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PRE-CONSTRUCTION, CONSTRUCTION AND POST-CONSTRUCTION PHASE

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



APPLICANT:	BITOU LOCAL MUNICIPALITY		
ENVIRONMENTAL CONSULTANT:	SHARPLES ENVIRONMENTAL SERVICES CC		
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DEA & DP PROJECT REFERENCE:	16/3/3/6/7/1/D1/9/0093/22		
SES REFERENCE NUMBER:	CT23/EMPR/11/22		
DATE:	November 2022		



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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.

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;• Section 4(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;• Section 5 • 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 avoided, including buffers;Not applicable, as proven by the specialists the site holds a low significance in terms of biodiversity and there are no environmental sensitivities.(d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided managed andSection 6 - 10
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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;
(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;



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(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	Section 11 -12
impact management actions contemplated in	APPENDIX H
paragraph (f);	
(I)a program for reporting on compliance, taking into	
account the requirements as prescribed by the	
	Cooling 14
(m)an environmental awareness plan describing the	
manner in which—	APPENDIX N
(i) the applicant intenas to inform his or her employees of	
any environmental risk which may result from their work;	
ana (ii) ista associate a da alta dite in anclas ta associate all'aticas and a	
(ii)risks must be dealt with in order to avoid poliution or the	
degradation of the environment; and	
(n) any specific information that may be required by the	
competent authority.	

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1. DOCUMENT DETAILS

Project Ref. No:	CT23
	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:
Conditions of Use:	 a. Approval for copy is obtained from SES. b. SES is acknowledged in the publication. c. SES is indemnified against and claim for damages that may result from publication of specifications, recommendations or statements that is not administered or controlled by SES. d. That approval is obtained from SES if this report is to be used for the purposes of sale, publicity or advertisement. SES accepts no responsibility for failure to follow the recommended program.

2. ABOUT THIS EMPR

This document is intended to serve as a guideline to be used by *Bitou Local Municipality* (as the Implementing Agent) and any person/s acting on behalf of *Bitou Local Municipality*, during the preconstruction, construction, post-construction rehabilitation and operational (maintenance) 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 development is avoided, or where such impacts cannot be avoided entirely, are minimised and mitigated appropriately.

This EMPr has been prepared in accordance with the requirements of an EMPr as specified in the Environmental Impact Assessment Regulations, 2014 (as amended), and with reference to the "Guidelines for Environmental Management Programmes" published by the Department of Environmental Affairs and Development Planning (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, or where such impacts cannot be avoided entirely, are minimised and mitigated appropriately. The mitigation hierarchy was considered during the BAR planning process, to appropriately manage environmental impacts. APPENDIX G contains the legislative requirements of the project.



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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 as a tool which can be used to manage the environmental *impacts* of the development.

The rehabilitation, mitigation, management and monitoring measures prescribed in this EMPr must be seen as binding to the *Bitou Local Municipality*, 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. Important caveat to the report

In the past, some developments have had a devastating impact on the environment even though they have had Environmental Management Programmes 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 that the development will have on the environment. The Environmental Control Officer (ECO) needs to ensure that all role-players are aware of the constraints that the EMPr places on the development and 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.

For the purpose of this development, an Environmental Site Officer (ESO) must be appointed. The site officer will be responsible for implementing and monitoring the site activities on a daily basis. This individual must be appointed by the Main Contractor.



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3. HOW TO USE THIS DOCUMENT

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

This EMPr must be included in all contracts compiled for contractors and subcontractors employed by *Bitou Local Municipality*, as this EMPr 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 EMPr must be seen as a working document, which may be amended as and when needed, in order to accommodate changing circumstances on site or in the surrounding environment, or in order to accommodate requests/ conditions issued by the Competent Authority, the Department of Environmental Affairs & Development Planning (DEADP). Amendments to this EMPr must first be approved by the Competent Authority, in writing, before being implemented.

4. DETAILS OF THE EAP & TECHNICAL/SPECIALIST INPUT

This EMPr and the associated environmental assessment was undertaken by Sharples Environmental Services cc. Sharples Environmental Services 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 EAP's (Environmental Assessment Practitioners) have been included below, as per Table 1, and a detailed Curriculum Vitae has been included in APPENDIX A.

Role:	Name:	E-Mail Address:	Qualifications:	Registration / Membershi ps	YEARS OF EXPERIENCE
Author:	Mr W Adonis	willan@sescc.net	 MPhil Environmental Management (Stellenbosch) PGD Environmental Management (Stellenbosch) BA Development and Environment (Stellenbosch) 		>1 year

Table 1: EAP Details.



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Reviewer:	Ms Ameesha Sanker	ameesha@sescc. net	 B. Enviror Manag B.Sc. Science 	Sc nmental gement (Ge ce (UKZN)	Hons. (UNISA) eological	 IAIA (SA) EAPASA (#4372) 	• 9+ yrs.
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Table 2: Environmental Specialist Input.

THEME	COMPANY	ROLE	NAME	REPORT TYPE & DATE
		Author	C. Grainger (Cand.Sci.Nat)	Impact Assessment.April 2022
Aquatic Biodiversity	FEN Consulting	Reviewer	C. du Preez (Pr. Sci. Nat)	
			K. Marias (Pr.Sci.Nat)	
Terrestrial Biodiversity and Plant Species	Jamie Pote	Author	Jamie Pote (Pr. Sci. Nat.)	Impact Assessment.May 2022
Agriculture	Johann Lanz		Johann Lanz (Pr Sci Nat)	 Compliance Statement. May 2022
Animal Species	Arcus Consultancy Services South Africa (Pty) Limited		Dr Owen Davies (Pr. Sci. Nat.)	Impact Assessment.April 2022
Heritage			Dr Jayson Orton	• NID

Table 3: Technical Input.

TECHNICAL ASPECT	COMPANY/TRADING NAME	NAME
Engineering Services	Niel Lyners and Associates	Mr G Pepler



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5. DESCRIPTION OF THE ACTIVITY

The proposed development is an initiative of the Bitou Local Municipality and will allow for the increase in capacity and improvement on bulk services, that will not only benefit the current Kurland population, but will accommodate for future development opportunities, such as the proposed Kurland Housing Development on ERF 562, Kurland, which will take significant steps toward addressing the housing backlog within the municipality. The proposed upgrades will entail:

Rising Main, Pump Stations and Reservoirs

- Construction of a new 351/s water pump station at the existing Matjiesfontein Reservoir, within the existing servitude.
- Construction of a new 200mm uPVC bulk water pipeline, outside of the N2 road reserve, 6m within the 60m building line, from Matjiesfontein Reservoir, situated on the South side of the N2.
 - Approximate length from existing Matjiesfontein Reservoir is approximately 3.08 Km's, to tie into the new proposed Matjiesfontein Upper pump station.
 - Approximate length from the new proposed Upper Matjiesfontein pump station is 6.1Km's, to tie into an existing 3Km long, 160mm UPVC pipeline along the N2 which comes down from the Kurland Water Treatment Works.
 - The existing 160 mm diameter rising main will feed water through a new 2 050m long uPVC, 200mm diameter rising main to the Kurland Reservoir which will be laid adjacent (parallel offset to stay outside future SANRAL road reserve) to the 200mm diameter old AC pipeline (which will be abandoned in place) currently supplying Kurland.
- Construction of a new 22I/s water pump station and a 0.6ML Reservoir, to be known as the Upper Matjiesfontein Reservoir.

Supply Pipelines

- Construction of a new 2 560 m long 315 mm diameter uPVC pipeline, from Kurland Reservoir toward Kurland Town, adjacent (parallel offset to stay outside future SANRAL Road Reserve) to the old 200mm diameter pipeline (which will be abandoned in place).
- The 315 mm diameter uPVC pipeline will be connected to a new 330 m long 200mm diameter supply pipeline feeding the Kurland Township, which will follow the alignment of the existing Kurland Township supply pipeline. This 330 m long section will just replace the existing 200 mm diameter AC pipeline which is considered old, is deteriorated and will be requiring regular repairs.
- The 315 mm diameter uPVC pipeline will also be connected to a new 1200 m long 200 mm diameter uPVC supply pipeline which will be laid from the 315 mm diameter supply pipeline to the development on Erf 562.

Kurland Water Treatment Works

• Upgrade at the existing Kurland Water Treatment Works, including the construction of a 1.5ML Reservoir, and additional mechanical and electrical works, contained within the existing servitude (therefore, not a listed Activity in terms of the EIA Regulations, 2014(as amended 2017).



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• Establishment of new boreholes, adjacent to the Water Treatment Works site (not a listed Activity in terms of the EIA Regulations, 2014(as amended 2017).



Figure 2: Schematic layout of Proposed Bulk Services (Annexure A of the Engineering report).

According to the Engineering Report, the proposed planned pipelines will have to be constructed within private property that falls within the 5m DRE building line (Road Ordinance 19 of 1976) and larger 30m Municipal building line and 60m SANRAL building line, measured from the road reserve fence. Once the final route of the proposed pipelines has been approved a land surveyor can commence the legal process of registering a services servitude to allow access to Bitou Municipality to operate and maintain the services. No compensation will be applicable to landowners due to the proposed servitude being inside the above-mentioned building lines. This, however, will need to be confirmed by the legal department of the Municipality. The extent of the servitude would be in the order of a 5m wide.

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.

Code of Conduct



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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 this CoC will result in a fine being levied against the offending or defaulting party / individual.

Labourers 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 operation on the environment within which they work and 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 a 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 at all times be responsible for their sub-contractors and employees whilst they are on the development property.

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 authorized 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 EMPr, and any additional environmental permits/licenses, as well as any additional input by the ECO. In addition to the EMPr, the environmental controls comprise of the following:

• Building Plan Controls

- A copy of the approved and signed building 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 keep the appearance of the site neat and tidy at all times. Building rubble must be removed from site at regular intervals, and litter must be removed from the site on a daily basis (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 and the waste taken to a licenced local waste disposal facility.
- Safety



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

6.1. 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. 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 from the N2 warning them of the construction. Signage would need to be clearly visible and include, amongst others, the following:

- o Identifying working area as a construction site;
- Cautioning against relevant construction activities;
- Prohibiting access to construction site;
- Clearly specifying possible detour routes and / or delay periods;
- Possible indications of time frames attached to the construction activities, and;
- \circ $\;$ 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.
- Construction vehicles must adhere to the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles.
- ECO to do awareness training with the contractor and labourers and to highlight the traffic related risks before construction commences.
- Where possible, construction traffic that may obstruct traffic flow on the surrounding roads must be scheduled for 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 utilized to assist vehicles entering/ exiting the site, particularly where vehicles must cross the path of oncoming traffic.

6.2. Site Demarcation

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

6.2.1. Construction Working Area

The Search and Rescue Plan, once approved by DEADP and appended to this EMPr, must be implemented by a suitably qualified/knowledgeable specialist before any pre-construction clearance activities occur. Prior to the commencement of any land-clearing or construction activities, the Specialist and ECO must be advised of the intended to be developed (considering the construction is phased). All areas intended to be utilized at that point in time (ie: for permanent structures, hardened



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ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.

surfaces, and temporary site camp), must be checked by the specialist, search and rescue conducted (if necessary), and thereafter signed off (written proof or instruction) by the specialist as confirmation that the search and rescue has concluded for the area in question. This proof must be communicated to the Contractor and project team to commence with demarcation and construction activities.

Prior to the commencement of any land-clearing 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 that 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 changes are required, such changes can only be applied once the approval of the appointed ECO and Site Engineer has been acquired. Areas to be cleared must be demarcated before any clearing and grubbing commences.

6.2.2. No-Go Areas

Areas beyond the approved working corridor and access corridors must be considered "no-go" areas, to avoid disturbance from expanding beyond the approved footprint. As the proposal will be phased, areas which have not been searched and rescued (by an appropriately registered specialist/ECO), must be considered temporary no-go areas, until this activity is completed to the satisfaction of the individual responsible therefor.

In order to limit the impacts of the construction phase, only the area to be developed must be cleared to ensure there are no unmanaged no open areas subject to alien invasive encroachment, or wind and water erosion.

Prior to the commencement of any land-clearing or construction activities, all sensitive areas (as identified by the ECO), must be demarcated and must not be disturbed during the construction phase. It is recommended that the No-Go Areas or access to the No-Go Areas, be demarcated with a suitable material that can be easily identified and noticed. Danger tape flagging (pieces of danger tape tied to twine or rope) may be utilised; 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.

No-go areas could include areas with slopes of 1:4 and steeper, greenbelt / corridor areas, public open spaces, drainage lines, demarcated/barricaded trees, streams and/or other wetlands outside of the approved development area and all areas beyond the proposed site footprint. No-go areas outside the approved development area must be off-limits to all construction workers, vehicles and machinery during all phases of the development. No vegetation may be cleared from within the no-go areas (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 should be consulted between the Contractor and ECO prior to any actions.

In accordance with this proposal, the No-Go Area should be considered any area beyond the proposed development footprint and it's associated servitude.



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6.2.3. 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.

6.3. Site Camp and Associated Facilities

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 the General Authorisation or any other relative permits.
- \circ $\,$ 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.

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:

6.3.1. 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 to non-personnel. 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.

6.3.2. Fire Fighting Equipment

No less than 2 fire extinguishers must be present in 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 is prohibited.
- Should he choose to create one beyond the demarcated area, he is solely responsible for the management.
- He/she should ensure that:
 - Utilize a metal barrel and contain the fire within, outside of the proposed site.



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- 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.

6.3.3. 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.

6.3.4. 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 away from the watercourses on site. 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.

6.3.5. Potable Water

An adequate supply of potable water must be provided to construction workers at the site camp. It is the Contractors 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, or construction activity must cease, until conditions are safe to continue. To conserve water, it is recommended that buckets of water are used to clean tools and machinery, rather than running water.

6.3.6. Ablution Facilities

Chemical toilets must be kept at the site camp, on a level surface and secured from blowing over and located in such a way that the toilets will not cause any form of pollution. As per the SANS10400 (SANS 10400 – Part P; Section 4.11 – Table 5) requirement, one ablution facility for every 8 male workers and 2 ablution facilities for every 8 female workers will be provided.



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The ablution facilities must not be linked to the river system/drainage lines 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 should 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.

6.3.7. Eating Area & 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.

6.3.8. Vehicle & Equipment Maintenance Yard

All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area (impermeable surface or underlain by a drip tray) to prevent ingress of hydrocarbons into the soil. Where possible, construction vehicles and equipment that require repair must be removed from site and taken to a workshop for servicing. If emergency repairs and/or basic maintenance of construction vehicles or equipment are necessary on site, such repair work must be undertaken within the designated maintenance yard area away from any watercourses. Repairs must be conducted on an impermeable surface, and/or a tarpaulin and/or drip trays must be laid down prior to emergency repairs taking place, in order to prevent any fuel, oil, lubricant or other spillages from contaminating the surrounding environment. All spills should they occur, should be immediately cleaned up and treated accordingly.

6.3.9. House-Keeping

The site camp and related 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.

6.4. 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 (see Section 14 for Environmental Awareness Plan and APPENDIX N for Environmental Awareness Training Booklet). 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.



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6.5. Indigenous Vegetation Clearing and Protection.

The Search and Rescue Plan, once approved by DEADP and appended to this EMPr, must be implemented by a suitably qualified specialist before any pre-construction clearance activities occur within the proposed phase. Should vegetation remain after the implementation of the Search and Rescue activities, the following measures must be implemented:

- As the construction will be phased, areas which have not been searched and rescued (as confirmed by the specialist/ECO), must be considered temporary no-go areas, until this activity is completed.
- The appointed specialist responsible for conducting the search and rescue activities is to guide and educate the labour on vegetation management and clearance techniques, especially related to alien invasives in line with APPENDIX K: Alien Invasive Management Programme and APPENDIX L: Search and Rescue Plan.
- 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, and the area to be cleared must be demarcated before any clearing commences, and ONLY AFTER search and rescue is done for that portion.
- Any alien vegetation that is cleared must be disposed of in accordance with the an 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.



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- 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 is 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.

6.6. Alien Invasive Species Control

Several exotic invasive and other weed species were noted on 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 existing infestations and any further spread of these tree species pose a significant 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 should take place throughout the construction, operational, and maintenance phases. Section 16 of this EMPr provides the Alien Invasive Management Programme which must form part of the construction contract and includes an after-care period which will be required, until such time as natural vegetation has become adequately re-established. A two year after-care period is recommended.

6.7. Topsoil and Subsoil Management

In accordance with the Search and Rescue Programme and the Rehabilitation Programme, and under the guidance of the appointed appropriately registered specialist, 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, vehicle maintenance yard, refuelling area and temporary waste storage area. Topsoil removal and stockpiling must be undertaken only after consultation with the ECO. The following soil management measures must be implemented:

- 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.
- Excavated subsoil must be stockpiled separately from topsoil.
- 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 at a later date.
- Ideally, topsoil is to be handled twice only, once to strip and stockpile, and once to replace, level, shape and scarify.



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- 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.

6.8. 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 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.

6.9. Erosion Control and Stormwater Management

Stormwater must be managed in accordance with the Bitou Municipality Stormwater Management By-law and based on Sustainable Drainage Systems (SUDS). The SUDS systems attempt to maintain or



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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:

- 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 sedimentladen 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;
- As far as possible, all construction activities in close proximity to watercourses should occur in the low flow season, during the drier winter months;
- 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 should be maintained and encouraged to minimise eroision;
- All soil compacted as a result 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 importation 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 should be ongoing during the construction phase and not left until the end of the construction period
- Stockpiles must not be located within 50 metres of the edge of any wetland habitat.



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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 should adhere to the principles of sound storm water management as well as the Bitou Municipality 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.

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.

6.10. Construction in a Watercourse

Following the ecological assessment of the watercourses, the DWS Risk Assessment Matrix (2016) was applied in order to ascertain the significance of possible impacts which may occur as a result of the proposed bulk water infrastructure. The results of this assessment show that assuming mitigation measures are strictly enforced, a 'Low' risk to the overall integrity of the riparian systems is expected and a 'Moderate' risk to the overall integrity of the wetlands is expected. The DEAT 2002 and 2006 informed impact assessment determined that impacts carry low impacts post mitigation provided that adequate mitigation is applied as required.

The following measures were proposed for the development by the appointed specialist in order to minimise the impacts of the various phases of the development:

- All construction works be undertaken during the dry summer months during low flows when flow diversion is not necessary;
- Due to the accessibility of the sites, no unnecessary crossing of the watercourses may be permitted and all existing roads must be utilised to limit edge effects, erosion and sedimentation of the watercourses during the construction phase;
- The reaches of the watercourses where no activities are planned to occur must be considered no-go areas. These no-go areas can be marked from a maximum distance of 5 m upstream and downstream of the proposed crossing in the watercourse. This 5 m construction area around the trenching site would allow for construction personal, vehicles (if applicable) to enter the watercourse and install the pipelines;
- Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the watercourses and their associated 32 m NEMA Zone of Regulation (ZoR);
- Construction vehicles that are not in use must be parked outside of watercourses and be equipped with drip trays to avoid potential spillage into adjacent watercourses;
- The removed vegetation must be stockpiled outside of the delineated boundary of the watercourses. The footprint areas of these stockpiles should be kept to a minimum. Should the vegetation not be suitable for reinstatement after the construction phase or be alien/invasive vegetation species, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site.
- The duration of impacts within the watercourse should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised. Therefore, the construction period should be kept as short as possible;



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- During trenching through the watercourses, soils must be stockpiled upgradient of the trench. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum. These soils must be used to close off the trenches, immediately after inserting the pipelines.
- Protect exposed soils and stockpiles from wind, and limit the time in which soils are exposed, by covering with a suitable geotextile such as hessian sheeting;
- Material used as bedding material (at the bottom of the excavated trench) should be stockpiled outside of the delineated boundary of the watercourse until trenches are ready for placement. Once the trench has been excavated, gabion walls and mattresses (as necessary) can be installed, and the bedding material should directly be placed within the trench rather than stockpiling it alongside the trench;
- The bedding layer (such as clean gravel) should be spread evenly and compacted uniformly to the required density using a hand tamper (one man operator) in order to minimise the use of large machinery within the watercourse;
- Once the pipeline has been installed, the stockpiled soils should be used as backfill for the trench. The trench should be filled with soil in the same sequence as it was removed;
- All excavated trenches must be compacted to natural soil compaction levels to prevent the formation of preferential surface flow paths and subsequent erosion. Conversely, areas compacted as a result of construction activities (within the 5m buffer zone) must be loosened to natural soil compaction levels;
- Any remaining soils following the completion of backfilling of the trenches are to be spread out thinly in an area within the watercourses to aid in the natural reclamation process;
- The construction footprint must be limited to the width of the trench and an additional 5m buffer (to allow for the stockpiling and movement of personnel). The area must be rehabilitated after the completion of the construction phase, including revegetation thereof with indigenous watercourse vegetation. In addition, alien vegetation eradication of the footprint area must be undertaken.

6.11. Excavations and Earthworks

Any major earthworks with bulldozers and heavy machinery must be under constant supervision and operators are to 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 into more sensitive 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 shall be handled as described in this Section 9.1 of this EMPr.
- Excavations shall take place only within the approved demarcated site.
- Excavations must follow the contour lines where possible.
- Do not open large extents of excavations which cannot be managed and closed on a daily basis.



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- Excavations should be closed overnight, over weekends, holiday periods, and during any other planned site closure periods.
- Excavations shall 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 previous stored topsoil shall be returned to its original depth over the area.
- Rehabilitation of the site shall take place as provided in APPENDIX M.

In the unlikely that any heritages 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 bones in the surficial cover-sands and soil, or buried archaeological material, or unmarked graves, the Fossil Finds Procedure (FFP) included as APPENDIX I of this EMPr, must be followed.

6.12. 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).

6.13. 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.

6.14. 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 in residential areas may not exceed 600mg/m²/day, and dust fall rates in non-residential areas may not exceed 1200 600mg/m²/day, measured using reference method ASTM D1739.



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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 File.

6.15. Heritage Resources

In the unlikely event that any heritages 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 bones in the surficial cover-sands and soil, or buried archaeological material, or unmarked graves, the Protocol for Chance Fossil Find (PCFF) included as APPENDIX I of this EMPr, must be followed.

6.16. 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 are to be checked for waste products from activities such as concreting or asphalting 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 to 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 that was 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 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 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.



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• 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.



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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.



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Objective 1: Appointment of an Environmental Control Officer and Environmental Auditor, and a search and rescue specialist 7.1.

Impact Management Objective: To appoint a suitably qualified and experienced environmental control officer, environmental auditor, and a specialist to plan			
and conduct search and rescue ad	escue activities.		
Potential impact to avoid	 Failure to appoint an ECO and Environmental Auditor will result in non-compliance with the requirements of the EMPr. Failure to appoint a specialist to plan and conduct search and rescue operations before any pre-construction clearance activities commence will result in non-compliance with the requirements of this EMPr. 		
Impact Management Outcome	The requirements of the EMPr are implemented and monitored du sound environmental management on site.	ring all phases of the develo	pment, which will promote
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
Environmental Auditor & Control O	fficer	Bitou Local Municipality	During design phase
 A suitably qualified and exactivities commence on site 	xperienced Environmental Auditor must be appointed before any e.		
 A suitably qualified and exp before any activities comm 	perienced Environmental Control Officer (ECO) must be appointed ence on site.		
The appointed ECO must a	dhere to the requirements stated in Section 11 of this EMPr.		
The appointed ECO must advance, prior to the com can perform a pre-comme environmental authorization construction workers (see S Environmental Awareness Tr	be advised of the construction start date, at least two weeks in mencement of any construction activities on site, so that the ECO ncement inspection, ensure any pre-construction conditions of the mare completed, and plan for environmental awareness training of Section 14 for Environmental Awareness Plan and APPENDIX N for raining Booklet).		
Search and Rescue Specialist			
 A suitably qualified specialis based on the viability of i rescue. The specialist must clearance activities on site: 	t is to be appointed to compile and implement a search and rescue ndigenous, salvageable, good quality vegetation at the time of t ensure the following is completed prior to commencement of		



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С	С	Compile a Search of following as a minim	and Rescue Plan prior to clearance activities, this must include the mum	
		 Details on the approximate 	the salvageable plant material, including the species names and te quantities that can be salvaged,	
		 Detailed main applicable. 	nethodology for safe removal, transportation, and delivery if	
с	C	The proviso should l substrate and veget protected.	be that the receiving area (holding area) comprises of the same etation type as that of the site in question, and that it will be actively	
c	C	The stripping and re form part of the sec avoided from previo also be collected fo	re-establishment of topsoil containing indigenous seed banks should earch and rescue programme. Topsoil and seed salvaging must be viously heavy alien infested areas. Seed-bearing plant material can for placement on previously disturbed areas to be rehabilitated.	
Performance	e l	ndicator	 A qualified ECO and Environmental Auditor is appointed prior to the commencement of any (including pre-construction set-up activities) on site. A qualified Search and Rescue specialist is appointed to plan and conduct search and rescue pre-construction clearance activities commence. 	y construction activities activities on site before

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72 Objective 2: Detailed Design Site Layout Plan and Search and Rescue Plan

	Design, she tayoon han and sedicit and kescoe han		
Impact Management Objective: To	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	e included in the Environmental Authorisation.		
	substantial deviation from the conceptual layout plan may result in		
	Non-compliance with the Environmental Authorisation during compliance	onstruction.	
	Triggering of additional listed activities not authorised in the Env	ironmental Authorisation.	
	• An increase in the severity of the impacts identified and assesse	ed in the BAR or may result in ne	ew impacts not previously
Potential impact to avoid	assessed and not provided for in the EMPr, resulting in environm	ental dearadation.	
	Visual disturbance.	Ç	
	Poor stormwater management as a result of poor planning, co	an 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			
Ceneral:		Bitou Local Municipality 8	During design phase

General:		Bitou Local Municipality &	During design phase
•	The final detailed design & layout must adhere to the conceptual layout assessed in the BAR	Neil Lyners and Associates	
	process.	(RF) (Pty) Ltd (General) &	
•	The final detailed design & layout must adhere to any conditions of the Environmental Authorisation	Appointed Specialist	
	(EA).	(search and kescue)	
٠	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.		
Se	arch and Rescue Plan:		
The	e following flora relocation plan is recommended:		
	• Once the final layout has been determined the botanist will be consulted in order to finalise the		
	plant relocation and vegetation clearing (search and rescue) plan.		
Respective permits to be obtained.			
Flora search and rescue is to be conducted before vegetation clearing takes place.			
• Areas should only be stripped of vegetation as and when required and once species of special			
	concern have been relocated for that area.		



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Once site clearing is to com	nmence, the area to be cleared of vegetation will be surveyed by		
the vegetation and plant se			
to identify and remove species suitable for rescue and commence removal of plants.			
• These species are to be rep	lanted immediately in a suitable area of similar vegetation, where		
future development is unlike	ly to occur, or within a protected area.		
This plan must be issued to DEA&D	P for approval and, once approved, it must be appended to this		
EMPr for implementation.			
Detailed designs and site layout plans are approved, and a Search and Rescue Plan is approved that adh		ved that adheres to the	
renormance indicator	conditions of the EA and EMPr, prior to the commencement of cons	struction.	

7.3. Objective 3: Legislative compliance

Impact Management Objective: L	:: 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, including search and rescue, and compliance with EMPr pre-construction activities, can result in penalties, time delays and excessive costs. All stemming from poor planning.	
Impact Management Outcome	Al 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
General	Bitou Local Municipality	During design phase
 Ensure programme of works is planned accordingly and includes recommended measures where necessary, such as implementing search and rescue activities. 		
 Ensure financial allowances are made for the recommended measures, such as search and rescue plans, rehabilitation, etc. 		
• Ensure all relevant permits/licenses/approvals are in place and are valid prior to commencing with works. These include:		



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0	Environmental Authorisation	
0	Servitudes registrations	
0	SANRAL approval for N2 road crossing	
0	Cardon Bouto District Municipality approval for DBE road crossings	
0	Barmissian from Ritou Municipal Roads and Stormwater Department for the temporary	
0	closure of municipal roads	
0	Permission from private landowners for the closure of private access roads during road	
	crossings	
0	A Water Use Licence	
0	A permit obtained from CapeNature in terms of the Nature Conservation Ordinance	
	(19 of 1974, amended 2000) for the search and rescue (removal) of endangered or	
	protected plant species listed in Schedules 3 or 4.	
0	A licence from Forestry Western Cape in terms of the National Forests Act (Act 84 of	
	1998, amended 2009) should any trees in natural forests be required to be cut,	
	disturbed or uprooted.	
 Ensure 	that the Contractor has accepted the approved EMPr and Environmental	
Author	ization (and any other relevant permits/licenses, etc), as a part of their Tender	
Docum	nent, to ensure that they are fully aware of their responsibilities in terms of the	
implen	nentation of these documents.	
 Ensure 	that the Contractor provides method statements for activities intended to be	
undert	aken, 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.	
<u>Unplanned/Pla</u>	anned Shutdown:	
 Should 	site need to be closed, ensure the following is undertaken:	
- All	waste is removed from site.	
- All	stockpiled soils, etc. is removed from site or is bunded efficiently and covered with tarp,	
tor	ninimize dispersion.	
- Ens	ure all excavations are backfilled, and recommended rehabilitation is commenced at	
the	very least.	
- Ens	ure heavy machinery is stored safely.	



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 Contact the ECO to un that need to be under It is important to note that binding document, there conditions must be met, estimated duration of shut 	ndertake an inspection and advise on any appropriate measures taken. the Environmental Authorization and approved EMPr is a legal and fore regardless of reason for shutdown compliance with these or the Competent Authority must be informed of the reason and down.		
Performance Indicator The project does not incur delays, excessive costs and penalties due to unobtained permits or required permits, permissions, licences, and approvals.		nd non-compliance with	



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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:

- Implement Search and Rescue Plan ٠
- 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: Implement search and rescue plan, and identify & demarcate No-Go and working areas

mpact Management Objective: Implement search and rescue plan and identify & demarcate No-Go and working areas.				
Potential impact to avoid	 Clearance before the Search and Rescue plan is established and implemented resulting in irrecoverable loss of biological material. 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	Impact Management OutcomeFuture construction activities will be restricted to within the designated areas & all areas indicated as no-go areas, will b protected from disturbance, i.e., beyond the development footprint or areas not assessed in terms of search and rescue, c of vet.			as no-go areas, will be of search and rescue, as
IMPACT MANAGEMENT ACTIONS				
Mitigation measure		Responsible party	,	Time period
General		Specialist (Sec	rch and	Pre-construction
 Inform ECO of planned works a 	head, so as to ensure inductions are undertaken timeously.	Rescue Mitigat	ion) and	phase (prior to arrival
• Involve ECO in selection of site	camp location.	Contractor (Gen	eral)	of construction
Ensure all labour and sub-contr	actors undergo environmental inductions.			equipment,
• Ensure flora permits are in pla	ace timeously (PNCO only) - allow at least 1 or 2 months before			machinery, or workers
commencement.				on site)
• Environmental Awareness and	Training (EAT) – Ensure all labour are informed and plant operators are			
aware of risks, issues, dos and c	lon'ts and no-go areas.			



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Ensure permits/licenses applicable, are obtained prior to commencement of construction works on site. Search and Rescue Plan Implementation The Search and Rescue Plan (as required by APPENDIX L of this EMPr), once approved by DEA&DP • and appended to this EMPr, must be implemented by a suitably qualified specialist before any preconstruction clearance activities. Prior to the commencement of any land-clearing or construction activities, the following steps must ٠ be taken by the appointed specialist (as a bare minimum): • A site visit is to be taken prior to clearance (by the ECO and Specialist), this is to confirm the quantity and type of vegetation to be removed and record this information (for the intended phase). This must take into account all areas intended to be utilized at that point in time (ie: for permanent structures, hardened surfaces, and temporary site camp, etc.) Prior to the implementation of the Search and Rescue Plan for the specific phase, the specialist 0 must identify whether any of the indigenous plant species identified to be salvaged are listed as endangered or protected species in Schedule 3 or Schedule 4 of the Nature Conservation Ordinance (19 of 1974, as amended 2000). Where necessary, the specialist must compile permit applications in terms of Section 62 and 71 0 of the Nature Conservation Ordinance (19 of 1974, as amended 2000), (and any other relevant permits), and issue these applications to CapeNature for approval, prior to the implementation of the Search and Rescue Plan. Identify area to transplant and maintain salvaged plant species on. Ο The appointed specialist is to confirm that conditions are ideal for removal of plant material (ie. Ο soil is moist, etc.) and inform the contractor of when this activity will be undertaken. If the appointed specialist intends to utilize the contractors labour to remove the plant material, 0 the specialist is to ensure that they are made aware of what vegetation is intended to be removed, and what the recommended and correct methodology is to be followed for removal. The appointed specialist is to conduct the search and rescue and monitor the labour during Ο implementation. Written confirmation from the Specialist/ECO must be issued to the Contractor and construction 0 team (ie. engineers and applicant), notifying them that all search and rescue for the intended phase has been fulfilled. Therefore, the Contractor may proceed with demarcation and construction activities.



•	No clearance may occur until the Search and Rescue Plan is implemented and removal activities have concluded, for the relevant construction phase. Areas which have not been searched and rescued (as confirmed by the specialist/ECO), must be considered temporary no-go areas, until this activity is completed.	
W	orking Corridor	
•	 Ensure the relevant ECO is present and consulted for demarcation. A maximum working corridor of 20 m is to be maintained in non-sensitive areas In Aquatic areas a maximum working corridor of 10 m must be maintained In Forest areas a maximum working corridor of 3 m must be maintained. See APPENDIX C: Vegetation Sensitivity for coordinates of very sensitive areas. Specialist appointed to undertake Search and Rescue should assess the 3 m corridor and identify/tag any mature trees to avoid. Engineer needs to confirm the route after on-site specialist input. Specialist/ECO must undertake an application to Forestry Western Cape for the removal of identified tree species (if necessary). Where possible, and especially in sensitive areas (ie. forest areas and watercourses/riparian areas), utilize the smallest possible working corridor which is in all cases below the specified maximums provided above. Demarcate/fence off the working corridor with temporary fencing (e.g. poles and shade cloth) to: contain potential overflow into the surrounding sites; prevent harm to faund that may fall into open excavations, therefore ensure all excavations are 	
•	 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. 	
•	Areas outside the working corridor must be considered no-go dreas.	
<u>Lc</u>	ndowners; 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.		
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.			
Search and Rescue of identified indigenous plant material is implemented before initial site establishment or clear			blishment or clearance
Performance Indicator commences. No-go areas, working areas and areas for site camp facilities have been identified and approximation of the second s			fied and appropriately
demarcated to the satisfaction of the ECO, before construction activities commences on site.			



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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	 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 e EMPr are provided on site.	equipment required to impleme	ent the provisions of the
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
 <u>General</u> The site camp and associated general environmental manage The site camp must be strated management during construct fires, spillage of hazardous subs The site camp, storage facilitie must be located in such a way and road users as possible. Frequent stormwater outlets m points. 	site facilities must be set-up and managed in accordance with the ement measures specified in Section 6 of this EMPr. gically set up in a manner that will promote good environmental ion/ demolition, and to respond to potential emergencies (including tances etc.) that may arise. s, stockpiles, waste bins, and any other temporary structures on site v that they will present as little visual impact to surrounding residents must be maintained (if necessary), to prevent erosion at discharge	Contractor / Bitou Local Municipality	Pre-construction phase (prior to start of construction activities)
 <u>Site Camp Establishment</u> If in an area that contains vegetati Ensure site selected is inspected Utilize disturbed or transformed Site camp facilities must be the camp facilities and must not be Ensure the site camp is positioned 	on, utilize disturbed areas only, and: d and approved by ECO. areas for site camp establishment. minimum area reasonably required to accommodate the site e allowed to impact areas not within the designated footprint. ed on a levelled area and is easily accessible.		



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٠	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).	
•	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 positioned at least 32m's from any watercourse. 	
	o Ensure toilets are rented from a registered company, with whom arrangements should be	
	made for cleaning of these toilets on a weekly basis.	
	o 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. 	
 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.	
• 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:	
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 utilized, removed and established daily.	
Environmental File	
• 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:	



0	Copies of all approvals,	ncluding: Environmental Authorization, Water Use Licence and any		
	other license/permit/app	proval.		
0	A copy of the approved	EMPr		
0	Copies of waste disposa	slips		
0	Copies of chemical toile	t cleaning/servicing slips		
0	Disposal slips or cleaning	slips (ablution cleaning)		
0	All EMR's (Environmental	Monitoring Reports) and ECO instructions		
0	Copies of Environmental	Induction Register/S		
0	A Complaints Register			
0	Updated method staten	nents		
0	 Material Safety Data Sheets for all hazardous substances utilised on site. 			
0	 Copies of audit reports 			
0	Risk Management, Preve	ention and Emergency Preparedness Plan		
0	An Incident Register			
0	Copy of induction regist	ers.		
0	Copies of purchase orde	ers for rehabilitation material etc.		
Performance Indicator		Appropriate, well organised, and properly equipped site facilitie construction activities. The location and set up of the facilities don't	s are available on site prior impact on the natural resource	to commencement of s.

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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	 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	 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	
• The appointed ECO must be advised of the construction start date, before any activities comm	ience Contractor	Start of construction	
on site so that the ECO can perform a pre-commencement inspection and plan for environm	nental	phase	
awareness training (see Section 14 and APPENDIX N), of construction workers.			
• The ECO must ensure all relevant items are in place in terms of Section 6 and 8 of this EMPr, v	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 acc	count.		
• The ECO is to take photographs of the site prior to the establishment of ALL facilities (includin	ig 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	t, and		
emergency numbers for the relevant authorities are available.			
• The ECO is to consult with the Contractor regarding relevant dates for environmental induc	ctions		
(with regard to new labour).			
• If it is recommended that an ESO is appointed, as per the EA, this must be undertaken.			



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 & Forest vegetation
- Disturbance and displacement of faunal habitat and faunal species of conservation concern
- Aquatic Impacts
- Visual Impacts
- Maintain sense of place (Reduce the visual impact)
- Creation of multiple job opportunities & capital expenditure
- Maintain traffic access and safety
- Prevent vandalism and maintain safety

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.



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PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.

9.1. Objective 1: Erosion, Earthworks and Land Clearance

Impact Management Objective: To prevent soil loss on site and prevent increased sediment load exiting the site caused by earthworks.				
Potential impact(s) to avoid Susceptibility of some areas to erosion because of construction related disturbances due to of vegetation cover and disturbance may result in some areas being susceptible to soil erosion, during heavy rainfall events, after completion cover and activity. Stockpiled soils and materials can be displaced in heavy rainfall and windy conditions, resulting in sedia dispersal.			getation cover and soil after completion of the hs, resulting in sediment	
Impact Management Outcome	Stormwater systems are not impacted significantly.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure		Responsible party	Time period	
 <u>General:</u> Ensure working corridor is demarcated appropriately. Ensure the working corridor does not exceed 20m's (only if necessary) Take into account sloped areas. 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 working corridor (this includes stockpiling, if necessary, on site). Undertake search and rescue of area demarcated for excavations as per the search and rescue plans. 		Contractor	Construction phase	
 Stockpiling: Ensure stockpiles do not exceed 2m's in height. Prohibit stockpiling of material close to slopes. Ensure stockpiles are bunded, 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-augity purchase new topsoil to ensure rehabilitation will be successful. 				



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• Remove alien invasives/weeds established on stockpiled soils prior to re-instatement.	
Continue with weed management throughout construction, in line with the EMPr.	
Excavations:	
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 ether is no potential for	
encroachment by fauna or people. The excavation may need to be covered using metal	
sheeting or other somewhat rigid cover.	
 No excavations may be left open overnight if rain is predicted. 	
Integrate shoring measures if pit walls are collapsing.	
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.	
<u>Alien invasive management:</u>	
• 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 utilized 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. 	



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 If natural vegetation re-establishment does not occur, a suitable grass must be applied. 	
 Be mindful of weather conditions that may cause runoff. 	
• Utilize silt fences, if necessary, at demarcated working corridor fence line, to capture runoff.	
Ensure all machinery utilizes drip trays.	
 Ensure all machinery is maintained prior to allowing them to be utilized on site. 	
 Utilize 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 utilized during backfilling. 	
Waste Management	
Utilize 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 	
• Do not allow rood wrappers of rood nerrs to bolid op in any waste receptacies as this will affide scavenging faund, and other pests	
Specialist Recommendation:	
<u>Fopsoil</u>	
• 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 Regional Manager prior to	
commencement of any operations.	
• The removed topsoil shall be stored on high ground within the 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 use of a	
suitable grass seed/runner mix will facilitate soil protection and minimise weeds/weed arowth.	
Stormwater and Erosion Control	
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•	• 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 importation 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. 	
C:1 -		
<u> 2116 (</u>	<u>Office / Camp Sites</u>	
	• No site offices or camp sites will be constructed on the site under current operating conditions,	
Оре	erating 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.	
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•	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 "bot 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.	
Excave Whene • • • •	ations ever 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. Excavations must follow the contour lines where possible. 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 previous stored topsoil shall 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 a local or adapted indigenous seed mix in order to propagate the locally occurring flora.	



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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 ٠ 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.

Rehabilitation of Processing and Excavation Areas

- 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 utilized 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 ٠ 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.



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<u>Monitoring:</u>			
 Bush clearing 			
- Ensure working plant has no oil or hydraulic leaks			
- Check delineated footprints area not exceeded			
Regular checks on trenches for trapped animals and possible drowning risks			
Regular checks of fences for snares			
Performance Indicator	The terrestrial and aquatic environment is not significantly impac	ed as a result of soil erosion.	

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

Impact Management Objective: Reduce the impacts caused by land disturbance and impacts on surrounding indigenous vegetation.				
Potential impact(s) to avoid	 Permanent loss of indigenous vegetation cover due to construction activities. Increased susceptibility to erosion caused by construction activities. 			
Impact Management Outcome	The disturbance of indigenous vegetation and faunal species is minimised.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Mitigation measure Responsible party Time period			
 <u>Specialist recommendation:</u> Implement a flora search and rescue before commencement. Respective permits to be obtained beforehand. 		Contractor	Construction phase	
 <u>Clearance of vegetation:</u> 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. Should the pipeline require clearing of forest, respective permits will be required beforehand AND measures must be implemented to minimise such clearing. 				



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 Such measures include a survey of the route before commencement in order to microsite the route to avoid large or important trees and may require hand excavation in certain areas to reduce the footprint so as not to significantly disturb the canopy. 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 away from watercourses. Avoid intact forest vegetation pockets where possible. 	
Flora search and Rescue	
 Once the final layout has been determined the botanist will be consulted in order to finalise the plant relocation and vegetation clearing plan. Respective permits to be obtained. Flora search and rescue is to be conducted before vegetation clearing takes place. Areas should only be stripped of vegetation as and when required and once species of special concern have been relocated for that area. Once site clearing is to commence, the area to be cleared of vegetation will be surveyed by the vegetation and plant search and rescue team clearing under the supervision of the botanist to identify and remove species suitable for rescue and commence removal of plants. These species are to be replanted immediately and maintained until re-establishment. 	
Alien Invasive Vegetation:	
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 agried through the operational phase.	
Woods and alian spacies must be cleared by hand before the rehabilitation phase of the great	
 Weeds and dien species must be cleared by hand before me renabilitation phase of me 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.	



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•	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.	
•	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 stabilization	
	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.	
<u>Fires</u>		
•	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.	
<u>Soil As</u>	<u>pects</u>	
٠	Sufficient topsoil must be stored for later use during decommissioning, particularly from outcrop	
	areas.	
٠	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.	



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The removed topsoil shall be level within demarcated ar	e stored on high ground within the site footprint outside the 1:50 flood eas.
 Topsoil shall be kept separation of roads. 	te from overburden and shall not be used for building or maintenance
 The stockpiled topsoil sho application of a suitable gro 	Ill be protected from being blown away or being eroded. The ass seed/runner mix will facilitate this and reduce the minimise weeds.
Dust	
 To manage complaints relative developed. 	ation to impacts on the nearby communities, a dust register will be
 If required, water spray very activities on the works. No over watering of the site 	shicles will be used to control wind cause by strong winds during
 Wind screens should be use 	ed to reduce wind and dust in open areas.
Performance Indicator	Construction team limit disturbance to the surrounding vegetation.

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	 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				
General: Contractor Construction phase • Ensure contact numbers for emergency assistance is available. Contractor Construction phase				



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Specialist recommendations:

- Blanket clearing of vegetation must be limited to the footprint.
- It is important that clearing activities are kept to the minimum and take place in a phased manner, where applicable. This allows any smaller animal species to move into safe areas and prevents wind and water erosion of the cleared areas.
- The habitats and microhabitats present on the project site are not unique and are widespread in the general area, hence the local impact associated with the footprint would be of low significance if mitigation measures are adhered to.
- Small mammals within the habitat on and around the affected area are generally mobile and likely to be transient to the area. They will most likely vacate the area once construction commences. As with all construction sites there is a latent risk that there will be some accidental mortalities. Specific measures are made to reduce this risk.
- The risk of species of special concern is low, and it is unlikely that there will be any impact to populations of such species because of the activity.
- Reptiles such as lizards are less mobile compared to mammals, and some mortalities could arise.
 - 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.
- Should any amphibian migrations occur between wetland areas during construction, appropriate measures (including temporarily suspending works in the affected area) should be implemented.
- A pre-commencement faunal search and rescue is recommended.
- Respective permits to be obtained beforehand (if applicable).
- No animals are to be harmed or killed during the course of operations.
- Workers are NOT allowed to snare any faunal species.
- Indigenous vegetation encountered on the sites that are to be conserved and left intact.
- 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 wind and water erosion of the cleared areas.



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 Stripped vegetation should be temporarily stored during operations and to be used later to stabilise slopes. This excludes exotic invasive species. No animals are to be harmed or killed during the course of operations. 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. 	
 It is the responsibility of the Contractor to provide sufficient fuel for cooking and heated as needed by the staff. 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. Rehabilitation of vegetation of the site must be done as described in the Rehabilitation Plans. 	
Performance Indicator Construction team limit disturbance to the surrounding vegetation.	

9.4. Objective 4: Aquatic Impacts

Impact Management Objective: Reduce the impacts caused by construction activities on aquatic features.			
Potential impact(s) to avoid	 Loss of watercourse vegetation, associated habitat and ecosystem services, associated with the trench footprint areas and associated construction area; Transportation of construction materials can result in disturbances to soils, and increased risk of sedimentation/erosion; Soil and stormwater contamination from oils and hydrocarbons originating from construction vehicles. Earthworks could be potential sources of sediment, which may be transported as runoff into the downstream watercourse areas; Proliferation of alien and/or invasive vegetation as a result of disturbances. Increased sedimentation of the watercourses, leading to smothering of vegetation associated with the watercourses; Exposure of soils, leading to increased runoff, and erosion, and thus increased sedimentation of the watercourses; Altered runoff patterns, leading to increased erosion and sedimentation of the watercourses. 		



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Impact Management Outcome	The disturbance of surrounding aquatic features is minimised.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
Site preparation prior to constructio	n activities:	Contractor	Construction phase
 Site preparation prior to construction activities; It is imperative that all construction works be undertaken during the dry summer months during low flows when flow diversion is not necessary; Due to the accessibility of the sites, no unnecessary crossing of the watercourses may be permitted and all existing roads must be utilised to limit edge effects, erosion and sedimentation of the watercourses during the construction phase; The reaches of the watercourses where no activities are planned to occur must be considered nogo areas. These no-go areas can be marked from a maximum distance of 5 m upstream and downstream of the proposed crossing in the watercourse. This 5 m construction area around the trenching site would allow for construction personal, vehicles (if applicable) to enter the watercourse and install the pipelines; Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the watercourses and their associated 32 m NEMA Zone of Regulation (ZoR); Construction vehicles that are not in use must be parked outside of watercourses and be equipped with drip trays to avoid potential spillage into adjacent watercourses; The removed vegetation must be stockpiled outside of the delineated boundary of the watercourses. The footprint areas of these stockpiles should be kept to a minimum. Should the vegetation not be suitable for reinstatement after the construction phase or be alien/invasive vegetation species, all material must be disposed of at a registered garden refuse site and may not be burned or mulched 			
Installation of the new water pipelines:			
 It is imperative that all construction works be undertaken during the dry summer months during low flows when no diversion of flow would be necessary. If diversion of flow is required, the following control measures must be implemented: 			



- Open trenching should be done in a phased manner, in half width sections across the applicable watercourse;
- All proposed activities will potentially result in bank destabilisation, and cause bank incision and sedimentation of the watercourse, therefore, sediment control devices (such as silt traps) should be installed in place prior to diverting the flow (an example of a silt trap is provided below);



- Ensure that the creation of any required diversion (by means of sandbags) does not result in a significant water level difference upstream or downstream of the installation site;
- The diversion sandbags should be filled with material from the watercourse so as to prevent foreign material to be introduced to the river;
- At least two sandbag berms should be placed between the running water of the watercourse and the open trench (specific for the riparian systems). After the temporary diversion is constructed and diversion of water occurs, one half of trench length can be excavated;
- The duration of impacts within the watercourse should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised. Therefore, the construction period should be kept as short as possible;
- Topsoil must be stockpiled separately from the rest of the excavated material and be replaced once the pipelines are installed. The footprint areas of these stockpiles should be kept to a minimum and may not exceed a height of 2m.
- During trenching through the watercourses, soils must be stockpiled upgradient of the trench. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum. These



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soils must be used to close off the trenches, immediately after inserting the pipelines. The stockpiles must remain as small as possible and may not exceed 2m in height;



- Protect exposed soils and stockpiles from wind, and limit the time in which soils are exposed, by covering with a suitable geotextile such as hessian sheeting;
- Material used as bedding material (at the bottom of the excavated trench) should be stockpiled outside of the delineated boundary of the watercourse until trenches are ready for placement. Once the trench has been excavated, gabion walls and mattresses (as necessary) can be installed, and the bedding material should directly be placed within the trench rather than stockpiling it alongside the trench;
- The bedding layer (such as clean gravel) should be spread evenly and compacted uniformly to the required density using a hand tamper (one man operator) in order to minimise the use of large machinery within the watercourse;
- Once the pipeline has been installed, the stockpiled soils should be used as backfill for the trench. The trench should be filled with soil in the same sequence as it was removed;
- All excavated trenches must be compacted to natural soil compaction levels to prevent the formation of preferential surface flow paths and subsequent erosion. Conversely, areas compacted as a result of construction activities (within the 5m buffer zone) must be loosened to natural soil compaction levels;
- Any remaining soils following the completion of backfilling of the trenches are to be spread out thinly in an area within the watercourses to aid in the natural reclamation process;
- The construction footprint must be limited to the width of the trench and an additional 5m buffer (to allow for the stockpiling and movement of personnel). The area must be rehabilitated after the



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completion of the construction phase, including revegetation thereof with indigenous watercourse vegetation. In addition, alien vegetation eradication of the footprint area must be undertaken.			
Performance Indicator	Construction team limit disturbance to the surrounding aquatic feature	res.	

9.5. Objective 5: Visual Impacts

Impact Management Objective: To prevent the site from presenting an unnecessary visual impact to the surrounding public.				
Potential impact(s) to avoid	Temporary loss of the visual aesthetics (sense of place) due to construction disturbance, poor housekeeping practices, negligent stockpiling, as well as failure to pursue rehabilitation timeously.			
Impact Management Outcome	The impact on the sense of place caused by the construction of the proposed development is significantly reduced and no notable impacts occur.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Mitigation measure Responsible party Time period			
General:		Contractor	Construction phase	
 The site camp, toilets, storage f site, should be located in suc residents and road users as po Utilize shade cloth, or other s construction working corridor. Waste must be managed acc of waste management. Good is kept neat and tidy and free Work on site must be well-plant thus minimizing the disturbance. The site camp, storage facilitis structures on site must be loc surrounding residents and road 	acilities, stockpiles, waste bins, and any other temporary structures on h a way that they will present as little visual impact to surrounding ssible. uitable material, along the fence perimeter of the site camp and ording to this EMPr and the mitigation measures listed above in terms housekeeping practices on site must be maintained to ensure the site of litter at all times. ned and well-managed so that work proceeds quickly and efficiently, e time. es, stockpiles, waste bins, elevated tanks and any other temporary ated in such a way that they will present as little visual impact to d users as possible.			



 Special attention must be give Use of lighting (if required) mu present little or no nuisance. De 	n to the screening of highly reflective material. st take into account surrounding residents and land users and must ownward facing, spill-off type lighting is recommended.		
Vegetation Clearance			
 Ensure working corridor fence is Ensure search and rescue is und Rehabilitate immediately after I Rehabilitation Programme (APP) 	established before proceeding. dertaken by specialist. backfilling, and monitor the area as recommended the ENDIX M).		
Heavy Machinery			
Heavy machinery must remainDo not undertake maintenance	within fenced areas. e of heavy machinery on site or on permeable surfaces.		
<u>Stockpiling</u>	Stockpiling		
 Separate subsoils and topsoils. The topsoil must be stored separately and should not be contaminated. The soil layers should be replaced in the same order and the topsoil returned last. Topsoil stockpiles must be less than 1.5 m in height and have adequate signage to illustrate which are topsoil and subsoil for rehabilitation purpose. Clear litter/waste/weeds from topsoil prior to backfilling. Import topsoil is found to be inadequate to support rehabilitation. Do not allow stockpiled materials to exceed 2 m in height, and do not position stockpiles along slopes or outside of the working corridor/site camp. 			
<u>Stormwater measures</u>			
down slopes.			
Performance Indicator	 Good "housekeeping" is evident on site. The site does not pose a visual impact to surrounding communit 	у.	



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9.6. Objective 6: Creation of Multiple Job opportunities and Capital Expenditure

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 th	e 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. The applicant is recommended to source local labour, contractors and sub-contractors, as well as utilize local materials and suppliers. 		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.			

9.7. Objective 7: Traffic and Access

Impact Management Objective: To ensure continued functioning of road network and road safety during construction.			
Potential impact(s) to avoid	 Some congestion may occur on Stella Road, when delivery vehicles enter and exit site with materials. Accidents may occur due to impatient or negligent drivers. Congestion and delays may be caused. 		



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npact Management Outcome The functioning of the surrounding road network remains efficient and the state of the infrastructure is not hampered.				
Mitigation measure		Responsible party	Time period	
 General Plan deliveries ahead of time, such as abnormal loads, to occur outside of peak traffic periods. All construction vehicles need to adhere to traffic laws. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible care should be taken to ensure that the local traffic flow pattern is not significantly disrupted. All vehicle operators need to be educated in terms of "best-practice" operations to minimise unnecessary traffic congestion or dangers. Construction vehicles should therefore, not unnecessarily obstruct the access point or traffic lanes used to access the site. Adequate signage, that is both informative and cautionary to passing traffic (motorists and pedestrians), warning them of the construction activities must be suitably located in the area where the construction is occurring and must be easily visible by all road users. Signage needs to be clearly visible and needs to include, among others, the following: 		Contractor	Construction phase	
 Identifying working area as a construction site; Cautioning against relevant construction activities; Prohibiting access to construction site; Clearly specifying possible detour routes and/or delay periods; Possible indications of time frames attached to the construction activities, and; Details of responsible contractors and engineers are working on the site. Speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. If needed, appropriate traffic management measures and/ or points men (traffic marshals) must be utilized to assist vehicles entering/ exiting the site, particularly where vehicles must cross the path of oncoming traffic. 				



Landowners;			
 Notify landowners of the construactivity may bring about delays Ensure clear signage is erected Where access roads to private and/or occupiers, and such ob Where possible, road crossings of only excavating half the access the remaining half. Excavations across private acc any circumstances. 	uction programme to ensure that they are aware that construction s/obstructions as well as ensuring that they are aware of any risks. on the access road. property is obstructed, notice must be given to affected landowners struction must endure for the minimum duration possible. of private access roads must be undertaken in piecemeal fashion, s road at a time and allowing for private vehicles to pass safely on ess roads, must not be left unattended or left open overnight under		
Performance Indicator	 The surrounding road networks infrastructure remains in its curren Limited congestion and traffic. 	ht state.	

9.8. Objective 8: Security and Vandalism

Impact Management Objective: To prevent the site from presenting an unnecessary visual impact to the surrounding public.			
Potential impact(s) to avoid	 Materials positioned on site overnight may attract people with nefarious intentions. Opportunities for criminal activities. Damage to or loss of resources. 		
Impact Management Outcome	The development remains unvandalized and safe.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure Responsible party Time period			Time period
General		Contractor	Construction phase
Ensure access to site is controlled and restricted.			



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 A register must be kept of all ve At night, ensure that materials of 	chicles and personnel entering the site. are covered/obstructed from view.	
 Fire safety Ensure that gas or any flamm National Veld and Forest Fire Ac Maintain fire hoses and extingui Erect fire safety signage, and w certain area, etc. and to indicc 	nable substances are stored according to industry standards, the ct (Act 101 of 1998), and as advised by the Municipal Fire Department. ishers in working order. varning signage to alert people that flammable items are stored in a ate where fire safety equipment (e.g. fire extinguishers) are located.	
Performance Indicator	 Good "housekeeping" is evident on site. The site does not pose a safety impact to surrounding community. 	

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:

- Water Quality and Impedance of flow
- Alien invasive species clearance and rehabilitation
- Boosting local revenue and local economy
- Provision of upgraded services and infrastructure
- Visual Impact
- Climate change impacts

10.1. Objective 1: Water Quality and impedance of flow

Impact Management Objective: To rehabilitate all areas disturbed by construction activities, if not already transformed, in an environmentally compliant manner.			
Potential impact(s) to avoid	Possible incision and alteration of the hydroperiod of the watercourse and potential impacts to the water quality.		
	 Can lead to a decrease in the portion of the water sustaining the watercourse. 		
Impact Management Outcome	No alterations to the hydro-landscape of the area		



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IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
 Specialist Recommendation: It is recommended that the integrity of the water pipelines be tested at least once every five years or more often should there be any sign of a leak; It should be ensured that the hydrological regime of the watercourses are not impacted as a result of leaks or bursting of the pipeline, and that an emergency plan should be compiled to ensure a quick response and attendance to the matter in case of a leakage or bursting of the pipeline; Should repair of the pipeline be required to address a leak, mitigations as per activity 2 and 3 above as applicable depending upon the location of the leak should be applied. The open trench method should ensure that the backfilled soil is compacted to a density characteristic of the natural surrounding area and all buried bulk water infrastructure should not be installed within 500 m of the surface so as to minimise impedance of interflows. 		Contractor	Construction phase – Post-Construction
Performance Indicator	 All construction-related materials, equipment, facilities, waste or site. All planned works have been implemented and any areas rehabilitated. 	and contaminated soils have b not planned that were impac	been removed from the

10.2. Objective 2: Alien invasive species clearance and rehabilitation

Impact Management Objective: Alien invasive species clearance and rehabilitation			
Potential impact(s) to be	Reoccurrence of alien invasive species		
promoted.			
Impact Management Outcome • Limited infestation and establishment of alien invasive species population.			
IMPACT MANAGEMENT ACTIONS			
Mitigation measure Responsible party Time period			
Specialist Recommendation:	Developer / Bitou Operational phase		
Implement the Rehabilitation and Landscaping Plan: Municipality			



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 Upon completion of co due to hauling and dum graded to an even surfa original depth over the a The disturbed areas can deemed to be required Excavations may not be Waste (non-biodegrado and must be disposed o Final rehabilitation must 	nstruction, the surface of any work areas, especially if compacted apping operations shall be scarified to a depth of at least 200 mm and ace condition and the previously stored topsoil will be returned to its area. In be seeded with suitable grasses and local indigenous seed mix, if a however, vegetation is likely to re-establish without input. I used for the dumping of construction wastes. In ble refuse) will not be permitted to be deposited in the excavations of appropriately. I comply with the requirements mentioned in the Rehabilitation Plan.		
Implement the Maintenanc	e Management Plan:		
 Ongoing maintenance excavation of portions components and leak re should be adhered for c stabilised and rehabilitat 	is likely to be required in the long-term, which could include re- s of the pipeline for maintenance/replacement of defective pair where applicable. All measures of this report, including the EMPr ny such maintenance requirements. Any excavated areas must be ed as per the measures indicated in this report.		
Performance Indicator	Increase in employment of local community members and utilize	ation of local businesses and sup	opliers.

Objective 3: Boosting local revenue and local economy 10.3.

Impact Management Objective: Boosting local revenue and local economy				
Potential impact(s) to be	Positive impacts			
promoted.	Local economic growth, due to reliability of essential services.			
Impact Management Outcome	Businesses, especially those in the tourism sector are more efficiently	supported, as th	nis essential s	ervice is upgraded.
IMPACT MANAGEMENT ACTIONS				
Mitigation measure		Responsible po	arty	Time period
No mitigation proposed.		Developer	/ Bitc	u Operational phase
As businesses grow and become more stable, they are able to employ more people, this can lead to:		Municipality		
Sourcing local employees a	Sourcing local employees of various skill levels.			
• Employees are able to earn a living to improve the lives, health and safety of their family members				
and households.				
Employees are able to affor	d to educate their children.			



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٠	Employees are able to prov	de food and shelter for themselves and their families.	
•	• Employment created with the development will have a positive influence on members in the		
community previously unemployed. Employees will source goods from the local community,			
contributing to the local economy.			
Opportunity for skills transfer and growth for employees.			
Perfor	mance Indicator	Local economic growth, due to reliability of essential services.	

10.4. Objective 4: Provision of upgraded services and infrastructure

Impact Management Objective: Provision of upgraded services and infrastructure				
Potential impact(s) to be avoid.	Avoid unnecessary noise generated from operational activity should be managed.			
	Unsettled community.			
	Meeting the demand for water in the Kurland area.			
Impact Management Outcome	Supporting existing communities and proposed future development in the area.			
	Utilizing existing infrastructure.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure		Responsible party	Time period	
Positive. No mitigation proposed		Developer / Bitou	Operational phase	
- The proposed development represents an enhancement measure on its own.		Municipality		
Performance Indicator	Development compliments the sense of place as it aligns with other land uses, and does not pose nuisances.			

10.5. Objective 5: Visual impact

Impact Management Objective: Visual Impact			
Potential impact(s) to be	Change in sense of place		
avoided.			
	Development remains fire wise.		
 Development protected from wildfires. 			
	 Implementation of the National Veld and Forest Fire Act (Act No. 101 of 1998) 		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period



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General:		Developer	/	Bitou	Operational phase
 Utilize natural colours and non-reflective material for the pump station and reservoir. Rehabilitate the area within the servitude area of the pump station and reservoir. Follow the rehabilitation plan and ensure that the all alien invasives are cleared and indigenous cover is successful. 		Municipality ,	/ Comm	unity	
Performance Indicator	No alien vegetation present.No dead vegetation present.				

10.6. Objective 6: Climate change impacts

Impact Management Objective: Ensure all adaption and mitigation measures are integrated and are in good order.				
Potential impact(s) to be avoided.	Strain on services, as temperatures increase.			
	Strain on water resources.			
	• The need to capture and store rainwater during periods of rainfall, will become a priority.			
	Will impact negatively on groundwater capacity and availability.			
	• Fires can be started by negligent labour activity. Which in turn can affect private properties, homes, and livelihoods (farms), etc.			
	• Based on the variety of vegetation intended to be traversed by this proposal, drier periods may see fire hazards occurring beyond the control of the contractor or farmers, which can put lives and infrastructure at risk.			
	• Potential for the storm event to damage infrastructure, at water crossings, and at extraction points, as well as at exposed infrastructure (ie. reservoirs and pump stations).			
	• Potential for storm events to impact on electricity supply, which will strain the functioning of pumps and other electrical devices, designed to ensure that the treatment and supply of water is undertaken correctly.			
Impact Management Outcome	Low climate impact as a result of the construction activities			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure Responsible party Time perio		Time period		
General:		Contractor	Operational phase	
Implement all adaption ar	nd mitigation measures found to be feasible and reasonable.			



Monitor efficiency of all adaption and mitigation measures, during operational phase.			
Performance Indicator	Local climate remains unchanged as a result of development – no resources.	occurrence of field fires, no ac	ditional strain on water



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ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

PROPOSED CONSTRUCTION OF A MIXED-USE DEVELOPMENT ON PORTION 278 & 282 OF FARM KRAAIBOSCH NO 195, GEORGE, WESTERN CAPE.

11. MONITORING COMPLIANCE

This EMPr, once approved by the competent authority (DEA&DP), 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 Authorization (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 Authorization 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 Authorization and any other relevant permits/licences and ensure that all labour, appointed subcontractors/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.

11.2.1. 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.



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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;

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

11.2.2. 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 (see Chapter 14).
- 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 **weekly** site visits during the construction phase, in addition to the startup 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 actiondocuments. These reports and documents must be made available to the ECO, Site Contractor, Site Engineer and the DEA&DP when required;
- Be present and give report on all incidents at all site meetings for the project.

11.5. 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 in dependent and is responsible for:

- Ensuring compliance with the conditions of the environmental authorisation and the EMPr; 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 EMPr, 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 EMPr 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 EMPr;
- Spillage that result 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 4: 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, the contractor and the EA Holder are responsible for ensuring that all construction workers are aware of the emergency procedures and are properly trained on how to identify and respond to an emergency incident during construction.

- 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.
- During 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 (see section 6.3).
- 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 (see APPENDIX N), 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:

- 1. This EMPr must be kept on site at all times.
- 2. The provisions of this EMPr and the conditions of the Environmental Authorisation must be explained in detail to all staff during Awareness Training.
- 3. Training booklets will be handed out to all labourers and must be explained to them.
- 4. Weekly checks to be done by the Holder's environmental representative who must be on site at all times.
- 5. The ECO to conduct frequent site visits.
- 6. 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 do's 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.;
- o 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 VITAES OF EAPS

CURRICULUM VITAE

AMEESHA SANKER

PERSONAL

Profession: Environmental Assessment Practitioner, Sharples Environmental Services cc, Cape Town.

Nationality: South African

Date of Birth: 27 December 1990

Languages: English (read, write and speak) - Fluent

Marital Status: Single

Drivers' License: Code B

Health: Excellent

WORK EXPERIENCE

March 2020 – Present: Sharples Environmental Services cc, Cape Town, WC Environmental Assessment Practitioner

- Basic Assessments Reports
- Amendment Applications
- Administration.

July 2014 – March 2020: Dartingo Consulting Engineers (Pty) Ltd, Durban, KZN

Part-time GIS Technician

- Management and compilation of GIS database.
- Layout/map creation.

June 2013- March 2020: EnAq Consulting.cc

Environmental Assessment Practitioner

- Basic Assessment Applications
- Water Use License Applications
- Environmental Monitoring/Auditing
- Stakeholder Engagement
- Reporting
- Environmental Management Plans
- Public /Contractor Awareness Training
- Biodiversity Offsets
- Rehabilitation and Protected Areas
- Project Management
- GIS management
- Administration

TERTIARY EDUCATION

2019: UNISA

• Bachelor of Science Honours Degree specialising in Environmental Management.

2014: University of Kwa-Zulu Natal

Bachelor of Science Degree specialising in Geological Science (Engineering and Environmental).

PROJECTS

Sharples Environmental Services.cc

- 2020-George Groenkloof Ontwikkelings (Pty) Ltd
- Partial completion of the Amendment for the Proposed Development of a Retirement Village and Associated Infrastructure on Portion 3 of the Farm Kraaibosch 195, George, Western Cape.

2020-Wittedrift

The Home Market NPC

• Completion of the Basic Assessment Report for the Proposed Retirement Village and Service Infrastructure on Erf 103, 104 and a Portion of Rotterdam Street. Wittedrift, Bitou Municipal Area, Western Cape.

2020-Mossel Bay Mossel Bay Local Municipality

Basic Assessment Report for the Proposed Construction of Walvis Street, Western Cape.

2020-Beaufort West Beaufort West Local Municipality

 Basic Assessment Report for the Expansion of the Existing "Goue Akker" Cemetery in Beaufort West, Beaufort Local Municipality, Western Cape.

2020-Melkhoutfontein Hessequa Local Municipality

 Basic Assessment Report for the Expansion of the Existing Melkhoutfontein Cemetery on ERF 566 and portion 141/480, Hessequa Local Municipality, Western Cape.

2020-Umzimkhulu Leratong Victim Empowerment Co-operative Ltd.

 Basic Assessment Report for the Construction of a Roof Sheeting Factory, Umzimkhulu Local Municipality, KwaZulu-Natal.

Previous Employment (2013 – 2020)

Margate

Ugu District Municipality

 BAR, WULA, GIS and ECO for the Proposed Southern Mains Bulk Water Upgrade: Gamalakhe to Margate, Ugu District Municipality, KZN.

Port Shepstone

Ray Nkonyeni Local Municipality

• Project screening, assistance with BAR preparation, public participation, GIS and ECO for the proposed Acacia Road Storm Water Network Update, Ray Nkonyeni Local Municipality, KZN.

Ixopo

Harry Gwala District Municipality

 Project screening, assistance with BAR preparation, and GIS for the Upgrade of Ixopo Sewer Network, Harry Gwala District Municipality, KZN.

KwaDukuza

KwaDukuza Local Municipality

 Project screening, EMPr preparation and ECO for the KwaDukuza Beach Upgrades: Life- Guard and Ablution Facilities, KwaDukuza Local Municipality, KZN.

KwaDukuza

KwaDukuza Local Municipality

 Project screening, EMPr preparation and ECO for the A/C Mains Replacements, KwaDukuza Local Municipality, KZN.

Mzumbe

Mzumbe Local Municipality

 Project screening, BID and Public Participation for the Proposed Mzumbe Access Road Upgrades, Mzumbe Local Muncipality, KZN.

uMtumvuna

Ray Nkonyeni Local Municipality

 Project screening, Public Participation and BID for the Proposed uMtamvuna Water Treatment Works Upgrade, Ray Nkonyeni Local Municipality, KZN.

Mkholombe

Ray Nkonyeni Local Municipality

 Project screening for the Proposed Upgrade of Mkholombe Sewer Network Upgrade, Ray Nkonyeni Local Municipality, KZN.

Phoenix

Ethekwini Municipality

 Project screening, Assistance with the initiation of the Section 24G for the Viewhaven Housing Development, Ethekwini Municipality, KZN.

Margate

Ugu District Municipality

 Project screening, and application for Amendment to the Margate Sewer Pipeline Replacement: Upgrade of Pump Station 3A and the Augmentation of Margate Effluent Main, Part 1 & 2, Ugu District Municipality, KZN.

Ballito

Siza Water

 Project screening, initiation of BID and WULA for the Ballito Hills Water and Sanitation, KwaDukuza Local Municipality, KZN.

Mzumbe

Umzumbe Local Municipality

- Project screening for the Proposed Construction of Ward 20 Community Hall, Umzumbe Local Municipality, KZN.
- Project screening for the Proposed Construction of R102 Bus Shelters, Umzumbe Local Municipality, KZN.
- Project screening for the Proposed Construction of Dweshula Community Hall, Umzumbe Local Municipality, KZN.

CURRICULUM VITAE

WILLAN ADONIS

PERSONAL

Profession: Environmental Assessment Practitioner, Sharples Environmental Services cc, Cape Town.

Nationality: South African

Date of Birth: 20 April 1996

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

Marital Status: Unmarried

Drivers License: Code B

Health: Excellent

WORK EXPERIENCE

January 2022 - Present: Sharples Environmental Services cc

Intern Environmental Assessment Practitioner

- Site Sensitivity Verification Reports
- Alien Invasive Management Plans
- ECO
- PPP plans
- NOIs
- EMPr's
- Contributions to Basic Assessments Reports
- Marketing and social media
- Tender search

Jan 2018 - Dec 2021: Stellenbosch University's School of Public Leadership

Course administrator & Online technology assistant

TERTIARY EDUCATION

2021: Stellenbosch University

- MPhil Environmental Management (Cum Laude)
- Thesis title: 'Investigating Governance for Urban River Restoration: The case of the Kuils River, South Africa'

2019: Stellenbosch University

• PGD Environmental Management (Cum laude)

2018: Stellenbosch University

• BA Development and Environment (Cum laude)

PROJECTS	
Sharples Environmental Services.cc	
2022 - Baden Powell bulk waterECO	City of Cape Town
 2022 - Montague Gardens Site Sensitivity Verification Report Public Participation Plan Contribution to NOI Contributions to BAR EMPr 	Platinum Pride Crematorium
2022 - PhiladelphiaPublic Participation Plan	Narcross Group
 2022 - Aalwyndal, Mossel Bay Site Sensitivity Verification Report NOI. Specialist Terms of Reference Letters of Appointment 	Catfight Properties 1313 cc
 2022 - Aalwyndal, Mossel Bay EMPr Alien Invasive Management Plan 	Mossel Bay Storage (Pty) Ltd
 2022 - Paarl SSVR Project Plan Public Participation Plan 	NexusAG
 2022 - George OEMPr SSVR NOI & Appednidices Specialist Terms of Reference Letters of Appointment 	Grow Green Organics (Pty) Ltd
 2022 - Kurland Bulks SSVR Public Participation Plan Contributions to BAR EMPr 	Bitou Local Municipality

APPENDIX B – LAYOUT PLAN



PROPOSED CONSTRUCTION OF A MIXED-USE DEVELOPMENT ON PORTION 278 & 282 OF FARM KRAAIBOSCH NO 195, GEORGE, WESTERN CAPE.

APPENDIX C – MAP OF ENVIRONMENTAL SENSITIVITIES

• Not Applicable, refer to Appendix E for description of receiving environment.



APPENDIX D - BACKGROUND AND EXISTING PERMITS/LICENSES

BACKGROUND

Sharples Environmental Services was appointed by Niel Lyners and Associates (RS) Pty Ltd, on behalf of the Bitou Local Municipality to undertake the environmental assessment, in accordance with the National Environmental Management Act, 1998 (Act 107 of 1998), in terms of the Environmental Impact Assessment Regulations, 2014 (as amended 2017), for the Proposed Upgrade to the Bulk Water Infrastructure, Kurland, Bitou Local Municipality.

The proposed development is an initiative of the Bitou Local Municipality and will allow for the increase in capacity and improvement on bulk services, that will not only benefit the current Kurland population, but will accommodate for future development opportunities, such as the proposed Kurland Housing Development on ERF 562, Kurland, which will take significant steps toward addressing the housing backlog within the municipality. The proposed upgrades will entail:

Rising Main, Pump Stations and Reservoirs

As depicted in Annexure D, drawing C20028G (sheets 1 – 19), as per the Engineering Report Appendix L of the Draft BAR.

- Construction of a new 351/s water pump station at the existing Matjiesfontein Reservoir, within the existing servitude.
- Construction of a new 200mm uPVC bulk water pipeline, outside of the N2 road reserve, 6m within the 60m building line, from Matjiesfontein Reservoir, situated on the South side of the N2.
 - Approximate length from existing Matjiesfontein Reservoir is approximately 3.08 Km's, to tie into the new proposed Matjiesfontein Upper pump station.
 - Approximate length from the new proposed Upper Matjiesfontein pump station is 6.1Km's, to tie into an existing 3Km long, 160mm UPVC pipeline along the N2 which comes down from the Kurland Water Treatment Works.
 - The existing 160 mm diameter rising main will feed water through a new 2 050m long uPVC, 200mm diameter rising main to the Kurland Reservoir which will be laid adjacent (parallel offset to stay outside future SANRAL road reserve) to the 200mm diameter old AC pipeline (which will be abandoned in place) currently supplying Kurland as shown on the drawings included under Annexure D (of the Engineering Report (Appendix L)).
- Construction of a new 221/s water pump station and a 0.6ML Reservoir, to be known as the Upper Matjiesfontein Reservoir.

Supply Pipelines

As depicted in drawing C20028G - 16 (sheet 16 - 19 of 19), as per the Engineering Report Appendix L.

• Construction of a new 2 560 m long 315 mm diameter uPVC pipeline, from Kurland Reservoir toward Kurland Town, adjacent (parallel offset to stay outside future SANRAL Road Reserve) to the old 200mm diameter pipeline (which will be abandoned in place), as shown on the drawings included in Annexure D (of the Engineering Report, Appendix L).

The 315 mm diameter uPVC pipeline will be connected to a new 330 m long 200mm diameter supply pipeline feeding the Kurland Township, which will follow the alignment of the existing Kurland Township supply pipeline. This 330 m long section will just replace the existing 200 mm diameter AC pipeline which is considered old, is deteriorated and will be requiring regular repairs.

• The 315 mm diameter uPVC pipeline will also be connected to a new 1200 m long 200 mm diameter uPVC supply pipeline which will be laid from the 315 mm diameter supply pipeline to the development on Erf 562.

Kurland Water Treatment Works

- Upgrade at the existing Kurland Water Treatment Works, including the construction of a 1.5ML Reservoir, and additional mechanical and electrical works, contained within the existing servitude (therefore, not a listed Activity in terms of the EIA Regulations, 2014(as amended 2017).
- Establishment of new boreholes, adjacent to the Water Treatment Works site (not a listed Activity in terms of the EIA Regulations, 2014(as amended 2017).



Figure 1: Schematic layout of Proposed Bulk Services (Annexure A of the Engineering report).

APPENDIX E - LOCATION AND RECEIVING ENVIRONMENT

LOCATION & RECEIVING ENVIRONMENT

Majority of the proposed development is accessible via the N2 and will utilize existing servitudes, where available. However, in the case of the approximately 9km bulk water pipeline from Matjiesfontein Reservoir, there is a significant possibility that the pipeline will not be permitted within the SANRAL road reserve and must therefore be situated within the adjacent private farm portions.



Figure 1: Locality of the proposed site



Figure 2: Proposed New Pump Station at Matjiesfontein Reservoir (orange) and Preferred Proposed 200mm Rising Main (green).



Figure 3: Preferred Proposed 200mm Rising Main (green) from Matjiesfontein Reservoir to the Proposed New Matjiesfontein Upper Reservoir and Pump Station.



Figure 4: Preferred Proposed New Matjiesfontein Reservoir and Pump Station (blue) with the Preferred Proposed 200mm Rising Main (green).



Figure 5: Preferred Proposed 200mm Rising Main (green) from Proposed New Matjiesfontein Upper Reservoir and Pump Station to existing 160mm tie-in.



Proposed 200mm Rising Main to WTW's

 Map Center:
 Lon: 23°29'18.1"E

 Lat:
 33°56'12.1"S

 Scale:
 1:15 000

 Date created:
 November 1, 2022

Western Cape Government

Figure 6: Proposed 200mm Rising Main from existing 160mm pipeline (white polyline) to the Kurland



Proposed 315mm Supply Pipeline from Legend

Map Center: Lon: 23°29'24.1"E Lat: 33°56'9.5"S Scale: 1:15 000 Date created: November 1, 2022 Western Cape Government

FOR YOU

Figure 7: Proposed 315mm UPVC Supply Pipeline (Blue) from Kurland WTW's to Kurland

Given the vast nature of this development, the proposed pipelines have been split into 1km intervals, as follows

Proposed	Section	Point ID	Distance	Coordinates	
Pipeline	Ref#		from		
			previous		
			point on		
			proposed		
			line (m)		
Proposed	1	RM200_A	0	34° 0'19.16"S	23°25'9.24"E
Rising Main		RM200_B	1000	34° 0'6.29''S	23°25'42.52''E
(200mm) to	2	1			
the		RM200_C	2000	33°59'48.29"S	23°26'7.60''E
Existing Tie-In	3				
		RM200_D	3000	33°59'19.16"S	23°26'18.37''E
	4				
		RM200_E	4000	33°58'50.33"S	23°26'11.47''E
	5	7			
		RM200_F	5000	33°58'22.47"S	23°25'53.47''E
	6				
		RM200_G	6000	33°58'10.08''S	23°26'25.16''E
	7	-			
		RM200_H	7000	33°58'1.75"S	23°26'59.00''E
	8	_			
		RM200_I	8000	33°57'56.62"S	23°27'34.18''E
	9				
		RM200_J	9000	33°57'46.60''S	23°28'8.04"E
	10	-			
		RM200_K	9175	33°57'43.07''S	23°28'11.06"E
Proposed	11	315_A	0	33°55'37.95''S	23°29'44.53''E
315mm		315_B	1000	33°56'3.05''S	23°29'27.45''E
Pipeline to	12	-			
Kurland		315_C	2000	33°56'33.81"S	23°29'15.42''E
	13	1			
		315_D	2543	33°56'48.46''S	23°29'19.77''E
Proposed	1	200_A	0	1	
200mm		200_B	1000	33°57'2.39''S	23°29'15.34"E
Pipeline to	14	-			
Kurland		200_C	1800	33°57'17.08''S	23°29'24.08''E
Housing 562					
Proposed	15	200_TA	329.2	33°56'48.46"S	23°29'19.77''E
200mm		200_TB		33°56'51.53"S	23°29'30.36''E
Pipeline to					
Kurland					
Township					
Proposed	16	RM200_L	0	33°55'37.95''S	23°29'44.53"E
Rising Main		RM200_M	1000	33°56'3.05''S	23°29'27.45"E
(200mm) from	17				
the		RM200_N	2000	33°56'33.81"S	23°29'15.42''E

PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.

Existing Tie-In	18				
to the WTW's		RM200_O	2034.9	33°56'34.72''S	23°29'15.35''E



Figure 8: Proposed reference sections – 200mm Rising Main to Existing 160mm Tie-In.



Figure 9: Proposed reference sections – 200mm Rising Main to Kurland WTW's

PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



Figure 10: Proposed reference sections – 315mm Supply Pipeline.



Figure 11: Proposed reference sections – 200mm Supply Pipeline to Kurland Housing 562.

PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



Figure 12: Proposed reference sections – 200mm Supply Pipeline to Kurland Township.

Province	Western Cape
District	Garden Route District Municipality
Municipality	
Local	Bitou Local Municipality
Municipality	
Ward	Ward No 1
number(s)	
Nearest	Kurland (outskirts)
town(s)	

Table 1: Summary Table - Site and Farm Details

Property descriptions

	POTENTIAL INFRA.	ALT LAYOUT	ALT		
		1	LAYOUT 2	LAND PARCELS	
		(PREFERRED)			
•	200mm Rising Main	~	✓	MATJES FONTEIN	
•	Pump station			Farm Nr 120/304; SG Code:	
				C0390000000030400120	
	200mm Rising Main	√		MATJES FONTEIN	
				RE/2/304; SG Code: C0390000000030400002	
		√		MATJES FONTEIN	
				RE/17/304; SG Code: C03900000000030400017;	
		√	\checkmark	Garden Route Biosphere Reserve – Keurbooms	
				Forest River Forest Reserve	
				522	
			\checkmark	MATJES FONTEIN	
				Farm Nr 159/304; SG Code:	
				C0390000000030400159	

			\checkmark	MATJES FONTEIN
				Farm Nr 181/304; SG Code:
				C0390000000030400181
			√	MATJES FONTEIN
				RE/29/304; SG Code: C03900000000030400029
			\checkmark	MATJES FONTEIN
				Farm Nr 184/304: SG Code:
				C0390000000030400184
			\checkmark	MATJES FONTEIN
				Farm Nr 185/304: SG Code:
				C0390000000030400185
			\checkmark	MATJES FONTEIN
				Farm Nr 197/304; SG Code:
				C0390000000030400197
			\checkmark	MATJES FONTEIN
				Farm Nr 157/304; SG Code:
				C0390000000030400157
			\checkmark	MATJES FONTEIN
				Farm Nr 41/304; SG Code:
				C0390000000030400041
			\checkmark	MATJES FONTEIN
				Farm Nr 186/304; SG Code:
				C0390000000030400186
			\checkmark	MATJIES FONTEIN
				RE/28/304; SG Code: C03900000000030400028
•	200mm Rising Main	\checkmark	\checkmark	RE/231; SG Code: C0390000000023100000;
•	Pump Station	\checkmark	\checkmark	Farm Nr 2/231; SG Code:
•	New Upper			C0390000000023100002
	Matiiesfontein			
	Reservoir (0.6ML)			
•	200mm Rising Main	√		RE 1/231; SG Code: C0390000000023100001;
	Ţ.	✓		CRAGS VIEW
				Farm Nr.1/541; SG Code:
				C0390000000054100001
	-	✓		CRAGS VIEW
				RE/541; SG Code: C0390000000054100000
	-	\checkmark		OAKHILL
				RE/479; SG Code: C0390000000047900000;
	-	✓		OAKHILL
				RE/1/479; SG Code: C0390000000047900001;
		√		OAKHILL
				RE/7/479; SG Code: C0390000000047900007;
		✓		RE/4/293; SG Code: C0390000000029300004;
		\checkmark		KIARUNA PRIVATE NATURE RESERVE
				RE/79/293; SG Code: C0390000000029300079
		√		KIARUNA PRIVATE NATURE RESERVE
				RE/20/293; SG Code: C0390000000029300020;
		√		Farm Nr 89/293; SG Code:
1				C0390000000029300089;

~		Farm Nr. 293 (portion north west of Ingwe Estate
		589)
~		Farm Nr 90/293; SG Code:
		C039000000029300090;
√		RE/3/293; SG Code: C0390000000029300003;
	¥	AFGUNST
		RE 2/294; SG Code: C0390000000029400002;
	· ·	AFGUNSI
		C0390000000029400014
	✓	
		Farm Nr 15/294: SG Code:
		C039000000029400015;
	√	AFGUNST
		RE 7/294; SG Code: C0390000000029400007
	√	FAIRVIEW
		Farm Nr 8/229; SG Code:
		C0390000000022900008;
	\checkmark	FAIRVIEW
		Farm Nr 9/229; SG
		Code:C0390000000022900009;
	¥	FAIRVIEW
		RE 2/229; SG Code:C0390000000022900002;
	•	Argunsi Farm Nr 14/294: SC Codo:
		$C_{0.390000000029400016}$
	√	Farm Nr 57/293 SG Code:
		C039000000029300057
	√	Farm Nr 58/293 SG Code:
		C0390000000029300058
	\checkmark	RE 5/293; SG Code: C0390000000029300005
	✓	RE 17/293; SG Code: C0390000000029300017
	✓	Farm Nr 28/293; SG Code:
		C039000000029300028
	√	RE 20/293; SG Code: C0390000000029300020
	√	Farm Nr 64/293; SG Code:
		CU37UUUUUUUU273UUU64
	•	C0390000000029300045
		Earm Nr 44/2031 SC Codo:
		C039000000029300066
		Farm Nr 15/293: SG Code:
		C039000000029300015
	✓	RE 2/293; SG Code: C0390000000029300002
	✓	RE 8/293; SG Code: C039000000029300008
	✓	RE 29/293; SG Code: C0390000000029300029
	√	RE 14/293; SG Code: C0390000000029300014

				-	== (000		<u> </u>
			↓ v	Farm Nr	/1/293;	SG	Code:
				C0390000000	029300071		
			✓	Farm Nr	72/293;	SG	Code:
				C0390000000	029300072		
			√	DUPEVALE CO	NS		
				Farm Nr	2/292;	SG	Code:
				C03900000000	029200002		
•	200mm Rising Main	√	✓	Earm Nr 490. S	<u>- Code: C0390</u>		19000000
•	Tio in to ovisting			1011111 470, 30	0 0000. 000700	-00000000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
•							
•	200mm Rising Main	v		KIRBYWOOD			
٠	Crossing N2			RE/20/302; SG	Code: C039000	00000030	200020;
•	200mm Rising Main		✓	RE/236; SG Co	de: C03900000)00023600	000;
	from existing						
	160mm Pipeline to			RE/506; SG Cc	de: C03900000	000050600	,0000
	Kurland WTW's			BUFFELS RIVIER			
				Farm Nr	67/288;	SG	Code:
				C0390000000	028800067		
					,02000000,		
					10/000	ŝ	Codor
					07/200,	3G	Code.
				C0390000000	1028800069;		
	PROPOSED			PROPERTIES AF	FECTED		
	PROPOSED INFRASTRUCTURE			PROPERTIES AF	FECTED		
•	PROPOSED INFRASTRUCTURE 315mm Supply	RE/236; SG C	ode: C03900	PROPERTIES AF	FFECTED		
•	PROPOSED INFRASTRUCTURE 315mm Supply Water Pipeline	RE/236; SG C	ode: C03900	PROPERTIES AF	FFECTED 00;		
•	PROPOSED INFRASTRUCTURE 315mm Supply Water Pipeline	RE/236; SG C RE/506; SG C	ode: C03900 ode: C03900	PROPERTIES AF	FFECTED 00; 00;		
•	PROPOSED INFRASTRUCTURE 315mm Supply Water Pipeline	RE/236; SG C RE/506; SG C BUFFELS RIVIE	ode: C03900 ode: C03900 R	PROPERTIES AF	FECTED 00; 00;		
•	PROPOSED INFRASTRUCTURE 315mm Supply Water Pipeline	RE/236; SG C RE/506; SG C BUFFELS RIVIE Farm Nr 67/20	ode: C03900 ode: C03900 R 88; SG Code	PROPERTIES AF	FECTED 00; 00; 028800067;		
•	PROPOSED INFRASTRUCTURE 315mm Supply Water Pipeline	RE/236; SG C RE/506; SG C BUFFELS RIVIE Farm Nr 67/2 BUFFELS RIVIE	ode: C03900 ode: C03900 R 88; SG Code R	PROPERTIES AF	FFECTED 00; 00; 00; 00; 0028800067;		
•	PROPOSED INFRASTRUCTURE 315mm Supply Water Pipeline	RE/236; SG C RE/506; SG C BUFFELS RIVIE Farm Nr 67/20 BUFFELS RIVIE Farm Nr 69/20	ode: C03900 ode: C03900 R 88; SG Code R 88: SG Code	PROPERTIES AF	FFECTED D0; D0; D0; D28800067; D28800069:		
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•	PROPOSED INFRASTRUCTURE 315mm Supply Water Pipeline 200mm Supply Water Pipeline to Kurland Housing 562	RE/236; SG C RE/506; SG C BUFFELS RIVIE Farm Nr 67/22 BUFFELS RIVIE Farm Nr 69/22 BUFFELS RIVIE Farm Nr 65/22 BUFFELS RIVIE RE/288; SG C BUFFELS RIVIE RE/288; SG C RE/562; SG C	ode: C03900 ode: C03900 R 88; SG Code R 88; SG Code R 88; SG Code R ode: C03900 R ode: C03900 Code: C0390	PROPERTIES AF 000000002360000 000000005060000 : C0390000000000 : C0390000000000 : C0390000000000 : C03900000000000 : C03900000000000000000000000000000000000	FFECTED D0; D0; D0; D28800067; D28800069; D28800065; D0; D0;		
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RECEIVING ENVIRONMENT

The DEA Screening Tool was produced on the 20th of September 2022, and has been attached as APPENDIX F. Based on this, the following studies were compiled to inform the Impact Assessment, in-line with the relevant Protocols:

- Agricultural theme conducted by Johann Janz (Pr. Sci. Nat)
- Terrestrial Biodiversity theme conducted by Jamie Pote (Pr. Sci. Nat)
- Aquatic Biodiversity theme conducted by Cole Grainger of FEN Consulting (Pty) Ltd
- Plant Species theme conducted by Jamie Pote (Pr. Sci. Nat)
- Animal Species theme conducted by Arcus Consulting Services South Africa (Pty) Ltd

AGRICULTURAL

An Agricultural Compliance Statement was found to be sufficient to address this theme. The specialist concluded that the impact of the proposed development on the agricultural production capability of the site is assessed as being acceptable. This is because the actual pipeline route has little agricultural production potential due to its location mostly along a road, and because of the temporary nature of the linear impact. The agricultural impact of the proposed development is therefore insignificant, and from an agricultural impact point of view, it is recommended that the development be approved.

The protocol requirement of confirmation that all reasonable measures have been taken through micrositing to avoid or minimise fragmentation and disturbance of agricultural activities, is not relevant in this case.

No further agricultural assessment of any kind is required for this application.

TERRESTRIAL BIODIVERSITY & BOTANICAL ASSESSMENT

The project area is generally characterised by undulating hills and plains, vegetated with a mozaic of fynbos communities with bands and pockets of natural forest, incised by occasional perennial and nonperennial rivers, generally draining to the south. The general area has notably moderate to high levels of transformation, degradation and utilization, in the corridor along the N2 between Keurboomstrand, The Crags and Kurland. Plantations of gum and pine trees are prevalent surrounding the site as well as numerous small farm dwellings, accommodation facilities such as guesthouses and other tourism related infrastructure. Extensive cultivated areas (pastures) are present between The Crags and Kurland, used primarily for horses and other livestock. Alien invasion (Blackwood, Black Wattle, Rooikrantz, Eucalyptus and Pine) is prevalent and significant, with extensive stands of dense alien vegetation. Even intact or semi-intact vegetation pockets tend to have alien trees present to a greater or lesser extent.

Two key ecological corridors are noted, one being at the southern end surrounding the existing Matjiesfontein reservoir and the second towards The Crags, in the vicinity of the Kiaruna Private Nature Reserve. These two corridors effectively encompass Southern Afrotemperate Forest - Garden Route Shale Fynbos bands that run in a north-west to south-east direction. While the National Vegetation Map shows these units as being contiguous units, on the ground the situation is somewhat more complex, with a patchwork of forest and fynbos rather being evident, with some plantations.

It would appear from on-site observations, that the Fynbos (Garden Route Shale Fynbos), in the absence of fire develops a more pronounced tree component, comprising typical thicket or forest pioneer species. Since it is well known that extensive areas of forest were cleared from this area historically, it

could be that the Garden Route Shale Band Fynbos is a secondary fynbos unit, and in the absence of fire successional processes come into play which perhaps promote the development of a secondary forest. It is also evident that the N2 National Road and other surrounding infrastructure already provides a significant disruption to the broader ecological processes and the overall impact of the proposed pipeline infrastructure will be negligible in comparison to the baseline disturbances already at play.

This offers habitat for a limited suite of animal species, although animals have largely been displaced by people. In the surrounding area, lack of topological complexity, including slope and aspect, limit the availability of microhabitats for a diverse range of different species.



Figure 13: Fynbos along powerline corridor near existing Matjiesfontein Reservoir.



Figure 14: Natural/Near Natural Fynbos.



Figure 15: Dense alien / plantation (at proposed Upper Matjiesfontein reservoir site).



Figure 16: Moribund fynbos with pioneer forest / thicket elements.



Figure 17: Natural Forest near Kiaruna Private Nature Reserve (south side of N2 to the left and north side of N2 to the right).

PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



Figure 18: Nearest to Kurland (remnant/secondary Fynbos patches to the to the left and cultivated pastures to the right).

Vegetation present along the proposed route includes:

- Intact or Secondary Fynbos (including low to moderate density invaded: Intact, semi-intact and secondary fynbos patches with light alien infestation. Most of these areas are disturbed to some extent, being in proximity to the N2 national road and also along the pipeline north of the Matjiesfontein reservoir along a powerline servitude. Most of the southern portion of the pipeline route from Matjiesfontein reservoir to just south of the proposed Upper Matjiesfontein pump station as well as scattered patches in other areas. All such areas would be considered to have a moderate ecological sensitivity.
- Fynbos with forest or forest-thicket elements: Intact, semi-intact and secondary fynbos patches
 with a developed tree component, possibly forest elements or due to lack of fire. Scattered
 patches along the route as well as a portion of the preferred alternative in the vicinity of the
 Keurboomstrand turnoff as well as around the existing Matjiesfontein reservoir and Kurland WTW.
 All such areas would be considered to have a moderate ecological sensitivity.
- Natural Forest: Intact Forest pockets comprising large, dense trees, often with a heavily invaded pioneer forest climax fynbos around the edges. These forest pockets would be protected in terms of the National Forests Act, and an opinion will be required from the respective forestry authority to clarify if they will allow the activity (i.e. will permits top remove such forest be possible). Mostly confirmed to a ± 4 km section in the vicinity of the Kiaruna Private Nature Reserve, comprising several fragmented forest patches including the upper reaches of some non-perennial some watercourses. All such areas would be considered to have a high to very high ecological sensitivity.
- Disturbed areas (including plantations and densely invaded fynbos): Primarily dense alien infested areas and plantations with the occasional indigenous element present. Scattered patches along the pipeline but includes a continues stretch from just south of the proposed upper Matjiesfontein pump station towards the forested areas near the Kiaruna Private Nature Reserve as well an area between the Kuerboomstrand turnoff and the existing Matjiesfontein reservoir. Includes the proposed Upper Matjiesfontein pump station. All such areas would be considered to have a low ecological sensitivity.
- Transformed areas: this includes all hardened surfaces such surfaced and unsurfaced roads, cultivated lands and pastures. In all these areas there has been a complete transformation and natural vegetation has been replaced by either hardened surfaces or crops including pastures grasses. All such areas would be considered to have a very low ecological sensitivity. Most of the Kurland portion from the tie-in to the WTW and to Kurland, excluding a few remnant patches of secondary fynbos vegetation and some significantly degraded watercourses, are transformed.

The habitats and microhabitats present on the project site are not unique and are widespread in the general area, hence the localised impact associated with the site footprint would in general be of low to very low significance with implementation of recommended mitigation measures.

In summary, the following general observations can be noted regarding the site:

- The fynbos vegetation on site is moderately degraded, mostly because of alien invasion, to completely transformed, in areas cleared for other uses (such as cultivated areas, urbanisation or around dwellings with the occasional near pristine pocket, including secondary patches. Intact Forest pockets are generally pristine or near pristine, but edges are often highly degraded with high levels of alien invasion.
- Extensive pockets or patches of the vegetation units are generally present in the broader area, including natural forest. The N2 national road does create a significant disruption already to ecological connectivity, hence the additional impact posed by the pipeline adjacent to this or other roads, which will largely result in a temporary impact during construction in fynbos, but more permanent in forest, is unlikely to increase the overall localised ecological disruptions more than current baseline levels.
- Alien invasion is variable but tends to be high to very high over large areas of the pipeline route.
- Erosion and erosion risk is generally low across the site.

Several endemic and range restricted species are known from the surrounding area. None are likely to be present. Note, there is a residual very-low possibility that these species could be present, and cannot be discounted without extensive seasonal sampling, which is generally outside the scope of such an assessment, unless a specific risk is identified. Due to the localised nature of the impact, as well as the level of degradation of the site, the risk of a species suffering any significant loss is low.

Red Listed, Endemic and Protected Flora

Listed species (Table 4 of Appendix G4) were flagged from various database sources, including the National environmental Screening Tool, as well as those noted to be occurring in the region and having an elevated status. All were cross-checked for distribution overlay and were actively screened for presence/absence on site. Other species may be endemic, but distribution range has been checked and are generally widespread. Sensitive species names have not been included.

Some of these species are also only from a single or a few populations. As per Table 4, <u>no Endangered</u> or <u>Critically Endangered flora species were confirmed to be present nor are known to be present in the affected area.</u> Erica glandulosa subsp. fourcadei and Erica glumiflora, both currently having a Vulnerable status and having somewhat widespread distributions were found to occur, often in disturbed areas such as the road reserve. This indicates that the species are likely to not be affected by the temporary nature of the pipeline construction. The site is relatively disturbed, being adjacent to the N2 national road as well as various other man-made features, and the area is generally well used by people. A flora search and rescue procedure is recommended before commencement.

Alien	Invasive	Species
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SCIENTIFIC NAME	COMMON NAME	FAMILY	STATUS ⁶	COMMENT/PRESENCE			
Acacia cyclops	Rooikrantz	Fabaceae	1b	Present, scattered			
Acacia mearnsii	Black Wattle	Fabaceae	1b	Present, common			
Acacia melanoxylon	Blackwood	Fabaceae	1b	Present, common			
Acacia saligna	Port Jackson Willow	Fabaceae	1b	Present, common			
Eucalyptus sp.	Gum tree	Myrtaceae	1b	Present, common			
Hakea sericea	Silky hakea	Proteaceae	1b	Present, scattered			
Pinus sp.	Pine tree	Pinaceae	1b	Present, common			
Solanum mauritianum	Bugweed	Solanaceae	1b	Present, scattered			

Table 2: Potential alien invasive species.

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.

Sensitivity	Status	Reference	Reference Sections for
		Sections for the	the Alternative 200mm
		Preferred 200mm	Rising Main (N of the
		Rising Main (S of	N2)
		the N2)	
Low (Green)	Portions of the site that are completely transformed or severely degraded, that have a low	 Portion of #3; #4 - #5 	 Portion of #3; #4 -#5 Portion of #6;
	conservation status, or where there is very dense alien infestation. Loss of these areas will not significantly compromise the current conservation status of the vegetation unit at a regional level, nor is its loss likely to compromise the ecological functioning of	 Portion of #6; Portion of #7 Portion of #9; #10 	Portion of #8Portion of #9;
Moderate (Orange)	Portions of natural vegetation that is mostly intact, but not having specific biodiversity related issues of significance or where proposed activity will have limited overall impact and recovery will be good with minimal intervention. Moderate sensitivity areas include intact fynbos vegetation in less disturbed areas, as well as marginal forest vegetation.	 #1 and #2 Portion of #3 	 #1 and #2 Portion of #3 Portion of #8; Portion of #9 #10
High (Red)	Those areas having intact vegetation and deemed to have a sensitivity, including being within intact Critical Biodiversity Areas and connectivity corridors, or are deemed critical habitat for fauna and/or flora species that are considered to be vulnerable and/or have confirmed presence of species of conservation concern. High sensitivity terrestrial areas on site include intact forest pockets as well as around watercourses.	 Portion of #7; Portion of #8; Portion of #9. 	• #7
Very High / No-Go Areas	(No-Go Areas) include areas having a Critically Endangered or Endangered conservation status, or that are irreplaceable in terms of	For the purposes specific Very High so have been identified	of this assessment <u>no</u> ensitivity terrestrial areas d.
Critical Biodiversity Areas or are			
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critical habitat for any faunal species			
that is endangered or critically			
endangered.			
No specific no go-areas have been	Several		
identified, however the preferred	watercourses and		
pipeline alternative from upper	forest pockets as		
Matjiesfontein pump station to the	well as through a		
Kurland tie-in does cross through	small dam in the		
several watercourses and forest	vicinity of the		
pockets as well as through a small	Kiaruna Private		
dam in the vicinity of the Kiaruna	Nature Reserve		
Private Nature Reserve. In order for			
this route to be acceptable, some			
revisions would be recommended.			
The watercourse crossing should not			
exceed standard design			
requirements for such a crossing and			
stormwater and erosion measures			
are recommended.			



Figure 19: Vegetation sensitivity indicated along Alternative 1 and Alternative 2 for the 200mm Rising Main.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



Figure 20: Vegetation sensitivity indicated along Alternative 1 and Alternative 2 for the 200mm Rising Main.



Figure 21: Vegetation sensitivity indicated along Alternative 1 and Alternative 2 for the 200mm Rising Main.

It is recommended that:

- The proposed pipeline and associated infrastructure (pump stations and reservoir) can be constructed within acceptable terrestrial biodiversity impact limits providing the recommended mitigation actions are adhered to.
- The implementation of the management actions relating to flora and fauna as well erosion and stormwater management and post construction rehabilitation will minimise biodiversity impacts.
- Should the pipeline require clearing of forest, respective permits will be required beforehand AND measures must be implemented to minimise such clearing. Such measures include a survey of the route before commencement in order to microsite the route to avoid large or important trees and may require hand excavation in certain areas to reduce the footprint so as not to significantly disturb the canopy.

It was concluded that due to the limited footprint and temporary nature of the proposed activity; it can be constructed within the fynbos areas without significantly compromising the broader ecological processes, nor the conservation status of the vegetation units bearing in mind specific positioning of the components within the landscape and current levels of degradation.

The removal and clearing of forest will however increase the impacts and alternatives may require further investigation. Of the options proposed, it is recommended that the least impact option would be the preferred Matjiesfontein to new upper Matjiesfontein pipeline and the alternative upper Matjiesfontein to Kurland tie-in routes. The alternative Matjiesfontein to new upper Matjiesfontein pipeline on the north side of the N2 will follow a steep slope adjacent to the N2 and will thus require more significant earthworks which would increase impact. The preferred upper Matjiesfontein to Kurland tie-in will traverse several forest pockets and will extend some distance from the N2 road, which will result in elevated disruptions to ecological processes and fragmentation of forest, which is not an advisable option. The alternative upper Matjiesfontein to Kurland tie-in will also traverse a forest pocket but will be near its edge. This can be further reduced by moving the pipeline from 6 m from the edge of the road reserve to the edge of the road reserve, which will result in minimal forest loss and no further fragmentation of significance.

The forest in this section on the north side of the N2 national road extends to the current road reserve fence and also the proposed pipeline route does not extend as far away from this edge. If it were possible to shift the pipeline from 6 m to along the fence, it would result in removal of trees from the edge of the forest rather than cutting a new line through, which would also limit the impact and fragmentation. Alternatively, it is recommended that vegetation clearing and trench excavation within these forest areas be done by hand or with the use of less destructive construction plant. Final routing through any forest patches will determine the final species impact, as it will depend on the specific trees that are impacted or require removal, which will be permanent. It is recommended that a micro-siting process be undertaken before plan finalisation and construction with a land surveyor and botanist, in order to minimise impact as far as possible.

While indigenous fynbos species including species of conservation concern are present on the site, it can be concluded that these indigenous species occupy a small proportion of the site compared to that of the exotic (i.e., non-indigenous) and common widespread species. The species that are present, are largely within a secondary context and thus would more than likely re-establish on completion of construction, with implementation of mitigation measures.

All mitigation measures have been integrated into the EMPr for implementation, this includes measures set out for:

- Management Programs
 - Site Preparation and Vegetation Clearing Plan;

- Rehabilitation and Landscaping Plan;
- Open Space Management/Conservation Plan; and
- Maintenance Management Plan

FRESHWATER FEATURES

According to the Freshwater Assessment for the Proposed Bulk Water Pipeline Infrastructure, Kurland, Bitou Municipality, April 2022. The following watercourses were identified along the proposed route:

Level 3: Landscape Unit Watercourse Level 4: Hydrogeomorphic (HGM) Type A wetland area located on gently to steeply Slope: an inclined stretch of ground typically sloping land and dominated by colluvial (i.e. located on the side of a mountain, hill or gravity-driven), unidirectional movement of water Hillslope Seep valley, not forming part of a valley floor. and material down-slope. Seeps are often located Includes scarp slopes, mid-slopes and footon the side-slopes of a valley but they do not, slopes. typically, extend onto a valley floor. A valley-bottom wetland without a river channel running through it and is instead characterised by Unchanneled Valley Valley Floor: the base of a valley, situated diffuse flows that are covered by the Bottom Wetland between two distinct valley side-slopes, establishment of facultative vegetation across the where alluvial or fluvial processes typically lateral extent of the valley floor. dominate. Hol River A linear landform with clearly discernible bed and Slope: an inclined stretch of ground typically banks which permanently or periodically carries a located on the side of a mountain, hill or concentrated flow of water. Rivers and drainage Ephemeral drainage valley, not forming part of a valley floor. lines may or may not have distinct riparian zones. lines Includes scarp slope, mid-slopes and footslopes.

Table 5: Watercourse features identified.

Watercourse	Present Ecological State (PES)	Ecoservices	Ecological Importance and Sensitivity (EIS)	Recommended Ecological Category (REC), Recommended Management Objective (RMO) and Best Attainable State (BAS)
Hillslope seep	Category C (Moderately Modified)	Low to Moderately Low	High	REC Category: C (Moderately modified) BAS: Category: C RMO Category: Improve
Unchanneled valley bottom wetlan	Category D (Largely modified)	Low	High	REC Category: D (Largely modified) BAS: Category: D RMO Category: (Improve)
Hol River	Category C (Moderately Modified)	Low to Moderate	High	REC Category: C (Moderately modified) BAS: Category: C RMO Category: Improve
Ephemeral drainage lines	Category C (Moderately modified)	Low	High	REC Category: C (Moderately modified) BAS: Category: C RMO Category: Improve



Figure 22: Layout of watercourse features along the proposed routes (Source: FEN Consulting).

Hillslope Seep Wetland – impacted by the 315mm supply pipeline and 200mm Rising Main.



Figure 23: Hillslope seep wetland (FEN Consulting).

Images taken on site, as depicted in Figure 23, indicate the following: (A) culvert and flow direction (black arrow) that permits seepage (albeit restricted) underneath the WTW access road, (B) the berm (blue line) at the south eastern corner of the seep west of the access road. (C) the access road and the location of the proposed 315 mm Ø pipeline (yellow line) and (D) shows the heterogenous habitat of the seep which shifts from a saturated zone to a shallow flooded zone and thereafter open water as a result of the impoundment created.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



Figure 24: Reference sections impacted by the Hillslope Seep Wetland (light green polygons).

As per Figure 24, Reference Sections #11 – a portion of #13 are located within close proximity to this watercourse feature. Also indicated is the 100m Zone of Regulation GN509 (mustard polyline); 500m Zone of regulation GN509 (light green polyline) and the 32m Zone of Regulation NEMA (pink polyline); Unchanneled Valley Bottom Wetland (light blue polygon); Seep Wetland (light green polygon); Depression feature (yellow polygon); Artificial Farm Dam/Pond (red polygon)

Modification to the seep wetland hydrological regime is largely attributed to the impoundment thereof. According to historical photographs this wetland was a diffuse system originating from four flow paths which together confluenced and drained to the Hol River. Although the seep wetland still receives natural flows from its upgradient catchment, it is likely that the storage of water at times may see temporary drying on seepage flows downstream of the impoundment compared to historic natural flows that did not experience impedance. Impoundment would also have implications for the seep wetlands ability to regulate flows into the Hol River, particularly during the dry season when the slow-controlledregulated flow of the seep would sustain river flow, especially in the headwaters of the Hol River.

The WTW access road also restricts flow. The impoundments have changed the flow velocity and the ability to transport sediments and distribute them evenly across the wetland, with the ultimate sedimentation of the impoundments. No notable sources of pollution on water quality within the 200 m buffer and broader topographical catchment were identified nor are any sources expected. A low nutrient status does however make this wetland sensitive to water pollution.

The wetland hosts a variety of habitats due to the presence of the impoundments, ranging from an open waterbody consisting of Nymphaea nouchalia water lillies which is surrounded by a shallow fringe of Typha capensis, Juncus Iomatophyllus, Cyperus textilis that in turn is surrounded by a temporary wet zone of Kyllinga erecta, Juncus effusus and Pteridium aqualinum. The adjacent grassy areas supported sporadic stands of Crinum bulbispermum. No invasive species were noticed on site besides the field of Pennisetum clandestinum that are likely used for horse grazing.

It was determined that the extent of modification is anticpated to be minimal, as a result of the construction activities but considering that it will be limited to the existing access road footprint where hydrological alteration has already taken place, no long term modification is anticipated to the wetland. Therefore the impact significance is considered moderate. Considering the moderately modified state of this seep, due to the storage, redirection, fragmentation and constriction of flows, the installtion of the pipeline is not deemed to result in a significant impact on this seep wetland, albeit a direct negative impact is still expected.

Unchanneled Valley bottom wetland – impacted by the 200mm supply pipelines to Kurland Housing and Kurland Township



Figure 25: Unchanneled valley bottom wetland.

Images taken on site as depicted in Figure 25 (A) north east vantage of the wetland immediately upstream of the existing road crossing. (B) northern view into the wetland from the road crossing which is dominated by grasses and restios, *Canna indica* at the centre of the channel fringed by *Pteridium aquilinum*. (C) southern view of the wetland immediately downstream of the road crossing – note the large shift in restiod and woody vegetation to a monoculture of *Pennisetum clandestinum* (Kikuyu grass) and *Canna indica*.



Figure 26: Reference sections within close proximity of the Unchanneled Valley Bottom Wetland feature (light blue polygons), close to the proposed 315mm supply pipeline and 200mm Rising Main (red polyline) and 200mm supply pipeline (light blue polyline).

As per Figure 26, Reference Sections #11 – #14 are located within close proximity to this watercourse feature. Also indicated is the 500m Zone of regulation GN509 (light green polyline) and the 32m Zone of Regulation NEMA (pink polyline); Unchanneled Valley Bottom Wetland (light blue polygon); Seep Wetland (light green polygon); Artificial Farm Dam/Pond (red polygon).

The serious modification of the hydrological component of this wetland stems from the following:

- the gradual densification of the Kurlands township within the wetland catchment and the wetland itself which has caused a decrease in lateral surface water inputs and forced it to become more narrow;
- the loss of the upstream surface and groundwater contributions due to the excavation which essentially acts as a major drainage feature and has cut these northern flows entirely off from the receiving wetland and caused its longitudinal shortening.

The natural balance between geomorphological processes of erosion and deposition have been greatly altered. Erosion is being favoured through valley narrowing which promotes concentrated flows that cause erosion. This is further exacerbated due to decreased opposing processes of sedimentation due to cutting off of the northern catchment of the wetland by excavation activities. Sedimentation within the wetland however has been favoured by the destabilization of wetland banks from the encroaching township and the high density of tall herbaceous and woody vegetation would further act as sediment traps, thereby also favouring sedimentation over erosion. If sedimentation is continuously favoured over erosion then this could decrease an already mild wetland gradient (~ 1.7%), eventually causing the cessation of flows which would pond until a storm event could favour downcutting and erosion of the wetland channel. This would cause a permanent change to this wetland morphology in the absence of human intervention and must be avoided.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.

Water quality is expected to be poor due to most of the wetland catchment accommodating high density urban residence which would see an increase in contaminants that would enter the wetland, especially during heavy rains. Considering that the wetland offers no isolation from human activity due to the loss of the natural buffer area and encroachment of the township on either side, it is not expected to act greatly as a refugia for shy or sensitive fauna, however common faunal species may utilise this wetland as a movement corridor to other, more suitable areas.

The extent of modification is anticipated to be minimal, as the wetland has already undergone extensive hydrological and geomorphological modification due to the developing Kurland township and excavation area to the north which is cutting flows off from the wetland. The proposed bulk water pipeline will be trenched within an existing road crossing that intersects the wetland, which is not anticipated to result in any long term modification to the wetland. Therefore the impact significance is estimated to be Moderate. Impacts will include removal of vegetation as well as trenching within the wetland. It must, however, be noted that the pipeline will be trenched within the existing road reserve and thus the impacts are considered lowered.





Figure 27: Hol River.

Images taken on site as depicted in Figure 27, includes (A) Hol River downstream of the existing bridge crossing and the weir where the proposed pipeline will be attached. (B) Hol River upstream of the bridge crossing with *Prionium serratum* (Palmiet) visible within the active channel.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



Figure 23: Reference section impacted by the Hol River (dark blue polygon), intersected by the proposed 315mm supply pipeline (red polyline).

As per Figure 23. Reference Section #11 is located within close proximity to this watercourse feature. Also indicated is the 100m Zone of Regulation GN509 (mustard polyline); 500m Zone of regulation GN509 (light green polyline) and the 32m Zone of Regulation NEMA (pink polyline); Seep Wetland (light green polygon); Artificial Farm Dam/Pond (red polygon).

The hydrological regime is considered to be moderately modified due to the presence of a weir (and likely associated abstraction) within the active channel which may influence the high and low flows. The geomorphological process and water quality are considered to be largely natural, with the embankments of the river being well vegetated, with little to no erosion noted along the N2 bridge crossing. Some sedimentation was observed just below the weir structure however this is not considered significant in terms of the larger sedimentation processes of the river system.

The Hol River supports a diverse aquatic habitat and a large invertebrate community, with two (2) species of fish according to the 2014 RQS PES/EIS database recorded. The Hol River provides suitable food resources, refuge as well as function as a movement corridor in the landscape for faunal species, allowing various species cover in a largely agricultural landscape setting. Both the instream and riparian-wetland habitat integrity classes are considered to be high, with an abundance of riparian tree species noted.

There is no modification anticipated as the proposed bulk water infrastructure will be installed by means of pipe bridging which will make use of the existing bridge crossing infrastructure. As such no works are anticipated within the marginal or non-marginal zones of the river. This activity is therefore not expected to pose any further modifications to the Hol River. Therefore, impact significance is Low.

Ephemeral Drainage Lines – impacted by the 200mm rising main



Figure 29: Ephemeral drainage lines identified on site.

Images taken on site as depicted in Figure 29, detailed as follows: (A) The erosion caused immediately downstream of a gabion structure noted within the proposed bulk water pipeline route. (B) various small trenches/swales were observed in the adjacent landscape, conveying stormwater into the ephemeral drainage lines. (C) various drainage furrows (black arrows) were observed that convey water from the road into the valley of the ephemeral drainage line. The blue lines indicate the flow path of the watercourse in photo A and C and of stormwater in photo B.

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Figure 30: Reference sections inclusive of the Ephemeral Drainage features (teal polygons) along 200mm Rising Main (dark green polyline).



Figure 31: Reference sections inclusive of the Ephemeral Drainage features (teal polygons) along 200mm Rising Main (dark green polyline).

As per Figure 30 and 31:

Proposed Pipeline	Section Ref#	Close to/Within Ephemeral Drainage Feature	Within 100m Zone of Regulation GN509	Within 500m Zone of regulation GN509	Within the 32m Zone of Regulation NEMA (pink polyline)
Proposed Rising Main	1	X	X	\checkmark	X
(200mm) the Existing Tie-In	2	X	\checkmark	X	X
	3	Close proximity	\checkmark	\checkmark	\checkmark
	4	X	\checkmark	\checkmark	X
	5	Close proximity	\checkmark	\checkmark	\checkmark
	6	Close proximity	\checkmark	\checkmark	\checkmark
	7	Close proximity	\checkmark	X	\checkmark
	8	Within x3	\checkmark	\checkmark	\checkmark
	9	Within x1 and in close proximity x 1	\checkmark	\checkmark	\checkmark
	10	X	X	\checkmark	X

Also indicated is the 100m Zone of Regulation GN509 (mustard polyline); 500m Zone of regulation GN509 (light green polyline) and the 32m Zone of Regulation NEMA (pink polyline); Unchanneled Valley Bottom Wetland (light blue polygon); Seep Wetland (light green polygon); Depression feature (yellow polygon); Artificial Farm Dam/Pond (red polygon)

The hydrological regime and seasonality of these watercourses has been altered through constant stormwater input (where applicable). The ephemeral drainage lines under natural conditions are expected to flow only after heavy rainfall events for a limited period, compared to currently where these watercourses likely cater for surface runoff flows during comparatively milder rainfall events. The result being a change in hydroperiods of the ephemeral drainage lines from ephemeral to seasonal.

Water quality is not expected to be in a poor state considering very low residence times of flows in these headwater reaches. Stormwater input will, however, contribute hydrocarbons on occasion (albeit gravel roads are anticipated to have low vehicular traffic), which may have temporary negative impacts in these watercourses. The hydrological shift will cause shifts in geomorphological processes, with an expected increase in silt loading from stormwater inputs, which could also be a source of erosion, especially if debris obstruct flows, causing water to excavate a new flow path. These ephemeral drainage lines are noted to drain into the Matjies River which supports a large invertebrate community. These ephemeral drainage lines were noted to have sufficient vegetation cover, and will provide adequate foraging, refuge and function as movement corridors throughout the landscape for various faunal species.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.

The extent of the modification is considered minimal. Given that the ephemeral drainage lines have already undergone moderate hydrological alteration due to impedance from the N2 and additional stormwater inputs, the proposed bulk water pipeline infrastructure will not modify these drainage lines further. Therefore, the proposed bulk water pipeline infrastructure will pose a low impact significance.

It was concluded that the DWS Risk Assessment Matrix (2016) shows that assuming mitigation measures are strictly enforced, a 'Low' risk to the overall integrity of the riparian systems is expected and a 'Moderate' risk to the overall integrity of the wetlands is expected. The DEAT 2002 and 2006 informed impact assessment determined that impacts carry low impacts post mitigation provided that adequate mitigation is applied as required.

In considering the two alternative pipelines for the 200 mm supply pipeline from the Matjiesfontein reservoir to the proposed upper Matjiesfontein reservoir, it is the opinion of the specialist that either pipeline alternative route will have similar impacts to the identified watercourses as both alternatives remain within close proximity to the N2 road and traverse similar watercourses (ephemeral drainage lines). It is noted that Alternative 1 is the preferred option, however from a freshwater resource management perspective Alternative 2 is considered more preferrable as it traverses less ephemeral drainage lines than Alternative 1.

The proposed development intersects both the 32 m ZoR (NEMA) and the 100m/500 m ZoR (NWA) which would necessitate the application for Environmental Authorisation from the Department of Environmental Affairs and Development Planning (DEA&DP), and Water Use Authorisation from the Breede-Gouritz Catchment Management Agency (BGCMA). Based on the findings of the watercourse assessments and the results of the risk and impact assessment, it is the opinion of the specialist that the proposed activities pose a low to moderate risk to the integrity of the watercourses provided that adherence to cogent, well-conceived and ecologically sensitive construction plans are implemented and the mitigation measures provided in this report as well as general good construction practice are adhered to. Therefore, the proposed activities are considered acceptable.

All mitigation has been integrated into this BAR and associated EMPr, and Water Use License will be undertaken by Upstream Consulting.

APPENDIX F - SCREENING TOOL

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

EIA Reference number:

Project name: Kurland Bulk Infrastructure Project title: Proposed Preferred Alt 1_Rising Main Date screening report generated: 23/02/2022 16:34:04 Applicant: BITOU LOCAL MUNICIPALITY Compiler: SES_WA Compiler signature:

Application Category: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water

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Proposed Project Location

Orientation map 1: General location



General Orientation: Kurland Bulk 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		522	0	33°57'57.9S	23°24'31.69E	Farm
2		304	0	34°0'27.67S	23°25'11.39E	Farm
3		231	0	33°59'28.63S	23°26'15.32E	Farm
4		24	0	33°53'33.79S	23°23'10.99E	Farm Portion
5		231	0	33°59'22.89S	23°26'14.46E	Farm Portion
6		304	157	34°0'7.03S	23°25'34.21E	Farm Portion
7		231	0	33°59'31.85S	23°26'16.09E	Farm Portion
8		304	120	34°0'21.23S	23°25'9.19E	Farm Portion
9		304	160	34°0'18.95S	23°25'7.95E	Farm Portion
10		304	2	34°0'8.38S	23°25'47.79E	Farm Portion
11		304	177	34°0'7.44S	23°25'37.77E	Farm Portion
12		231	1	33°59'25.3S	23°26'16.04E	Farm Portion
13		231	0	33°59'28.03S	23°26'16.51E	Farm Portion
14		304	28	33°59'49.14S	23°26'7.5E	Farm Portion
15		522	4	33°59'38.62S	23°26'5.57E	Farm Portion
16		304	176	34°0'11.99S	23°25'27.3E	Farm Portion
17		522	3	33°59'40.38S	23°26'33.8E	Farm Portion
18		304	178	34°0'3.34S	23°25'53.22E	Farm Portion
19		304	17	33°59'57.42S	23°26'12.29E	Farm Portion
20		304	175	34°0'16.88S	23°25'12.6E	Farm Portion
21		522	5	33°59'49.03S	23°26'7.3E	Farm Portion
22		522	6	33°59'43.7S	23°26'6.62E	Farm Portion
23		304	179	33°59'56.33S	23°26'4.79E	Farm Portion

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Disclaimer applies 23/02/2022

24	304	180	33°59'49.22S	23°26'7.2E	Farm Portion
25	304	41	33°59'55.14S	23°26'2.56E	Farm Portion
26	231	2	33°59'22.62S	23°26'12.53E	Farm Portion
27	304	120	34°0'21.78S	23°25'8.79E	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 nearby wind or solar developments found.

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: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water.

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.

Incenti	Implication
ve,	
restricti	
on or	
prohibi	
tion	
South	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA
African	D OB 2021 O3 Metadata pdf
Conserva	<u>D_on_2021_Q5_metadata.par</u>
tion	
Areas	

¹ "development footprint", means the area within the site on which the development will take place and incudes 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.

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: Kurland Bulk Infrastructure

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		Х		
Animal Species Theme		Х		
Daga C of 19				icolaimor appliac

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

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

N 0	Speci alist asses smen t	Assessment Protocol
1	Agricul tural Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Agriculture Assessment Protocols.pdf
2	Archae ologica I and Cultura I Heritag e Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
3	Palaeo ntology Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
4	Terrest rial Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	Aquati c Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Aquatic Biodiversity Assessment Protocols.pdf
6	Geotec hnical Assess	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_General_Requirement_Assessment_Protocols.pdf

	ment	
7	Socio- Econo mic Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
8	Plant Species Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Plant Species Assessment Protocols.pdf
9	Animal Species Assess ment	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
	Х		

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
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 <u>eiadatarequests@sanbi.org.za</u> 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	Feature(s)
High	Aves-Circus maurus
High	Aves-Bradypterus sylvaticus
High	Aves-Circus ranivorus
Medium	Invertebrate-Sarophorus punctatus
Medium	Invertebrate-Aneuryphymus montanus
Medium	Invertebrate-Forest invertebrate
Medium	Amphibia-Afrixalus knysnae
Medium	Aves-Circus ranivorus
Medium	Aves-Circus maurus
Medium	Aves-Neotis denhami
Medium	Aves-Bradypterus sylvaticus
Medium	Insecta-Aloeides thyra orientis
Medium	Insecta-Tsitana dicksoni

Medium	Mammalia-Chlorotalpa duthieae
Medium	Sensitive species 7

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Х		

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity
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 <u>eiadatarequests@sanbi.org.za</u> 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
		Х	

Sensitivity	Feature(s)
Medium	Faurea macnaughtonii
Medium	Ocotea bullata
Medium	Ruschia duthiae
Medium	Indigofera hispida
Medium	Aspalathus bowieana
Medium	Sensitive species 131
Medium	Amauropelta knysnaensis
Medium	Leucospermum glabrum
Medium	Mimetes pauciflorus
Medium	Selago burchellii
Medium	Selago rotundifolia
Medium	Psydrax capensis
Medium	Sensitive species 419

Medium	Erica onusta
Medium	Erica stylaris
Medium	Erica glandulosa subsp. fourcadei
Medium	Centella longifolia
Medium	Sensitive species 1038
Medium	Sensitive species 181
Medium	Pterygodium newdigateae
Medium	Felicia westae
Medium	Osteospermum pterigoideum
Medium	Acmadenia alternifolia
Medium	Muraltia knysnaensis
Medium	Erica glumiflora
Medium	Acrolophia lunata
Medium	Sensitive species 763
Medium	Pterygodium cleistogamum

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 1
Very High	Ecological support area 1

Very High	Ecological support area 2
Very High	National Forestry Inventory
Very High	Vulnerable ecosystem
Very High	Strategic Water Source Areas

Disclaimer applies 23/02/2022

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

EIA Reference number:

Project name: Kurland_Bulk Infrastructure

Project title: Proposed Alternative 1_Ø200mm Rising Main from New 0.6ML Res to Kurland

Date screening report generated: 28/02/2022 13:24:15

Applicant: Bitou Local Municipality

Compiler: SES_WA

Compiler signature:

Application Category: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water

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MAP OF RELATIVE DEFENCE THEME SENSITIVITY
Proposed Project Location

Orientation map 1: General location



General Orientation: Kurland_Bulk 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		293	0	33°57'58.08S	23°26'46.41E	Farm
2		479	0	33°58'34.84S	23°26'14.02E	Farm
3		302	0	33°57'49.02S	23°28'54.27E	Farm
4		541	0	33°59'3.06S	23°26'21.25E	Farm
5		292	0	33°57'50.2S	23°27'34.2E	Farm
6		231	0	33°59'28.63S	23°26'15.32E	Farm
7		294	0	33°58'54.91S	23°26'6.64E	Farm
8		490	0	33°57'55.17S	23°27'51.01E	Farm
9		231	0	33°59'22.89S	23°26'14.46E	Farm Portion
10		293	3	33°58'2.47S	23°27'21.89E	Farm Portion
11		231	0	33°59'31.85S	23°26'16.09E	Farm Portion
12		292	1	33°57'55.79S	23°27'35.43E	Farm Portion
13		293	59	33°58'10.7S	23°26'19.91E	Farm Portion
14		293	87	33°57'57.91S	23°27'16.93E	Farm Portion
15		231	1	33°59'25.3S	23°26'16.04E	Farm Portion
16		231	0	33°59'28.03S	23°26'16.51E	Farm Portion
17		293	69	33°57'57.93S	23°27'6.91E	Farm Portion
18		293	3	33°58'3.92S	23°27'21.75E	Farm Portion
19		294	2	33°59'6.22S	23°26'17.66E	Farm Portion
20		293	32	33°58'11.63S	23°26'15.27E	Farm Portion
21		293	60	33°58'9.6S	23°26'29.57E	Farm Portion
22		231	2	33°59'22.62S	23°26'12.53E	Farm Portion
23		292	0	33°57'49.43S	23°27'34.23E	Farm Portion

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Disclaimer applies 28/02/2022

24	293	53	33°57'57.35S	23°27'15.77E	Farm Portion
25	293	20	33°58'12.81S	23°26'32.43E	Farm Portion
26	293	4	33°58'14.42S	23°26'1.81E	Farm Portion
27	293	81	33°58'3.35S	23°26'58.16E	Farm Portion
28	293	7	33°58'4.19S	23°27'8.32E	Farm Portion
29	293	90	33°57'59.97S	23°27'7.36E	Farm Portion
30	293	68	33°58'0.39S	23°26'58.33E	Farm Portion
31	293	63	33°58'10.69S	23°26'38.11E	Farm Portion
32	293	67	33°58'5.81S	23°26'52.79E	Farm Portion
33	294	2	33°59'6.03S	23°26'17.54E	Farm Portion
34	479	5	33°58'19.01S	23°25'53.09E	Farm Portion
35	292	0	33°57'57.13S	23°27'36.34E	Farm Portion
36	293	37	33°58'9.29S	23°26'45.42E	Farm Portion
37	293	89	33°58'13.42S	23°26'47.31E	Farm Portion
38	293	7	33°58'1.66S	23°27'8.74E	Farm Portion
39	294	13	33°58'22.11S	23°25'52.01E	Farm Portion
40	479	7	33°58'21.18S	23°25'53.54E	Farm Portion
41	490	1	33°57'55.17S	23°27'29.65E	Farm Portion
42	293	31	33°58'12.79S	23°26'0.86E	Farm Portion
43	293	55	33°57'54.91S	23°27'25.56E	Farm Portion
44	293	79	33°58'25.23S	23°26'38.37E	Farm Portion
45	293	8	33°58'10.95S	23°26'58.25E	Farm Portion
46	294	11	33°59'5.34S	23°26'18.59E	Farm Portion
47	302	26	33°57'41.42S	23°28'13.49E	Farm Portion
48	490	0	33°57'58.99S	23°27'52.78E	Farm Portion
49	293	79	33°58'23.21S	23°26'30.58E	Farm Portion
50	293	21	33°58'5.52S	23°26'52.79E	Farm Portion
51	302	20	33°57'44.81S	23°28'13.92E	Farm Portion
52	479	4	33°58'34.91S	23°25'58.96E	Farm Portion
53	479	1	33°58'23.61S	23°26'5.37E	Farm Portion
54	541	1	33°59'11.85S	23°26'18.64E	Farm Portion
55	479	1	33°58'23.31S	23°26'5.38E	Farm Portion
56	479	0	33°58'40.98S	23°26'18.63E	Farm Portion
57	490	8	33°57'54.93S	23°27'29.56E	Farm Portion
58	479	6	33°58'12.28S	23°26'11.78E	Farm Portion
59	479	3	33°58'47.42S	23°26'7.81E	Farm Portion
60	490	5	33°57'49.55S	23°28'0.5E	Farm Portion
61	490	0	33°57'58.22S	23°27'52.82E	Farm Portion
62	541	0	33°59'3.06S	23°26'21.25E	Farm Portion

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

¹ "development footprint", means the area within the site on which the development will take place and incudes 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.

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

No nearby wind or solar developments found.

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: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water.

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.

Incenti ve, restricti on or prohibi tion	Implication
South African Protecte d Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SAPA D_OR_2021_Q3_Metadata.pdf
South African Conserva tion Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA D OR 2021 Q3 Metadata.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: Kurland_Bulk Infrastructure

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		Х		
Animal Species Theme		Х		
Dama 7 of 10				

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

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

N o	Speci alist asses smen t	Assessment Protocol
1	Agricul tural Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Agriculture Assessment Protocols.pdf
2	Archae ologica I and Cultura I Heritag e Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment_Protocols.pdf
3	Palaeo ntology Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
4	Terrest rial Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	Aquati c Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Aquatic Biodiversity Assessment Protocols.pdf
6	Geotec hnical Assess	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf

	ment	
7	Socio- Econo mic Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
8	Plant Species Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Plant Species Assessment Protocols.pdf
9	Animal Species Assess ment	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
	Х		

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
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 <u>eiadatarequests@sanbi.org.za</u> 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	Feature(s)
High	Aves-Circus maurus
High	Aves-Bradypterus sylvaticus
Medium	Invertebrate-Sarophorus punctatus
Medium	Invertebrate-Aneuryphymus montanus
Medium	Invertebrate-Forest invertebrate
Medium	Amphibia-Afrixalus knysnae
Medium	Aves-Circus ranivorus
Medium	Aves-Neotis denhami
Medium	Aves-Turnix hottentottus
Medium	Insecta-Aloeides thyra orientis
Medium	Insecta-Tsitana dicksoni
Medium	Mammalia-Chlorotalpa duthieae
Medium	Sensitive species 7



MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

0 0.75 1.5 3 Kilometers

Very High sensitivity		High sensitivity	Medium sensitivity	Low sensitivity
Х				

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Freshwater ecosystem priority area quinary catchments

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

, , , , , , , , , , , , , , , , , , , ,	
Low Low sensitivi	ty



MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Х		

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
Medium	Between 8 and 15 km of other civil aviation aerodrome



MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity
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 <u>eiadatarequests@sanbi.org.za</u> 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
		Х	

Sensitivity	Feature(s)
Medium	Faurea macnaughtonii
Medium	Ocotea bullata
Medium	Ruschia duthiae
Medium	Indigofera hispida
Medium	Aspalathus bowieana
Medium	Sensitive species 131
Medium	Amauropelta knysnaensis
Medium	Leucospermum glabrum
Medium	Mimetes pauciflorus
Medium	Selago rotundifolia
Medium	Psydrax capensis
Medium	Sensitive species 419
Medium	Erica onusta

Medium	Erica stylaris
Medium	Erica glandulosa subsp. fourcadei
Medium	Centella longifolia
Medium	Sensitive species 1038
Medium	Marsilea schelpeana
Medium	Felicia westae
Medium	Osteospermum pterigoideum
Medium	Acmadenia alternifolia
Medium	Muraltia knysnaensis
Medium	Sensitive species 448
Medium	Erica glumiflora
Medium	Sensitive species 53
Medium	Sensitive species 654
Medium	Acrolophia lunata
Medium	Sensitive species 763
Medium	Pterygodium cleistogamum

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 1

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Very High	Ecological support area 1
Very High	Ecological support area 2
Very High	FEPA Subcatchments
Very High	Kiaruna Private Nature Reserve
Very High	Vulnerable ecosystem
Very High	Strategic Water Source Areas

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

EIA Reference number:

Project name: Kurland Bulk Infrastructure

Project title: Proposed Alternative 2_Ø200mm Supply Line To New Upper Matjiesfontein Reservoir

Date screening report generated: 23/02/2022 11:44:27

Applicant: BITOU LOCAL MUNICIPALITY

Compiler: SES_WA

Compiler signature:

Application Category: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water

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MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY
MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Proposed Project Location

Orientation map 1: General location



General Orientation: Kurland Bulk 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		231	0	33°59'28.63S	23°26'15.32E	Farm
2		304	0	34°0'27.67S	23°25'11.39E	Farm
3		522	0	33°57'57.9S	23°24'31.69E	Farm
4		24	0	33°53'33.79S	23°23'10.99E	Farm Portion
5		231	0	33°59'22.89S	23°26'14.46E	Farm Portion
6		304	157	34°0'7.03S	23°25'34.21E	Farm Portion
7		304	159	34°0'13.39S	23°25'12.7E	Farm Portion
8		304	120	34°0'21.23S	23°25'9.19E	Farm Portion
9		304	160	34°0'18.95S	23°25'7.95E	Farm Portion
10		304	29	34°0'3.32S	23°25'26.85E	Farm Portion
11		231	1	33°59'25.3S	23°26'16.04E	Farm Portion
12		231	0	33°59'28.03S	23°26'16.51E	Farm Portion
13		304	187	33°59'54.48S	23°25'59.99E	Farm Portion
14		304	158	34°0'4.06S	23°25'36.51E	Farm Portion
15		304	28	33°59'55.63S	23°25'33.68E	Farm Portion
16		304	184	34°0'2.13S	23°25'39.89E	Farm Portion
17		522	4	33°59'38.62S	23°26'5.57E	Farm Portion
18		522	7	33°59'40.14S	23°26'2.79E	Farm Portion
19		304	188	33°59'50.58S	23°26'2.43E	Farm Portion
20		304	41	33°59'55.14S	23°26'2.56E	Farm Portion
21		304	189	33°59'49.69S	23°26'5.38E	Farm Portion
22		304	181	34°0'10.05S	23°25'13.13E	Farm Portion
23		231	2	33°59'22.62S	23°26'12.53E	Farm Portion

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24	304	2	33°59'59.13S	23°25'52.29E	Farm Portion
25	304	185	34°0'1.73S	23°25'43.89E	Farm Portion
26	304	186	33°59'57.05S	23°25'57.74E	Farm Portion
27	304	197	33°59'58.46S	23°25'52.38E	Farm Portion
28	304	28	34°0'4.06S	23°25'36.51E	Farm Portion
29	304	120	34°0'21.78S	23°25'8.79E	Farm Portion
30	304	156	33°59'54.62S	23°26'3.1E	Farm Portion
31	304	29	34°0'12.51S	23°25'7.29E	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 nearby wind or solar developments found.

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: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water.

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.

Incenti ve, restricti on or prohibi tion	Implication
South	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA

¹ "development footprint", means the area within the site on which the development will take place and incudes 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.

African	D OR 2021 Q3 Metadata.pdf
Conserva	
tion	
Areas	

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: Kurland Bulk Infrastructure

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	High	Medium	Low	
	sensitivity	sensitivity	sensitivity	sensitivity	
Agriculture Theme		Х			
Animal Species Theme		Х			
Aquatic Biodiversity Theme				Х	
Archaeological and Cultural				Х	
Heritage Theme					
Civil Aviation Theme		Х			
Defence Theme				Х	
Paleontology Theme	Х				
Plant Species Theme			Х		
Terrestrial Biodiversity Theme	Х				

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

Ν	Speci	Assessment Protocol
ο	alist	
	asses	
	smen	
	t	
1	Agricul tural Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Agriculture Assessment Protocols.pdf
2	Archae ologica I and Cultura I Heritag e Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
3	Palaeo ntology Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
4	Terrest rial Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	c Biodive rsity	<u>Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf</u>

	Impact	
	Assess	
6	Geotec hnical Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Socio- Econo mic Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
8	Plant Species Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Plant Species Assessment Protocols.pdf
9	Animal Species Assess ment	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
	Х		

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
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 <u>eiadatarequests@sanbi.org.za</u> 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	Feature(s)
High	Aves-Circus maurus
High	Aves-Bradypterus sylvaticus
High	Aves-Circus ranivorus
Medium	Invertebrate-Sarophorus punctatus
Medium	Invertebrate-Aneuryphymus montanus
Medium	Invertebrate-Forest invertebrate
Medium	Amphibia-Afrixalus knysnae
Medium	Aves-Circus ranivorus
Medium	Aves-Circus maurus
Medium	Aves-Bradypterus sylvaticus
Medium	Insecta-Aloeides thyra orientis
Medium	Insecta-Tsitana dicksoni
Medium	Mammalia-Chlorotalpa duthieae

Medium	Sensitive species 7

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity

Legend: Neutron stard High Surces: Esti, HERE, Garnin, USGS, Intermap, INGREMENT P, INGRAM, Esti, Varga, Esti, Tratano, NGREMENT P, INGRAM, NGCO, (c) OpenStreetMap contributors, and the GIS User Community

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity
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 <u>eiadatarequests@sanbi.org.za</u> 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
		Х	

Sensitivity	Feature(s)
Medium	Faurea macnaughtonii
Medium	Ocotea bullata
Medium	Ruschia duthiae
Medium	Indigofera hispida
Medium	Aspalathus bowieana
Medium	Sensitive species 131
Medium	Amauropelta knysnaensis
Medium	Leucospermum glabrum
Medium	Mimetes pauciflorus
Medium	Selago burchellii
Medium	Selago rotundifolia
Medium	Psydrax capensis
Medium	Sensitive species 419

Medium	Erica onusta
Medium	Erica stylaris
Medium	Erica glandulosa subsp. fourcadei
Medium	Centella longifolia
Medium	Sensitive species 1038
Medium	Sensitive species 181
Medium	Pterygodium newdigateae
Medium	Felicia westae
Medium	Osteospermum pterigoideum
Medium	Acmadenia alternifolia
Medium	Muraltia knysnaensis
Medium	Erica glumiflora
Medium	Acrolophia lunata
Medium	Sensitive species 763
Medium	Pterygodium cleistogamum

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 1
Very High	Ecological support area 1

Very High	National Forestry Inventory
Very High	Vulnerable ecosystem
Very High	Strategic Water Source Areas

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

EIA Reference number:

Project name: Kurland Bulk Infrastructure

Project title: Proposed Alternative 2_Ø200mm Rising Main from New 0.6ML Res to Kurland

.....

Date screening report generated: 23/02/2022 16:05:03

Applicant: BITOU LOCAL MUNICIPALITY

Compiler: SES_WA

Compiler signature:

Application Category: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water
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MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY
MAP OF RELATIVE DEFENCE THEME SENSITIVITY
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY
MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY
MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Proposed Project Location

Orientation map 1: General location



General Orientation: Kurland Bulk 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		302	0	33°57'49.02S	23°28'54.27E	Farm
2		229	0	33°58'36.45S	23°25'33.09E	Farm
3		293	0	33°57'58.08S	23°26'46.41E	Farm
4		479	0	33°58'34.84S	23°26'14.02E	Farm
5		541	0	33°59'3.06S	23°26'21.25E	Farm
6		292	0	33°57'50.2S	23°27'34.2E	Farm
7		231	0	33°59'28.63S	23°26'15.32E	Farm
8		294	0	33°58'54.91S	23°26'6.64E	Farm
9		490	0	33°57'55.17S	23°27'51.01E	Farm
10		231	0	33°59'22.89S	23°26'14.46E	Farm Portion
11		293	72	33°57'53.23S	23°27'22.09E	Farm Portion
12		229	8	33°58'31.88S	23°25'53.51E	Farm Portion
13		231	1	33°59'25.3S	23°26'16.04E	Farm Portion
14		231	0	33°59'28.03S	23°26'16.51E	Farm Portion
15		293	52	33°57'55.92S	23°27'13.28E	Farm Portion
16		293	28	33°57'52.33S	23°26'34.67E	Farm Portion
17		293	17	33°57'57.3S	23°26'30.26E	Farm Portion
18		293	91	33°58'6.98S	23°26'31.69E	Farm Portion
19		294	12	33°58'57.76S	23°26'14.9E	Farm Portion
20		294	2	33°59'6.22S	23°26'17.66E	Farm Portion
21		229	5	33°58'26.37S	23°25'51.57E	Farm Portion
22		229	2	33°58'29.97S	23°25'38.57E	Farm Portion
23		293	47	33°57'56.83S	23°26'58.97E	Farm Portion

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Disclaimer applies 23/02/2022

24	293	36	33°58'8.42S	23°26'33.39E	Farm Portion
25	293	65	33°58'5.98S	23°26'46.44E	Farm Portion
26	229	7	33°58'26.53S	23°25'49.39E	Farm Portion
27	231	2	33°59'22.62S	23°26'12.53E	Farm Portion
28	292	0	33°57'49.43S	23°27'34.23E	Farm Portion
29	293	14	33°57'51.32S	23°27'11.22E	Farm Portion
30	293	71	33°57'54.04S	23°27'14.44E	Farm Portion
31	293	50	33°57'55.17S	23°27'4.27E	Farm Portion
32	293	20	33°58'7.55S	23°26'36.09E	Farm Portion
33	293	31	33°58'12.79S	23°26'0.86E	Farm Portion
34	293	55	33°57'54.91S	23°27'25.56E	Farm Portion
35	293	54	33°57'56.38S	23°27'16.63E	Farm Portion
36	293	64	33°58'7.82S	23°26'36.47E	Farm Portion
37	293	73	33°57'54.91S	23°27'22.43E	Farm Portion
38	293	2	33°57'46.28S	23°26'53.17E	Farm Portion
39	294	11	33°59'5.34S	23°26'18.59E	Farm Portion
40	294	15	33°58'49.56S	23°26'6.09E	Farm Portion
41	294	14	33°59'7.4S	23°26'15.08E	Farm Portion
42	302	26	33°57'41.42S	23°28'13.49E	Farm Portion
43	490	4	33°57'43.49S	23°28'5.68E	Farm Portion
44	490	0	33°57'58.99S	23°27'52.78E	Farm Portion
45	229	4	33°58'31.2S	23°25'53.7E	Farm Portion
46	292	1	33°57'55.79S	23°27'35.43E	Farm Portion
47	293	5	33°57'54.78S	23°26'20.62E	Farm Portion
48	293	57	33°58'10.91S	23°26'1.32E	Farm Portion
49	293	2	33°57'45.71S	23°26'53.27E	Farm Portion
50	293	29	33°57'42.56S	23°27'7.81E	Farm Portion
51	293	17	33°57'56.79S	23°26'30.3E	Farm Portion
52	293	34	33°58'7.4S	23°26'25.46E	Farm Portion
53	293	35	33°58'7.28S	23°26'30.83E	Farm Portion
54	293	15	33°57'54.77S	23°26'49.28E	Farm Portion
55	294	2	33°59'6.03S	23°26'17.54E	Farm Portion
56	479	5	33°58'19.01S	23°25'53.09E	Farm Portion
57	229	9	33°58'30.49S	23°25'52.63E	Farm Portion
58	292	2	33°57'52.7S	23°27'36.7E	Farm Portion
59	293	82	33°57'55.2S	23°26'59.54E	Farm Portion
60	293	37	33°58'9.29S	23°26'45.42E	Farm Portion
61	293	4	33°58'8.26S	23°26'6.42E	Farm Portion
62	293	74	33°57'53.78S	23°27'28.07E	Farm Portion
63	293	48	33°57'56.76S	23°26'56.45E	Farm Portion
64	293	88	33°58'4.93S	23°26'29.41E	Farm Portion
65	294	13	33°58'22.11S	23°25'52.01E	Farm Portion
66	294	7	33°58'58.61S	23°26'15.32E	Farm Portion
67	294	16	33°58'19.23S	23°25'50.53E	Farm Portion
68	293	56	33°57'54.25S	23°27'25.23E	Farm Portion
69	293	58	33°58'7.34S	23°26'21.64E	Farm Portion
70	293	66	33°58'1.99S	23°26'52.15E	Farm Portion
71	293	49	33°57'55.07S	23°27'2.37E	Farm Portion
72	293	17	33°57'56.62S	23°26'33.08E	Farm Portion

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Disclaimer applies 23/02/2022

73	293	8	33°57'55.07S	23°26'59.62E	Farm Portion
74	294	7	33°58'37.62S	23°25'58.26E	Farm Portion
75	479	3	33°58'47.42S	23°26'7.81E	Farm Portion
76	490	5	33°57'49.55S	23°28'0.5E	Farm Portion
77	490	0	33°57'54.7S	23°27'43.68E	Farm Portion
78	490	7	33°57'54.03S	23°27'28.92E	Farm Portion
79	490	0	33°57'29.76S	23°28'19.06E	Farm Portion
80	490	3	33°57'53.77S	23°27'28.73E	Farm Portion
81	541	1	33°59'11.85S	23°26'18.64E	Farm Portion
82	490	1	33°57'55.17S	23°27'29.65E	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 nearby wind or solar developments found.

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: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water.

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.

Incenti	Implication
ve,	
restricti	
on or	
prohibi	

¹ "development footprint", means the area within the site on which the development will take place and incudes 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.

tion	
South	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SAPA
African	D OR 2021 O3 Metadata.pdf
Protecte	
d Areas	
South	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA
African	D_OR_2021_O3_Metadata.pdf
Conserva	<u>D_OR_EDET_QS_Mctadata.pu</u>
tion	
Areas	

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: Kurland Bulk Infrastructure

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

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

N	Speci	Assessment Protocol
0	alist	
	asses	
	smen	
	t	
1	Agricul	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/
	tural	Gazetted General Agriculture Assessment Protocols pdf
	Impact	
	Assess	
	ment	
2	Archae	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/
	ologica	Gazetted General Requirement Assessment Protocols ndf
	l and	ducetted deneral negatienter / issessment / rotocols.par
	Cultura	
	I	
	Heritag	
	е	
	Impact	
	Assess	
	ment	
3	Palaeo	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/
	ntology	Gazetted General Requirement Assessment Protocols.pdf
	Impact	
	Assess	
	ment	
4	Terrest	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/
	rial	Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
	Biodive	

	rsity	
	Impact	
	Assess	
	ment	
5	Aquati	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/
	С	Gazetted Aquatic Biodiversity Assessment Protocols.pdf
	Biodive	
	rsity	
	Impact	
	Assess	
	ment	
6	Geotec	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/
	hnical	Gazetted General Requirement Assessment Protocols.pdf
	Assess	
	ment	
7	Socio-	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/
	Econo	Gazetted_General_Requirement_Assessment_Protocols.pdf
	mic	
	Assess	
0	Diant	
õ	Fidill	https://screening.environment.gov.za/screeningDownloads/AssessmentProtocols/
	Species	Gazetted Plant Species Assessment Protocols.pdf
	Assess	
0	Animal	https://www.aning.anuirence.et.anu.an/CoursesingDougloads/AccessestDuctors/
Э	Annual	nttps://screening.environment.gov.za/screeningDownloads/AssessmentProtocols/
	Accord	Gazetted Animal Species Assessment Protocols.pdf
	mont	
	ment	

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	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
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 <u>eiadatarequests@sanbi.org.za</u> 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	Feature(s)
High	Aves-Circus maurus
High	Aves-Bradypterus sylvaticus
Medium	Invertebrate-Sarophorus punctatus
Medium	Invertebrate-Aneuryphymus montanus
Medium	Invertebrate-Forest invertebrate
Medium	Amphibia-Afrixalus knysnae
Medium	Aves-Circus ranivorus
Medium	Aves-Neotis denhami
Medium	Aves-Turnix hottentottus
Medium	Insecta-Aloeides thyra orientis
Medium	Insecta-Tsitana dicksoni
Medium	Mammalia-Chlorotalpa duthieae
Medium	Sensitive species 7



MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Freshwater ecosystem priority area quinary catchments

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

, , , , , , , , , , , , , , , , , , , ,	
Low Low sensitivi	ty



MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Х		

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
Medium	Between 8 and 15 km of other civil aviation aerodrome



MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity
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 <u>eiadatarequests@sanbi.org.za</u> 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
		х	

Sensitivity	Feature(s)	
Low	Low Sensitivity	
Medium	Faurea macnaughtonii	
Medium	Ocotea bullata	
Medium	Ruschia duthiae	
Medium	Indigofera hispida	
Medium	Aspalathus bowieana	
Medium	Sensitive species 131	
Medium	Amauropelta knysnaensis	
Medium	Leucospermum glabrum	
Medium	Mimetes pauciflorus	
Medium	Selago rotundifolia	
Medium	Psydrax capensis	
Medium	Sensitive species 419	

Medium	Erica onusta		
Medium	Erica stylaris		
Medium	Erica glandulosa subsp. fourcadei		
Medium	Centella longifolia		
Medium	Sensitive species 1038		
Medium	Marsilea schelpeana		
Medium	Felicia westae		
Medium	Osteospermum pterigoideum		
Medium	Acmadenia alternifolia		
Medium	Muraltia knysnaensis		
Medium	Sensitive species 448		
Medium	Erica glumiflora		
Medium	Sensitive species 53		
Medium	Sensitive species 654		
Medium	Acrolophia lunata		
Medium	Sensitive species 763		
Medium	Pterygodium cleistogamum		

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity Features:

Sensitivity	Feature(s)	
-------------	------------	--

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Very High	Critical biodiveristy area 1
Very High	Ecological support area 1
Very High	Ecological support area 2
Very High	FEPA Subcatchments
Very High	Kiaruna Private Nature Reserve
Very High	Vulnerable ecosystem
Very High	Strategic Water Source Areas

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

EIA Reference number:

Project name: Kurland Bulk Infrastructure

Project title: Proposed 0.6ML Reservoir & Pump Station_New Upper Matjiesfontein

Date screening report generated: 23/02/2022 15:18:47

Applicant: BITOU LOCAL MUNICIPALITY

Compiler: SES_WA

Compiler signature:

Application Category: Services | Water services | Storage | Reservoirs

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Proposed Project Location

Orientation map 1: General location



General Orientation: Kurland Bulk 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		231	0	33°59'28.63S	23°26'15.32E	Farm
2		231	0	33°59'31.85S	23°26'16.09E	Farm Portion
3		231	0	33°59'28.03S	23°26'16.51E	Farm Portion
4		231	0	33°59'22.89S	23°26'14.46E	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 nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

¹ "development footprint", means the area within the site on which the development will take place and incudes 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.

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.

la conti	Invaliantian
incenti	Implication
ve,	
restricti	
on or	
prohibi	
tion	
South	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA
African	D_OR_2021_O3_Metadata.ndf
Conserva	
tion	
Areas	

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: Kurland Bulk Infrastructure

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			Х	
Animal Species Theme		Х		
Dago 6 of 17				isclaimer applies

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

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

Ν	Special	Assessment Protocol
0	ist	
	assess	
	ment	
1	Agricult ural Impact Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landsca pe/Visu al Impact Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted General Requirement Assessment Protocols.pdf
3	Archaeo logical and Cultural Heritage Impact Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted General Requirement Assessment Protocols.pdf
4	Palaeon tology Impact Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted General Requirement Assessment Protocols.pdf
5	Terrestri al Biodiver sity Impact Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiver sity Impact Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted Aquatic Biodiversity Assessment Protocols.pdf

7	Civil Aviation Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted Civil Aviation Installations Assessment Protocols.pdf
8	Geotech nical Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Plant Species Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols /Gazetted_Plant_Species_Assessment_Protocols.pdf
1 0	Animal Species Assessm ent	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
		Х	

Sensitivity	Feature(s)
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 <u>eiadatarequests@sanbi.org.za</u> 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	Feature(s)	
High	Aves-Bradypterus sylvaticus	
Medium	Invertebrate-Sarophorus punctatus	
Medium	Invertebrate-Aneuryphymus montanus	
Medium	Amphibia-Afrixalus knysnae	
Medium	Insecta-Aloeides thyra orientis	
Medium	Insecta-Tsitana dicksoni	
Medium	Mammalia-Chlorotalpa duthieae	
Medium	Sensitive species 7	



MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

, , , , , , , , , , , , , , , , , , , ,	
Low Low sensitivi	ty

Surfaces: Esh, HERE, Standh, USOS, Internega, INSREEMENT P, Nichar, Bird, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, INSREEMENT P, Nichar, Nichar, Bard, Japan, METT, Esh Ginha, Lisos, Internega, In

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Х		

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome

Surces: Est, HERE, Garmin, USGS, Internap, INGREMENT P, INGRA., Esti Japan, METI, Esti China (Hong Kong), Esti Korea, Esti, Thatano), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity



MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)	
Low	Features with a Low paleontological sensitivity	

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

Legend: Very High High Medium Low	Sources: Esti, HERE, Garmin, USGS, Internap, INGREMENT P, NRGan, Esti Japan, METI, Esti China (Hong Kong), Esti Korea. Esti (Thailand), NGC (e) OpenStreetMan contributors and the GIS Liser Community
0 0.0275 0.055 0.11 Kilometers	

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 <u>eiadatarequests@sanbi.org.za</u> 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
		х	

Sensitivity	Feature(s)
Medium	Faurea macnaughtonii
Medium	Ocotea bullata
Medium	Indigofera hispida
Medium	Aspalathus bowieana
Medium	Sensitive species 131
Medium	Amauropelta knysnaensis
Medium	Leucospermum glabrum
Medium	Mimetes pauciflorus
Medium	Selago rotundifolia
Medium	Psydrax capensis
Medium	Erica onusta
Medium	Erica stylaris
Medium	Erica glandulosa subsp. fourcadei

Medium	Centella longifolia	
Medium	Sensitive species 1038	
Medium	Felicia westae	
Medium	Osteospermum pterigoideum	
Medium	Acmadenia alternifolia	
Medium	Muraltia knysnaensis	
Medium	Erica glumiflora	
Medium	Acrolophia lunata	
Medium	Sensitive species 763	
Medium	Pterygodium cleistogamum	

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)	
Very High	Strategic Water Source Areas	

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

EIA Reference number: 16/3/3/6/7/1/D1/9/0093/22

Project name: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY

Project title: 315MM SUPPLY PIPELINE TO KURLAND & 200MM RISING MAIN TO WTW

Date screening report generated: 01/11/2022 15:33:54

Applicant: BITOU LOCAL MUNICIPALITY

Compiler: SES

Compiler signature:

Application Category: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water
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MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY
MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY
MAP OF RELATIVE DEFENCE THEME SENSITIVITY
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY
MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY
MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Proposed Project Location

Orientation map 1: General location



General Orientation: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY



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		506	0	33°55'47.45S	23°29'11.07E	Farm
2	LOT SOLWAY	240	0	33°56'38.43S	23°29'44.35E	Farm
3	BLACK DOG	587	0	33°55'59.41S	23°29'41.11E	Farm
4		585	0	33°55'42.01S	23°30'8.56E	Farm
5		288	0	33°56'48.06S	23°28'34.31E	Farm
6		584	0	33°55'7.82S	23°29'35.2E	Farm
7	BUFFELS RIVIER	462	0	33°56'35.24S	23°29'22.71E	Farm
8	LOT SOLWAY	240	0	33°56'32.96S	23°29'39.22E	Farm Portion
9	BUFFELS RIVIER	462	0	33°56'35.24S	23°29'22.71E	Farm Portion
10		506	5	33°56'18.41S	23°29'20.68E	Farm Portion
11		288	65	33°56'29.9S	23°29'21.42E	Farm Portion
12		506	1	33°55'55.17S	23°29'36.32E	Farm Portion
13		236	2	33°55'37.17S	23°29'45.72E	Farm Portion
14		236	0	33°54'59.29S	23°29'31.13E	Farm Portion
15		288	69	33°56'31.97S	23°29'17.72E	Farm Portion
16		288	0	33°56'58.37S	23°28'57.73E	Farm Portion
17		506	3	33°56'20.11S	23°29'20.87E	Farm Portion
18		585	0	33°55'40.67S	23°30'8.29E	Farm Portion
19		236	3	33°55'44S	23°29'47.5E	Farm Portion
20		236	0	33°55'0.76S	23°29'30.82E	Farm Portion
21		288	0	33°57'3.02S	23°29'3.34E	Farm Portion
22		506	0	33°55'48.26S	23°29'10.95E	Farm Portion
23		506	0	33°55'46.3S	23°29'11.03E	Farm Portion
24		584	0	33°54'57.66S	23°29'31.14E	Farm Portion
25	LOT SOLWAY	240	0	33°56'31.84S	23°29'39.83E	Farm Portion
26		288	67	33°56'32.84S	23°29'15.33E	Farm Portion
27		288	74	33°56'33.06S	23°29'21.47E	Farm Portion
28		288	65	33°56'31.77S	23°29'20.92E	Farm Portion

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Disclaimer applies 01/11/2022

29		585	0	33°55'38.48S	23°30'8.93E	Farm Portion
30		288	75	33°57'5.21S	23°28'47.76E	Farm Portion
31		506	2	33°56'11.51S	23°29'27.51E	Farm Portion
32		506	6	33°55'59.73S	23°29'35.6E	Farm Portion
33	BLACK DOG	587	0	33°55'59.41S	23°29'41.11E	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 nearby wind or solar developments found.

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: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water.

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.

Incenti	Implication
ve,	
restricti	
on or	
prohibi	
tion	
South	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA
African	D OR 2022 O2 Metadata ndf
Conserva	
tion	
Areas	

¹ "development footprint", means the area within the site on which the development will take place and incudes 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.

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY

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	High	Medium	Low
	sensitivity	sensitivity	sensitivity	sensitivity

Agriculture Theme		Х		
Animal Species Theme		Х		
Aquatic Biodiversity Theme	Х			
Archaeological and Cultural				Х
Heritage Theme				
Civil Aviation Theme			Х	
Defence Theme				Х
Paleontology Theme		Х		
Plant Species Theme			Х	
Terrestrial Biodiversity Theme	Х			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

Ν	Speci	Assessment Protocol
0	alist	
	asses	
	t	
1	Agricul tural Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Agriculture Assessment Protocols.pdf
2	Archae ologica I and Cultura I Heritag e Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
3	Palaeo ntology Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
4	Terrest rial Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	Aquati c Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Aquatic Biodiversity Assessment Protocols.pdf

6	Geotec hnical Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Socio- Econo mic Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
8	Plant Species Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_Plant_Species_Assessment_Protocols.pdf
9	Animal Species Assess ment	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
	Х		

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Small Holdings;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-
	High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-
	Moderate/08. Moderate
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;01. Very low/02. Very low/03.
	Low-Very low/04. Low-Very low/05. Low
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
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 <u>eiadatarequests@sanbi.org.za</u> 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
	Х		

Sensitivity	Feature(s)
High	Aves-Bradypterus sylvaticus
Medium	Amphibia-Afrixalus knysnae
Medium	Aves-Stephanoaetus coronatus
Medium	Insecta-Tsitana dicksoni
Medium	Mammalia-Chlorotalpa duthieae
Medium	Sensitive species 8
Medium	Invertebrate-Sarophorus punctatus
Medium	Invertebrate-Aneuryphymus montanus

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Very High	Strategic water source area
Very High	Freshwater ecosystem priority area quinary catchments

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Low Low sensitivi	ty

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		Х	

Sensitivity	Feature(s)
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	Х		

Sensitivity	Feature(s)	
High	Features with a High paleontological sensitivity	
Low	Features with a Low 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 <u>eiadatarequests@sanbi.org.za</u> 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
		Х	

Sensitivity	Feature(s)
Medium	Faurea macnaughtonii
Medium	Ocotea bullata
Medium	Ruschia duthiae
Medium	Indigofera hispida
Medium	Aspalathus bowieana
Medium	Amauropelta knysnaensis
Medium	Leucospermum glabrum
Medium	Mimetes pauciflorus
Medium	Mimetes splendidus
Medium	Selago rotundifolia
Medium	Psydrax capensis
Medium	Sensitive species 419
Medium	Erica onusta

Medium	Erica stylaris
Medium	Erica glandulosa subsp. fourcadei
Medium	Centella longifolia
Medium	Sensitive species 1038
Medium	Marsilea schelpeana
Medium	Felicia westae
Medium	Osteospermum pterigoideum
Medium	Sensitive species 1171
Medium	Sensitive species 53
Medium	Sensitive species 654
Medium	Acrolophia lunata
Medium	Sensitive species 763
Medium	Pterygodium cleistogamum

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 1
Very High	Ecological support area 1
Very High	Ecological support area 2
Very High	FEPA Subcatchments

Very High	Protected Areas Expansion Strategy
Very High	Protected Areas Expansion Strategy: Sanparks
Very High	Strategic Water Source Areas

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

EIA Reference number: 16/3/3/6/7/1/D1/9/0093/22

Project name: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY

Project title: PROPOSED 200MM SUPPLY PIPELINE TO KURLAND HOUSING

Date screening report generated: 11/11/2022 12:23:06

Applicant: BITOU LM

Compiler: SES

Compiler signature:

Application Category: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water

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Proposed Project Location

Orientation map 1: General location



General Orientation: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY

Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

N 1 -	F N		D			
NO	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	KURLAND	935	0	33°57'13.32S	23°29'15.32E	Erven
2	KURLAND	939	0	33°57'15.7S	23°29'17.12E	Erven
3	KURLAND	940	0	33°57'29.34S	23°29'37.33E	Erven
4	KURLAND	536	0	33°57'15.67S	23°29'27.2E	Erven
5	KURLAND	936	0	33°57'13.64S	23°29'16.76E	Erven
6	KURLAND	58	0	33°57'13.83S	23°29'16.36E	Erven
7	KURLAND	937	0	33°57'13.57S	23°29'17.54E	Erven
8	KURLAND	938	0	33°57'13.57S	23°29'18.29E	Erven
9	KURLAND	562	0	33°57'29.58S	23°29'37.35E	Erven
10	LOT SOLWAY	240	0	33°56'38.43S	23°29'44.35E	Farm
11		288	0	33°56'48.06S	23°28'34.31E	Farm
12		302	0	33°57'49.02S	23°28'54.27E	Farm
13		288	0	33°56'58.37S	23°28'57.73E	Farm Portion
14	LOT SOLWAY	240	0	33°56'31.84S	23°29'39.83E	Farm Portion
15	LOT SOLWAY	240	0	33°56'32.96S	23°29'39.22E	Farm Portion
16		288	0	33°57'3.02S	23°29'3.34E	Farm Portion
17		302	16	33°57'18.75S	23°29'15.46E	Farm Portion
18		302	17	33°57'16.84S	23°29'11.9E	Farm Portion
19	KURLAND	36	0	33°57'9.12S	23°29'23.14E	Public Place
20	KURLAND	57	0	33°57'13.54S	23°29'20.18E	Public Place

Development footprint¹ vertices:

11/11/2022

¹ "development footprint", means the area within the site on which the development will take place and incudes 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. Page 4 of 17 <u>Disclaimer applies</u>

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 nearby wind or solar developments found.

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: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water.

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.

Incenti ve, restricti on or prohibi	Implication
tion	
South African Conserva tion Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA D OR 2022 Q2 Metadata.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY

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	High	Medium	Low
	sensitivity	sensitivity	sensitivity	sensitivity

Agriculture Theme		Х		
Animal Species Theme			Х	
Aquatic Biodiversity Theme	Х			
Archaeological and Cultural				Х
Heritage Theme				
Civil Aviation Theme			Х	
Defence Theme				Х
Paleontology Theme				Х
Plant Species Theme			Х	
Terrestrial Biodiversity Theme	Х			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

Ν	Speci	Assessment Protocol
0	alist	
	asses	
	smen	
	t	
1	Agricul tural Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Agriculture Assessment Protocols.pdf
2	Archae ologica I and Cultura I Heritag e Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
3	Palaeo ntology Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General_Requirement_Assessment_Protocols.pdf
4	Terrest rial Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	Aquati c Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Aquatic Biodiversity Assessment Protocols.pdf

6	Geotec hnical Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Socio- Econo mic Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
8	Plant Species Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_Plant_Species_Assessment_Protocols.pdf
9	Animal Species Assess ment	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	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;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 <u>eiadatarequests@sanbi.org.za</u> 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
		х	

Sensitivity	Feature(s)
Medium	Amphibia-Afrixalus knysnae
Medium	Aves-Turnix hottentottus
Medium	Insecta-Tsitana dicksoni
Medium	Mammalia-Chlorotalpa duthieae
Medium	Sensitive species 8
Medium	Invertebrate-Sarophorus punctatus
Medium	Invertebrate-Aneuryphymus montanus



MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Very High	Strategic water source area
Very High	Strategic water source

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low sensitivity

Burnes Burnes

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		Х	

Sensitivity	Feature(s)
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Features with a Low 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 <u>eiadatarequests@sanbi.org.za</u> 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
		х	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Faurea macnaughtonii
Medium	Ocotea bullata
Medium	Ruschia duthiae
Medium	Indigofera hispida
Medium	Aspalathus bowieana
Medium	Amauropelta knysnaensis
Medium	Leucospermum glabrum
Medium	Mimetes pauciflorus
Medium	Selago rotundifolia
Medium	Psydrax capensis
Medium	Sensitive species 419
Medium	Erica onusta

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Medium	Erica stylaris
Medium	Erica glandulosa subsp. fourcadei
Medium	Centella longifolia
Medium	Sensitive species 1038
Medium	Marsilea schelpeana
Medium	Felicia westae
Medium	Osteospermum pterigoideum
Medium	Sensitive species 53
Medium	Sensitive species 654
Medium	Acrolophia lunata
Medium	Sensitive species 763
Medium	Pterygodium cleistogamum

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity	Feature(s)
Very High	Ecological support area 1
Very High	Ecological support area 2
Very High	Protected Areas Expansion Strategy: Sanparks
Very High	Strategic Water Source Areas

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

EIA Reference number: 16/3/3/6/7/1/D1/9/0093/22

Project name: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY.

Project title: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY.

.....

Date screening report generated: 01/11/2022 10:01:07

Applicant: BITOU LOCAL MUNICIPALITY

Compiler: SES

Compiler signature:

Application Category: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water

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MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY
Proposed Project Location

Orientation map 1: General location



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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	KURLAND	369	0	33°56'52.24S	23°29'26.29E	Erven
2	KURLAND	3	0	33°56'52.19S	23°29'29.83E	Erven
3	KURLAND	364	0	33°56'52.28S	23°29'22.15E	Erven
4	KURLAND	366	0	33°56'52.26S	23°29'23.04E	Erven
5	KURLAND	371	0	33°56'52.07S	23°29'26.96E	Erven
6	KURLAND	20	0	33°56'54.43S	23°29'33.84E	Erven
7	KURLAND	362	0	33°56'52.3S	23°29'21.25E	Erven
8	KURLAND	367	0	33°56'52.24S	23°29'23.49E	Erven
9	KURLAND	372	0	33°56'52.05S	23°29'27.57E	Erven
10	KURLAND	117	0	33°56'52.07S	23°29'29.79E	Erven
11	KURLAND	363	0	33°56'52.3S	23°29'21.7E	Erven
12	KURLAND	365	0	33°56'52.27S	23°29'22.59E	Erven
13	KURLAND	375	0	33°56'52.02S	23°29'28.36E	Erven
14	KURLAND	368	0	33°56'52.23S	23°29'23.94E	Erven
15	LOT SOLWAY	240	0	33°56'38.43S	23°29'44.35E	Farm
16		288	0	33°56'48.06S	23°28'34.31E	Farm
17	LOT SOLWAY	240	0	33°56'31.84S	23°29'39.83E	Farm Portion
18		288	0	33°57'3.02S	23°29'3.34E	Farm Portion
19		288	0	33°56'58.37S	23°28'57.73E	Farm Portion
20	LOT SOLWAY	240	0	33°56'32.96S	23°29'39.22E	Farm Portion
21	KURLAND	2	0	33°56'52.23S	23°29'25.1E	Public Place

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 nearby wind or solar developments found.

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: Utilities Infrastructure | Pipelines | Water | Fresh_Storm Water.

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.

Incenti	Implication
ve.	
restricti	
on or	
prohibi	
tion	
South	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACA
African	D_OR_2022_Q2_Metadata.pdf
Conserva	
tion	
Areas	

¹ "development footprint", means the area within the site on which the development will take place and incudes 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.

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Project Location: PROPOSED UPGRADES TO THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY.

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	High	Medium	Low
	sensitivity	sensitivity	sensitivity	sensitivity

Agriculture Theme		Х		
Animal Species Theme			Х	
Aquatic Biodiversity Theme	Х			
Archaeological and Cultural				Х
Heritage Theme				
Civil Aviation Theme			Х	
Defence Theme				Х
Paleontology Theme				Х
Plant Species Theme			Х	
Terrestrial Biodiversity Theme	Х			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, 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.

N o	Speci alist asses smen	Assessment Protocol
	t	
1	Agricul tural Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Agriculture Assessment Protocols.pdf
2	Archae ologica I and Cultura I Heritag e Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
3	Palaeo ntology Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
4	Terrest rial Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	Aquati c Biodive rsity Impact Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted Aquatic Biodiversity Assessment Protocols.pdf

6	Geotec hnical Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Socio- Econo mic Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted General Requirement Assessment Protocols.pdf
8	Plant Species Assess ment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/ Gazetted_Plant_Species_Assessment_Protocols.pdf
9	Animal Species Assess ment	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
	Х		

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate- High



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 <u>eiadatarequests@sanbi.org.za</u> 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
		Х	

Sensitivity	Feature(s)			
Medium	Amphibia-Afrixalus knysnae			
Medium	Insecta-Tsitana dicksoni			
Medium	Mammalia-Chlorotalpa duthieae			
Medium	Sensitive species 8			
Medium	Invertebrate-Sarophorus punctatus			
Medium	Invertebrate-Aneuryphymus montanus			



MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)	
Very High	Strategic water source area	
Very High	Freshwater ecosystem priority area quinary catchments	

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)	
Low	Low sensitivity	



MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		Х	

Sensitivity	Feature(s)
Medium	Between 8 and 15 km of other civil aviation aerodrome



MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Low Sensitivity



MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			Х

Sensitivity	Feature(s)
Low	Features with a Low 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 <u>eiadatarequests@sanbi.org.za</u> 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
		Х	

Sensitivity	Feature(s)	
Low	Low Sensitivity	
Medium	Ruschia duthiae	
Medium	Indigofera hispida	
Medium	Aspalathus bowieana	
Medium	Leucospermum glabrum	
Medium	Mimetes pauciflorus	
Medium	Selago rotundifolia	
Medium	Sensitive species 419	
Medium	Erica stylaris	
Medium	Erica glandulosa subsp. fourcadei	
Medium	Centella longifolia	
Medium	Marsilea schelpeana	
Medium	Felicia westae	

Medium	Osteospermum pterigoideum
Medium	Sensitive species 53
Medium	Sensitive species 654
Medium	Acrolophia lunata
Medium	Pterygodium cleistogamum

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Х			

Sensitivity	Feature(s)
Very High	Ecological support area 1
Very High	FEPA Subcatchments
Very High	Protected Areas Expansion Strategy: Sanparks
Very High	Strategic Water Source Areas

APPENDIX G - LEGISLATIVE COMPLIANCE

LEGAL FRAMEWORK

The NEMA, Act No 107 of 1998, as Amended, and the EIA Regulations (2014) (as amended 2017)

The National Environmental Management Act, 1998 (Act No. 107 of 1998) as per EIA Regulations, 2014 (as amended 2017), gives effect to the Constitution of the Republic of South Africa by providing a framework for co-operative environmental governance and environmental principles that enable and facilitate decision-making on matters affecting the environment. NEMA requires that an environmental authorisation be issued by a competent authority (CA) before the commencement of an activity listed in the Environmental Impact Assessment Regulations, 2014 (as amended 2017), in terms of the Listing Notices G.N. 324, 325, 326 & 327 published on the 7th April 2017.

Due to the fact that this development proposal consists of activities listed in the EIA Regulations, Listing Notice 1 and 3, a Basic Assessment Process was required and the respective reports (Basic Assessment Report and Appendices) were submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) Region 3, for Environmental Authorization.

The following table indicates the relevant triggered activities as per the development proposal:

Table 6: Listed /	Activities in	terms of	the NEMA	Environmental	Impact	Assessment	Regulations	(2014),	as amended,
that are propos	ed to be trig	gered a	ind therefo	ore require an E	nvironm	ental Authori	sation.		

Activity #	Listing Notice 1. Description of Activity as per GN No. R 327
	[The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more;
	where such development occurs—
	 (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —
12	excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; [or] (ee) where such development occurs within existing roads, [or] road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving—

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.

	 (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan:
	 (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the
	port or harbour; or 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
Activity #	Listing Notice 3. Description of Activity as per GN No. R 324
	The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres.
2	 i. Western Cape i. A protected area identified in terms of NEMPAA, excluding conservancies; ii. In areas containing indigenous vegetation; or iii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for expressivitien use in Spatial Development Frameworks adapted by the
	competent authority, or zoned for a conservation purpose. This listed activity may be triggered, due to areas containing indigenous vegetation.
12	The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more.
	 i.Western Cape i. Inside a protected area identified in terms of NEMPAA; ii.Outside urban areas;
	 (aa) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; or (bb)Within 5km from national parks, world heritage sites, areas identified in terms of NEMPAA or from the core area of a biosphere reserve; -
	excluding the conversion of existing buildings where the development footprint will not be increased.
12	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 purposes undertaken in accordance with a maintenance management plan.
	 Western Cape (vi) 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; (vii) Within critical biodiversity areas identified in bioregional plans;
	 (viii) 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; (ix) 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
	(x) 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.
	The proposed activity is applicable, as the proposed pipelines will occur within areas indicated as CBA's.
14	The development of—
	(ii) infrastructure or structures with a physical footprint of 10 square metres or more;
	where such development occurs— (a) within a watercourse;

N/A	N/A
Activity #	Listing Notice 2. (GN No. R325): Scoping & Environmental Impact Reporting
	 (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. i. Western Cape Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas listed in terms of an international convention; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Core areas in biosphere reserves; or (hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.

Therefore, in summary, the following activities will be applied for:

- Listing Notice 1: Activity No: 12 and 19;
- Listing Notice 2: None; and
- Listing Notice 3: Activity No: 2, 12 and 14

Other Applicable Legislation

The *Bitou Local Municipality* is responsible for ensuring that all contractors, labourers and any other appointed person/entity acting on their behalf, remain compliant with the conditions of the received authorisations, as well as the provisions of all other applicable legislation, including *inter alia*:

- National Environmental Management Act (NEMA) (Act No 107 of 1998, as amended);
- National Environmental Management Biodiversity Act (Act 10 of 2004);
- National Environmental Management: Waste Act (Act 59 of 2008);
- National Water Act (Act 36 of 1998)
 - The National Water Act (Act 36 of 1998) provides the framework for the sustainable management of South Africa's water resources. It aims to protect, use, develop, conserve, manage and control water resources as a whole, promoting integrated water resource management that involves participation of all stakeholders. The Act declares the national government to be the public trustee of the nation's water. The Act is administered by the national Department of Water Affairs (DWA) via regional offices.

The proposed development activities <u>will trigger a General Authorization</u>, which will be required in terms of Section 21 (e) of the National Water Act (Act 36 of 1998).

- National Forest Act (Act No 84 of 1998);
- National Heritage Resources Act (Act No 25 of 1999);
- Occupational Health and Safety Act (Act 85 of 1993);
- National Veld and Forest Fire Act (Act No. 101 of 1998).

The above listed legislation has general applicability to most development applications, and it is the Bitou Local Municipality to ensure that all contractors and employees are aware of their obligations in terms of these Acts. This EMPr does not detract from any other legal requirements. **APPENDIX H - 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 preconstruction, 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
 - o Identified environmental risks
 - Mitigation measures to be implemented
 - o 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 <u>monthly</u> 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 **weekly** 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.
- Once a year, for the following 3 years 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 DEA&DP).

- 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 I - PROTOCOL FOR CHANCE FOSSIL FINDS

PROTOCOL FOR CHANCE FOSSIL FINDS

Province & region:	George, Western Cape				
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 / sand bags if necessary.				
2. Record key data while fos	sil remains are still in situ:				
Accurate geographic la image / aerial photo	ocation – describe and mark on site map / 1: 50 000 map / satellite				
Context – describe posi-	tion of fossils within stratigraphy (rock layering), depth below surface				
 Photograph fossil(s) in site (e.g. rock layering) 	u with scale, from different angles, including images showing context				
3. If feasible to leave fossils in	3. If not feasible to leave fossils in situ (emergency procedure only):				
 Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume 	 Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock) Photograph fossils against a plain, level background, with scale Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation 				
4. If required by Heritage Respanse palaeontologist is appointed	ources Agency, ensure that a suitably-qualified specialist as soon as possible by the developer.				

APPENDIX J: EMPR REVIEW AND AMENDMENT REGISTER

EMPR REVIEW AND AMENDMENT REGISTER

Review Date	Description of Review and/or Amendment	Signature
		1

APPENDIX K - ALIEN INVASIVE MANAGEMENT PROGRAMME

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. A general rule of thumb is to first target lightly infested areas before tackling densely invaded areas and prioritize sensitive areas such as riverbanks and wetlands. 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. A list of species is included in the table below:.

SCIENTIFIC NAME	COMMON NAME	STATUS	COMMENT/PRESENCE
Acacia cyclops	Rooikrans	1b	Present, scattered
Acacia mearnsii	Black Wattle	1b	Present, common
Acacia melanoxylon	Blackwood	1b	Present, common
Acacia saligna	Port Jackson Willow	1b	Present, common
Eucalyptus sp.	Gum tree	1b	Present, common
Hakea sericea	Silky hakea	1b	Present, scattered
Pinus sp.	Pine tree	1b	Present, common
Solanum mauritianum	Bugweed	1b	Present, scattered

Alien and Invasive Species Present on Site

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 as per Appendix M Rehabilitation Programme.
- 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
- No vehicles should be allowed to drive through designated sensitive watercourse areas during the eradication of alien and weed species.
- 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 L: GENERAL SEARCH AND RESCUE PROGRAMME

SEARCH AND RESCUE PROGRAMME

The Search and Rescue Programme must be undertaken by an appropriately qualified specialist (e.g. botanist). The appointed specialist, in consultation with the ECO, must develop a detailed search and rescue plan during the design phase of the proposed development. This plan must be implemented prior to the commencement of any pre-construction clearance and site establishment activities.

This Section of the EMPr provides guidance for the Search and Rescue Plan which is to be compiled by the appointed specialist for search and rescue, in consultation with the ECO. On completion of the Search and Rescue Plan, it must be appended to this EMPr.

1. Objective of Search and Rescue

The overall objective of Search and Rescue programmes is to identify, remove, and where possible, rescue or relocate indigenous flora species of concern (threatened, protected or conservation worthy) to mitigate the development's impact on terrestrial biodiversity.

2. Compilation of the Search and Rescue Plan

A suitably qualified specialist is to be appointed to compile the Search and Rescue Plan based on the viability of indigenous, salvageable, good quality vegetation at the time of rescue. The specialist must ensure that the Search and Rescue Plan include the following as a minimum:

- Details on the salvageable plant material, including the species names and approximate quantities that can be salvaged,
- Detailed methodology for safe removal, transportation, and delivery of each species, if applicable.
- Confirm the location of the temporary storage of transplanted material, to be maintained, until the re-establishment on site.
- Details of maintenance activities.
- The stripping and stockpiling of topsoil containing indigenous seed banks should form part of the Search and Rescue operations and should lay the groundwork for rehabilitation activities as provided in the Rehabilitation Programme (Appendix M of this EMPr).
 - Topsoil and seed salvaging must be avoided from previously heavy alien infested areas.
 - Seed-bearing plant material can also be collected for placement on previously disturbed areas to be rehabilitated.
- Where necessary, the specialist must compile permit applications in terms of Section 62 and 71 of the Nature Conservation Ordinance (19 of 1974, as amended 2000), for the search and rescue (removal) of endangered or protected plant species listed in Schedules 3 or 4, and issue these applications to CapeNature for approval, prior to the implementation of the Search and Rescue Plan.
- This plan must be issued to DEA&DP for approval and once approved, it must be appended to this EMPr for implementation on site.

3. Implementation of Search and Rescue

No clearance of vegetation may occur until the Search and Rescue Plan, as approved by DEA&DP and appended to this EMPr, is implemented and removal activities have concluded, for the relevant construction phase. Areas which have not been searched and rescued (as confirmed by the specialist/ECO), must be considered temporary no-go areas, until this activity is completed. Prior to the commencement of any land-clearing or construction activities, the following steps must be taken by the appointed specialist (as a bare minimum):

• The area to be cleared of vegetation is to be surveyed prior to search and rescue (by the ECO and Specialist), this is to confirm the quantity and type of vegetation to be removed and record this

information (for the intended phase). This must take into account all areas intended to be utilized at that point in time (ie: for permanent structures, hardened surfaces, and temporary site camp, etc.)

- Prior to the implementation of the Search and Rescue Plan for the specific phase, the specialist must identify whether any of the indigenous plant species identified to be salvaged are listed as endangered or protected species in Schedule 3 or Schedule 4 of the Nature Conservation Ordinance (19 of 1974, as amended 2000).
- Transplant rescued plant material into temporary storage area and maintain until re-establishment is necessary.
- The appointed specialist is to confirm that conditions are ideal for removal of plant material (ie. soil is moist, etc.) and inform the contractor of when this activity will be undertaken.
- If the appointed specialist intends to utilize the contractors labour to remove the plant material, the specialist is to ensure that they are made aware of what vegetation is intended to be removed, and what the recommended and correct methodology is to be followed for removal.
- The appointed specialist is to conduct the search and rescue and monitor the labour during implementation.
- <u>Written confirmation from the Specialist/ECO must be issued to the Contractor and construction team</u> (ie. engineers and applicant), notifying them that all search and rescue for the intended phase has been fulfilled. Therefore, the Contractor may proceed with demarcation and construction activities.

APPENDIX M - REHABILITATION PROGRAMME
REHABILITATION PROGRAMME

The following Rehabilitation Programme was compiled and recommended by the terrestrial biodiversity specialist, Jamie Pote (Pr. Sci. Nat.).

1. 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.

2. 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 contract 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.

3. 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.

Botanical name	Common name	Approx seed mixture /Ha
Cynodon dactylon	Kweek	12 kg/ Ha
Eragrostis curvula	Weeping Love Grass	6 kg/ Ha
Eragrostis tef	Teff	2 kg/ Ha
Digitaria eriantha	Smuts Grass	4 kg/ Ha
Other indigenous veld grasses can be added to the seed mix		± 4 kg/Ha

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

- Ameliorate the aesthetic impact of the site
- 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.

4. 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

5. 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 BOOKLET



GEORGE

TEL: +27 (0) 44 873 4923 FAX:+27 (0) 44 874 5953 EMAIL: info@sescc.net WEBSITE: www.sescc.net ADDRESS: 102 Merriman Street, George, 6530 PO BOX: 9087, George, 6530

CAPE TOWN

TEL: +27 (0) 21 554 5195 EMAIL: lauren@sescc.net ADDRESS: Unit 71, Eden on the Bay, 5 Beach Estate Boulevard Blouberg, Big Bay, 7441 PO BOX: 443, Milnerton, 7435

ENVIRONMENTAL AWARENESS TRAINING BOOKLET



Environmental Impact Assessments
Basic Assessments
Environmental Management Planning

Environmental Monitor's Forward

SES is here to ensure that everyone complies with the conditions of "Duty to Care". If these conditions are not complied with the project can be stopped and fines can be issued.

We hope that with your co-operation the project won't be stopped and fines won't be issued, and a successful project can be finished on time.

Notes:

- Workers working on this project must undergo environmental training.
- The information contained in this document should be used during day-to-day activities.



Environmental Impact Assessments
Basic Assessments
Environmental Management Planning

HOW IS THIS PROJECT IMPLEMENTING ENVIRONMENTAL MANAGEMENT?

This project is implementing Environmental Management on an ongoing basis throughout the duration of the project. The following aspects would be implemented to achieve the above stated:

- A dedicated Environmental Manager or Environmental Control Officer appointment to the project to implement and monitor Environmental Management.
- Regular environmental inspection on the site.
- Regular environmental training for workers
- Environmental audits on a regular basis.

WASTE TREATMENT

Refuse:

- Refuse waste includes: waste food, food containers, packaging materials, cans, bottles, newspapers and magazines.
- Day to day household waste should always be disposed of in the containers provided on site by the company.
- No dumping of waste anywhere other than in the bins provided.
- No burning of refuse.
- If there are not enough refuse containers on site, the ECO or supervisor needs to be informed.

Construction Waste:

- Construction waste includes: concrete, steel, cement, rock, pre-coated chips, wood, plastic, empty bags and rubble.
- Construction waste must be discarded in skips located in strategic areas for removal.
- Construction waste must not be discarded in holes or burned on site.



Environmental Impact Assessments
Basic Assessments
Environmental Management Planning

Environmental Control & Monitoring • Water Use License Applications • Aquatic Assessments

- Small amounts of construction waste should be collected and not discarded into vegetation or down fill slopes.
- Material should only be spoiled if a rehabilitation plan has been designed for the area.

Liquid waste:

- Liquid waste includes: concrete, paint, thinners, diesel, hydraulic fluids, cooking oil, chemicals, other fuel and sewage.
- Use facilities provided for waste.
- The liquid waste should be recycled as far as possible.
- Use chemical toilets and ablution facilities.

INFORM THE ENVIRONMENTAL CONTROL OFFICER (ECO) IMMEDIATELY OF ANY IMMEDIATE OR POTENTIAL ENVIRONMENTAL INCIDENT.



Environmental Impact Assessments
Basic Assessments
Environmental Management Planning

SPECIFIC ENVIRONMENTAL ISSUES

SPESIFIEKE OMGEWINGSKWESSIES IMIBA ETHILE YEZOBUME BEMEKO YENDALO

The basic Do's and Don'ts towards environmental awareness are as follows:

Die basiese Moets en Moenies van omgewingsbesinning is as volg:

Oondoqo bo mawukwenze no mawungakwenzi kwilinge lezobume be meko yendalo bume ngoluhlobo:

ToiletFacilities:ToiletFasiliteite:IzindluZangasese:

DO:

USE THE TOILET FACILITIES PROVIDED - REPORT FULL FACILITIES MOET: GEBRUIK MAAK VAN TOILET FASILITEITE WAT VOORSIEN WORD - RAPPORTEER AS FASILITEITE VOL IS OMAWUKWENZE: SEBENZISA IZINDLU ZANGASESE EZIBONELELWEYO-NIKA INGXELO NGAMALUNGISELELO AGCWELEYO.

DO NOT: USE THE BUSH *MOENIE: DIE BOS GEBRUIK NIE* OMAWUNGAKWENZI: UKUSEBENZISA ITYHOLO.



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Vehicles operation and maintenance: Voertuig werking en onderhoud: Ulawulo nophatho lezithuthi:

DO:

ENSURE THAT VEHICLES AND MACHINERY DO NOT LEAK FUEL OR OILS. REFUELLING, MAINTENANCE, SERVICING OR WASHING MUST BE DONE WITHIN THE DESIGNATED AREA IN THE CONSTRUCTION CAMP AREA ONLY.

MOET:

VERSEKER DAT VOERTUIE EN MASJINERIE NIE OLIES OF BRANDSTOF LEK NIE. VOLMAAK, ONDERHOUD, DIENS OF SKOONMAAK VAN VOERTUIE MOET SLEGS IN AANGEWYSTE AREAS IN DIE KONSTRUKSIE KAMP GESKIED.

OMAWUKWENZE: QINISEKISA IZITHUTHI NOMATSHINI ABAVUZI MAFUTHA OKANYE OYILE. UKUGALELA, UKUPHATHA, UKUHLAMBA KUFUNEKA UKULUNGISA OKANYE **KWENZIWE** OTYUNJIWEYO KWINKAMPI YOLWAKHIWO KUMMANDLA KUPHELA NGOKUKHAWULEZILEYO.

DO:

REPORT ALL FUEL OR OIL SPILLS IMMEDIATELY & STOP THE SPILL CONTINUING.

MOET:

RAPPORTEER ENIGE BRANDSTOF OF OLIE STORTE & VERHOED DAT DIE STORT AANHOU.

OMAWUKWENZE: NIKA INGXELO NGE OLI NAMAFUTHA ACHITHEKILEYO, UZE UNQANDE UCHITHEKO LUNGAQHUBEKI.

DO:

PREVENT CONTAMINATION OR POLLUTION OF STREAMS AND WATER CHANNELS.

MOET:

VERHOED DIE KONTAMINASIE EN BESOEDELING VAN STROME & WATERKANALE.

OMAWUKWENZE : NQANDA USULELEKO OKANYE UNGCOLISEKO LWEMILAMBO NEMISELE YAMANZI.



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DO NOT: ALLOW WASTE, LITTER, OILS OR FOREIGN MATERIALS INTO THE STREAM **MOENIE:**

TOELAAT DAT AFVALPRODUKTE, GEMORS, OLIES OF VREEMDE MATERIALE IN STROME BELAND NIE.

OMAWUNGAKWENZI: MUSA UKUVUMELA INCITHO, ULAHLO, IOYILE OKANYE EZINYE IZINTO EMILANJENI.











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Fire Control: *Vuur Beheer:* Ulawulo Lemililo:

DO:

DISPOSE OF CIGARETTES AND MATCHES CAREFULLY. (Littering is an offence.)

MOET:

GOOI SIGARETTE & VUURHOUTJIES OP GEPASTE MANIER WEG WEG (rommelstrooi is 'n oortreding)

OMAWUKWENZE: LAHLA ISIGARETE NOOMATSHISI NGONONOPHELO (ukulahla lityala).

DO:

ENSURE A WORKING FIRE EXTINGUISHER IS IMMEDIATELY AT HAND IF ANY "HOT WORK" IS UNDERTAKEN e.g. welding, grinding, gas cutting etc.

MOET:

VERSEKER DAT 'N WERKENDE BRANDBLUSSER BYDERHAND IS INDIEN "WARM WERK" GEDOEN WORD bv. Sweiswerk.

OMAWUKWENZE: QINISEKISA ISICIMA-MLILO ESISEBENZAYO SISESANDLENI UKUBA KUKHO UMSEBENZI "OTSHISAYO" OWENZIWAYO, umz. ukuwelda, ugubo, ukuqhawula ugesi, nji.

DO NOT:

MAKE ANY FIRES **MOENIE:** ENIGE VURE MAAK OF ENIGEIETS VERBRAND NIE **OMAWUNGAKWENZI:** UKWENZA IMILILO OKANYE UTSHISE NOKUBA YINTONI.



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Fencing and Restricted Areas: *Omheining en Beperkte Areas:* Ubiyelo Nemimanndla Engavumelekanga:

DO:

CONFINE WORK AND STORAGE OF EQUIPMENT TO WITHIN THE IMMEDIATE WORK AREA.

MOET:

BEPERK ALLE WERK EN STOOR VAN GEREEDSKAP TOT IN DIE GEGEWE WERKAREA.

OMAWUKWENZE:GCINA UMSEBENZI NEZIXHOBO ZOKUSEBENZA NGAKUMMANDLA OKUSETYENZELWA KUWO.

DO NOT:

ENTER ANY FENCED OFF OR MARKED AREA. SUCH AREAS HAVE BEEN MARKED WITH "NO-GO AREA" SIGNS AND SHOULD BE ADHERED TO.

MOENIE:

ENIGE OMHEINDE OF GEMERKTE AREAS BINNEGAAN NIE. SULKE AREAS IS MET "NO-GO AREA" TEKENS GEMERK EN MOET GEHOORSAAM WORD.

OMAWUNGAKWENZI: MUSA UKUNGENA KWI NDAWO EBIYIWEYO OKANYE EPHAWULWEYO. IMIMANDLA ENJALO IPHAWULWE NGAMAGAMA ATHI **'NO-GO AREA** "









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Safety: *Veiligheid:* Ukhuseleko:

DO:

USE ALL SAFETY EQUIPMENT AND COMPLY WITH ALL SAFETY PROCEDURES.

MOET:

GEBRUIK ALLE VEILIGHEIDSGEREEDSKAP EN VOLDOEN AAN ALLE VEILIGHEIDS PROSEDURES.

OMAWUKWENZE: SEBENZISA ZONKE IZIXHOBO ZOKHUSELEKO, UZE UTHOBELE YONKE IMIGAQO YOKHUSELO.



Driving and Dust: Bestuur en Stof: Uqhubo Nothuli:

DO:

DRIVE ON DESIGNATED ROUTES ONLY. **MOET:** NET OP AANGEWYSTE ROETES BESTUUR. **OMAWUKWENZE:** QHUBA KWIMIMANDLA EPHAWULWEYO KUPHELA.

DO NOT:

SPEED OR DRIVE RECKLESSLY **MOENIE:** JAAG OF ROEKELOOS BESTUUR NIE. **OMAWUNGAKWENZI:** SUKUQHUBA NGESANTYA ESIPHEZULU OKANYE NGOKUNGAKHATHALI.

DO NOT:

ALLOW CEMENT TO BLOW AROUND. **MOENIE;** TOELAAT DAT SEMENT WEGWAAI NIE. **OMAWUNGAKWENZI:** MUSUKUVUMELA ISAMENTE ISASAZWE.

DO NOT: CAUSE EXCESSIVE DUST MOENIE: OORDREWE STOF VEROORSAAK NIE.



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ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) PROPOSED UPGRADE TO THE KURLAND BULK WATER INFRASTRUCTURE, BITOU LOCAL MUNICIPALITY, WESTERN CAPE.



SERVICE

Vegetation protection: *Plantegroei Beskerming:* Ukhuselo Lwezityalo:

DO NOT:

DAMAGE OR REMOVE ANY VEGETATION WITHOUT DIRECT INSTRUCTION.

MOENIE:

ENIGE PLANTEGROEI SONDER DIREKTE INSTRUKSIE BESKADIG OF VERWYDER NIE.

OMAWUNGAKWENZI: MUSA UKUTSHABALALISA OKANYE USUSE NASIPHINA ISITYALO NGAPHANDLE KOMYALELO.





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Animals: *Diere:* Izilwanyana:

DO NOT:

INJURE, CAPTURE/SNARE, FEED OR CHASE ANIMALS – this includes birds, frogs, snakes, lizards, tortoises, etc.

MOENIE:

ENIGE DIERE BESEER, VANG, VOER OF JAAG NIE – dit sluit in: voëls, paddas, slange akkedisse, skilpaaie ens.

OMAWUNGAKWENZI: MUSA UKWENZAKALISA, UKUBAMBA, UKONDLA OKANYE UKULEQA IZILWANYANA- okuquka iintaka, amasele, iinyoka, amacilikishe, izikolopati.

DO:

REPORT ANY INJURY OF AN ANIMAL. MOET: DIE BESERING VAN 'N DIER RAPPORTEER. OMAWUKWENZE: XELA NASIPHI ISENZAKALO SESILWANYANA.



Preventing Pollution: Voorkoming van Besoedeling: Ukhuselo Longcoliseko:

DO:

CLEAR YOUR WORK AREAS OF LITTER AND BUILDING RUBBLE AT THE END OF EACH DAY – use the waste bins provided and ensure that litter will not blow away.

MOET:

RUIM NA ELKE DAG DIE WERK AREA OP EN GOOI ENIGE ROMMEL WEG IN DIE GEGEWE HOUERS – maak seker dat rommel nie kan wegwaai nie.

OMAWUKWENZE: COCA INDAWO OSEBENZA KUYO, IZINTO EZILAHLIWEYO NENKUNKUMA YOKWAKHA QHO EKUPHELENI KWEMINI-sebenzisa imigqomo yenkunkuma uze uqiniseke ukuba inkunkuma ayivuthuzwa ngumoya.

DO NOT:

ALLOW WASTE BINS TO OVERFLOW OR WASTE TO BLOW AROUND.

MOENIE:

TOELAAT DAT ROMMELHOUERS OORVLOEI OF DAT ROMMEL ROND WAAI NIE.

OMAWUNGAKWENZI: MUSA UKUVUMELA IMIGQOMO YENKUNKUMA IGCWALE KAKHULU OKANYE INKUNKUMA ISASAZEKE.

DO NOT:

LITTER OR LEAVE FOOD LAYING AROUND *MOENIE:*

ROMMEL OF KOS LAAT RONDLÊ NIE.

OMAWUNGAKWENZI: MUSA UKUNGCOLISA OKANYE USHIYE UKUTYA KULELE INDAWO YONKE.

DO NOT:

BURY ANY LITTER OR WASTE IN THE GROUND. **MOENIE:** ENIGE ROMMEL OF GEMORS IN DIE GROND BEGRAWE NIE. **OMAWUNGAKWENZI:** MUSA UKUNGCWABA INKUNKUMA EMHLABENI.



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