environmental impacts associated with operations it is intended to adopt a progressive rehabilitation programme, which will entail carrying out the proposed rehabilitation procedures concurrently with activity.

APPENDIX N: ENVIRONMENTAL AWARENESS PLAN

