



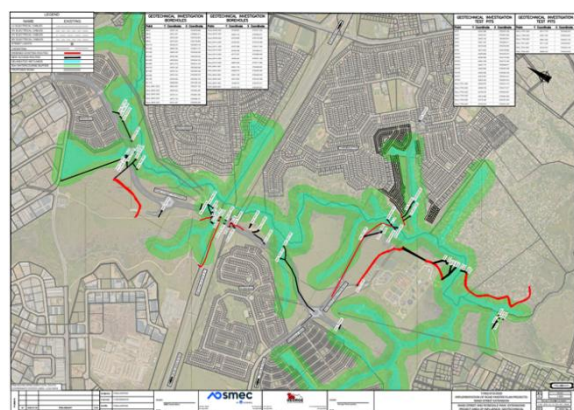
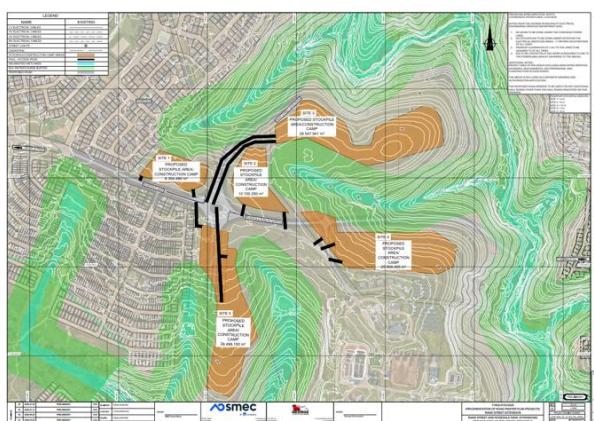
HilLand Environmental

Environmental Assessment Practitioners

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998, as amended) and the Environmental Impact Assessment Regulations 2014 (as amended)

GEORGE MUNICIPAL STOCKPILE SITES/CONSTRUCTION CAMP SITES AND GEOTECHNICAL PHASE 2 ASSESSMENT FOR RAND STREET AND ROSEDALE MAIN EXTENSION



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Submitted for:

Public review and comment – submission with Draft BAR

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Annexure C	Environmental Induction Sheet and Register
Annexure D	Engineering method statements for implementation Method Statement Form
Annexure E	Register of Rescued Indigenous Vegetation
Annexure F	Protected Plant Species Lists
Annexure G	HWC chance find procedures
Annexure H	CV of EAPs

National Environmental Management Act

An EMPr must comply with Section 24N of NEMA and the Environmental Impact Assessment Regulations 2014 (GN 982 Appendix 4) which requires that it must include the following:

REQUIREMENTS	REPORT SECTION
(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;	Annexure H
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Annexure B
(d) a description of the impact management [objectives] outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Section 2, 4 - 8
(e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 2
(f) a description of proposed impact management actions, identifying the manner in which the impact management [objectives and] outcomes contemplated in paragraph (d) [and (e)] will be achieved, and must, where applicable, include actions to – (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Section 2, 4 - 8
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 3 and 6
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f)	Section 3 and 6
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 3 and 6
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 3, 4 and 6
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 2, 4 - 8
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 2, 4 - 8
(m) an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 5.3 and Annexure C
(n) any specific information that may be required by the competent authority.	N/A
1. Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	N/A

1 INTRODUCTION

HillLand Environmental has been appointed as the Environmental Assessment Practitioner (EAP) by the applicant, George Municipality represented by SMEC Consulting Engineers, to ensure compliance with the regulations contained in the National Environmental Management Act (NEMA Act No. 107 of 1998, as amended) and the Environmental Impact Assessment Regulations (2014, as amended).

The proposal involves the temporary establishment of stockpile areas, construction camp sites and associated access roads on Erf 325, George, for the storage of material to be reused in municipal infrastructure projects but specifically to be used on the Rand Street and Rosedale Main Extension project. It also includes the required Phase 2 Geotechnical Assessment to inform the Rand Street and Rosedale Main Extension project.

Both proposals require Environmental Authorisation (EA) from DEADP, and this EMPr forms part of the application documentation.

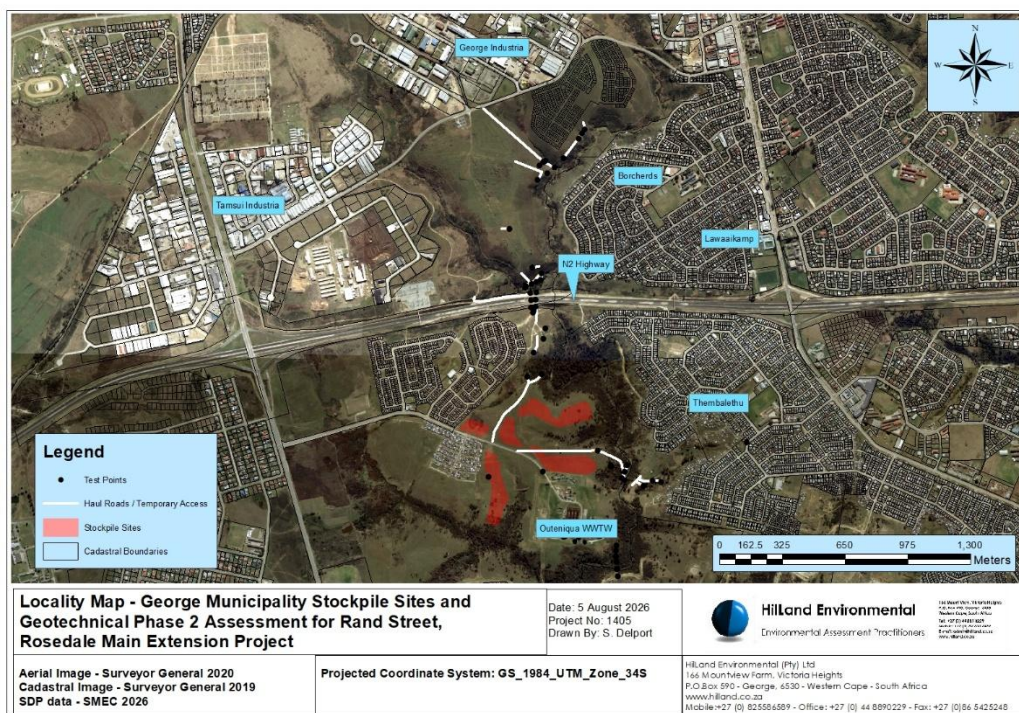


Figure 1: Locality map for the project (Annexure A)

This EMPr is therefore submitted as per the requirements of a Basic Assessment in terms of NEMA.

The monitoring of compliance of the EMPr is mandatory in terms of all phases and a completion audit at the end of the decommissioning and rehabilitation of the stockpile areas is likely to be a requirement of the EA.

This EMPr must be included in the tender documents of all prospective contractors and in the final contract awarded, where applicable. It is binding on the George Municipality where they will manage the stockpile sites until such sites are handed over to a contractor, and to all contractors, sub-contractors, agents, consultants and construction staff on the property.

The full approved EMPr must be made available to all contractors working on the project.

This EMPr must be implemented in conjunction with the Environmental Authorisation and approved Site Development Plan. Site-specific implementation details may be refined through written method statements approved by the ECO, provided that such refinements do not alter the authorised activity, approved footprint, environmental sensitivities or impact management outcomes.

Any substantive amendment to the approved EMPr, authorised scope or approved layout must be dealt with in accordance with the applicable EIA Regulations and must receive the necessary written approval before implementation.

2 ACTIVITY DESCRIPTION

The preferred alternative comprises five temporary stockpile / construction camp areas on Erf 325, temporary haul roads, temporary geotechnical access routes, test pits and monitoring boreholes. Method statements for these activities are attached as Annexure D.

The stockpile areas provide temporary capacity for approximately 757 472 m³ of clean material within an overall stockpile footprint of approximately 99 361 m² (9.9 ha). Access to these areas will be from existing roads and new temporary haul roads of approximately 5-6m wide.

The stockpile area is to be used for the temporary stockpile of granular material taken from spoil areas originating from other George Municipal projects and, subject to prior approval by George Municipality, from projects undertaken by other public entities such as SANRAL or the Western Cape Government.. **This material may not include building rubble, municipal waste, any organic material, any rubber products, any plastic products or anything else not accepted at the George Municipal Waste Facility.**

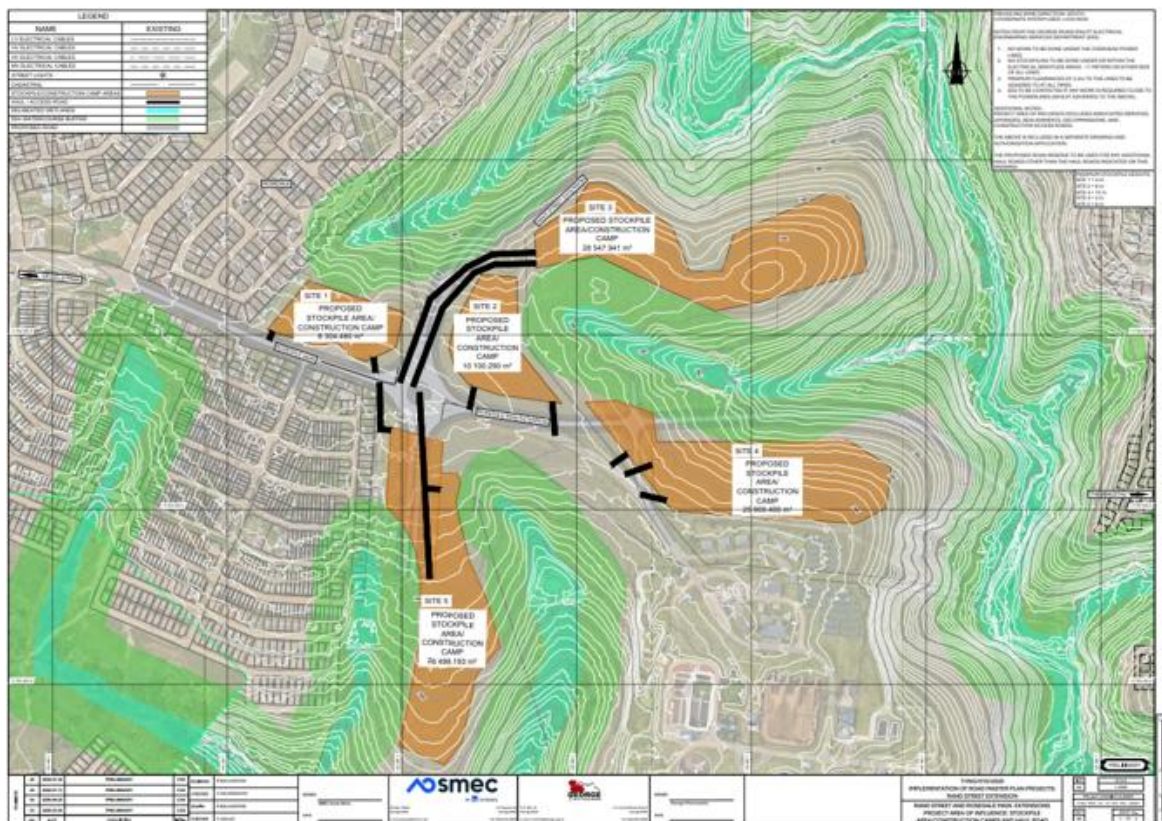


Figure 2: Final stockpile sites / construction camp(s) and temporary haul roads layout taking specialist recommendations and electrotechnical comments into account.

For the geotechnical investigation points, access shall be via existing roads/paths. If no road/paths exist, a route to the test position must be agreed upon with the "property owner" and the Employer. Only this route must be followed to and from the test position. Due to the steep slopes on site, the selected route will generally follow the natural contours to ensure easier accessibility.

Test pits will be around 5m x 5m which will be rehabilitated following use. Rotary core drilling will also require an area of approximately 5m x 5m. No abstraction of groundwater will be allowed.

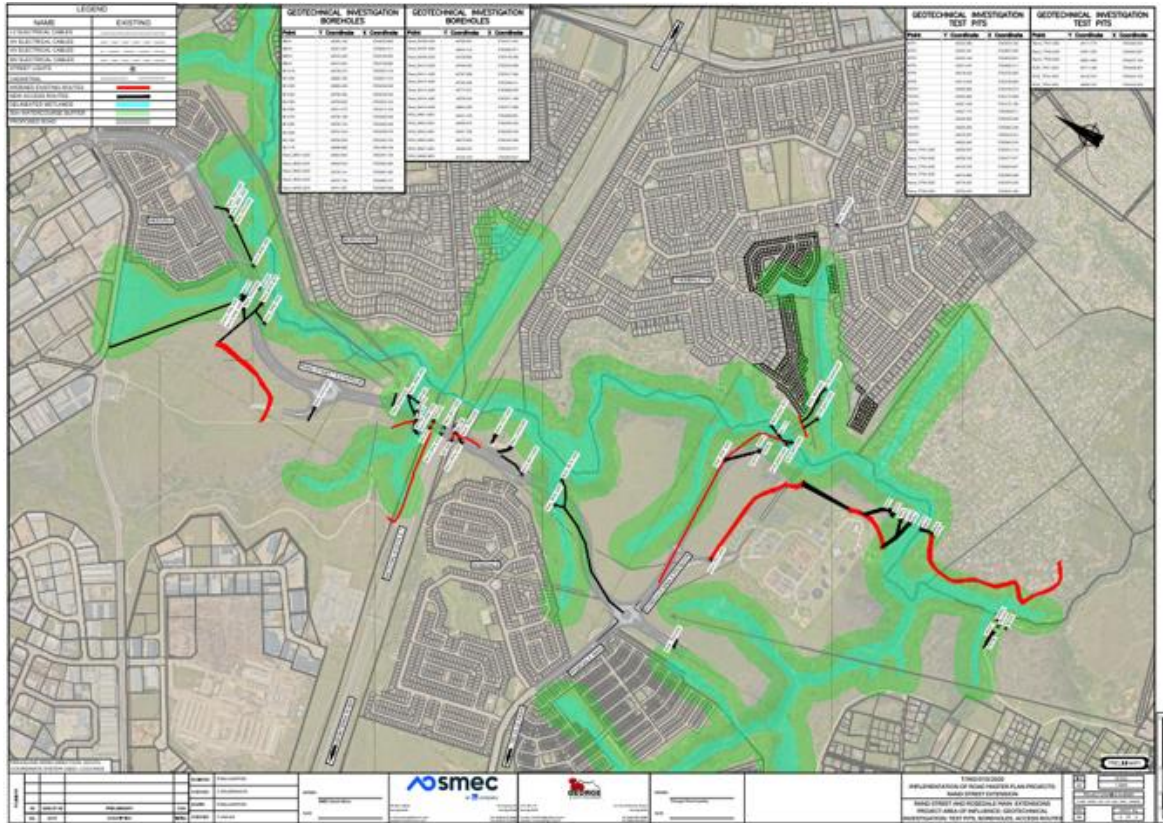


Figure 3: Geotechnical Phase 2 assessment demarcated positions for testing as well as access routes to these positions (KML, SMEC July 2026) see high-definition plan in Annexure B

Please note that **any deviation** from the above/approved SDP will **require DEADP approval prior to implementation.**

The following specific visual controls are to be implemented as per the visual specialist VRM Africa:

- Maintain a 25 m no-go buffer between stockpiles and residential structures.
- Construction camps must be set back 50 m from residential property boundaries and screened where required.
- Maximum stockpile height is 4 m at Sites 1, 4 and 5 and 12 m elsewhere.
- Site 4 requires the approved visual screen, including the recommended Bitou hedgerow or an equivalent authority-approved measure.

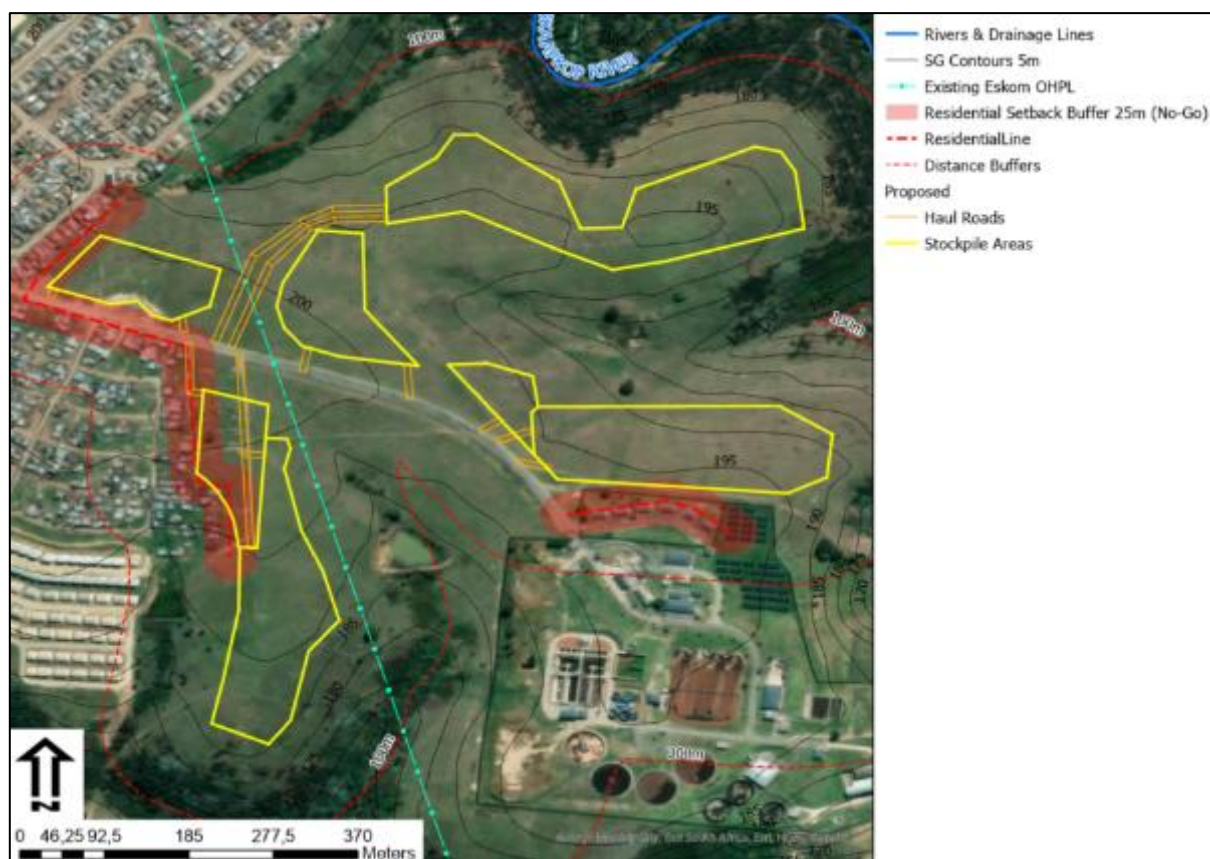


Figure 4: VRM Africa map - the residential Very High Visual Exposure 25m setback map depicting No-Go areas

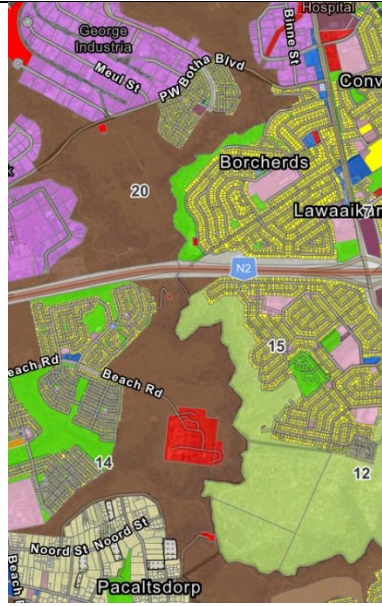
3 APPROVALS REQUIRED

3.1 ENVIRONMENTAL AUTHORISATION IN TERMS OF NEMA

The proposal will require environmental authorisation (EA) in terms of NEMA prior to commencement. The following activities have been applied for in terms of Listing Notice 1 and 3 of the Environmental Impact Assessment Regulations (2014, as amended) (GN NO. R. 324 & 327):

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	Describe the portion of the proposed development to which the applicable listed activity relates.
12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (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; — 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;	The temporary stockpile sites / temporary construction camp(s) site(s) and temporary haul roads are not proposed within 32m of any watercourse. The Geotechnical test pits, where they are within 32m of a watercourse, are not structures or infrastructure and they will not exceed 100m². The test pits are simply temporary disturbance areas to test ground conditions. While the boreholes are to monitor ground water conditions. Access to these points is temporary and will be immediately rehabilitated.

	(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; (ee)where such development occurs within existing roads, road reserves or railway line reserves; (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of the development and where indigenous vegetation will not be cleared.	As indigenous vegetation will be temporarily affected and as the cumulative disturbance area may temporarily exceed 100m², this activity has been included for the temporary access infrastructure that will be required, albeit for only a couple of days with immediate rehabilitation.
27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Temporary stockpile sites / temporary construction camp(s) site(s) and haul roads will require the clearance of indigenous vegetation which is currently mostly transformed agricultural lands which will exceed 1ha in extent. Geotechnical phase 2 assessment – will be short term clearance under 1ha in size and will be rehabilitated immediately on completion of the test pit and installation of the borehole. The roads (temporary haul roads, temporary access routes to test pit locations for access) are excluded from this activity as they are linear activities (however, where possible, existing tracks and roads are being proposed for access).
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3	Describe the portion of the proposed development to which the applicable listed activity relates.
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres i. Western Cape i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or iii. Inside urban areas: (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.	The temporary access haul roads to the the stockpile sites will be in areas supporting transformed indigenous vegetation and will be wider than 4m. There will be no road reserves as these are not permanent roads and they will be rehabilitated on completion. Temporary access tracks for the Geotechnical phase 2 assessment will be through areas of indigenous vegetation. Any areas that are deemed to be “inside urban areas” are not portion for conservation use.
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 i. Western Cape i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;	The whole area is mapped as critically endangered ecosystem and there will be more than 300m² clearance of indigenous vegetation required. Area is zoned as undetermined which could be regarded as “equivalent zoning” to open space by DEADP.

	ii. Within critical biodiversity areas identified in bioregional plans; iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.	
18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. i. Western Cape i. Areas zoned for use as public open space or equivalent zoning; ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or iii. Inside urban areas: (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.	Existing roads may need to be widened by more than 4m in areas. This applies to all haul roads and temporary access roads to the stockpile sites / construction camp(s) and to the temporary access to Geotechnical test pit sites. In areas "equivalent zoning" to public open space. In areas containing indigenous vegetation which may be deemed to be outside an urban area by DEADP.

3.1.1 CONDITIONS OF ENVIRONMENTAL AUTHORISATION (EA)

The Environmental Authorisation (EA) (once issued) will be attached to the Final EMPr.

It is binding on the George Municipality where they will manage the stockpile sites until such sites are handed over to contractors, sub-contractors, agents, consultants, construction staff on the property who will manage the sites on their behalf.

If the EA conditions are not included at this point, then the reader is NOT reading the final approved EMPr and should request such a document prior to continuation.

3.2 GENERAL AUTHORISATION (GA) IN TERMS OF THE NWA

The Risk Matrix was compiled on the assumption that the mitigation measures detailed in the impact assessment section will be fully implemented. On that basis, all impact risks were rated as Low, indicating that the proposed geotechnical investigations and stockpiling areas may be authorised under a General Authorisation (GA) in terms of the NWA.

This report will be updated to include the conditions contained in the GA once issued by the Breede-Olifants Catchment Management Agency (BOCMA).

4 TERMS OF REFERENCE

The main terms of reference of this EMPr are to identify and mitigate any potential negative environmental impacts that may be associated with the construction in accordance with the proposal.

The full and approved EMPr must be made available to all contractors working on the project and must be included in all tender and contract documentation. Certain fundamental aspects are therefore of importance:

The EMPr and these requirements are binding on all contractors and their sub-contractors.

It is the responsibility of the holder to ensure that any contractor(s) or sub-contractor(s) is made aware of the environmental requirements.

The contractor will be required to make good any damage caused through their actions or the actions of their sub-contractors (in addition to any penalties for non-compliance issued).

For the purposes of this EMPr, references to the contractor include both the contractor responsible for the geotechnical investigation and the contractor(s) responsible for the establishment and operation of the stockpile areas.

4.1 ROLES AND RESPONSIBILITIES

4.1.1 ENVIRONMENTAL CONTROL OFFICER (ECO) / MUNICIPAL ENVIRONMENTAL OFFICER (EO)

An environmental control officer (ECO) must be appointed to oversee the EMPr **construction, operational and rehabilitation phases**, ensure compliance with the Environmental Authorisation (EA, once issued) and the approved Environmental Management Programme (EMPr) and to assist with issues as they may arise on site.

The ECO can be an independent practitioner or the Municipal Environmental Officer (EO).

It will be the Municipal EO/ appointed ECO's responsibility to ensure that the mitigation rehabilitation measures and recommendations referred to in the EA (once issued) and EMPr are implemented and complied with by the holder.

The **applicant (holder)** will be responsible for the remuneration of the EO / ECO and any other expenses encountered in the process of environmental monitoring of the phases.

4.1.2 SELECTION OF THE ECO / EO

The appointed ECO must be able to demonstrate that (s)he is of sufficient competency to undertake the required task. This includes:

- Previous experience of environmental control of similar sites.
- Working experience with contractors.
- Knowledge of the particular project and expected areas of concern.
- Or be a duly appointed Environmental Officer with the required experience in the municipal employment.

4.1.3 ROLES AND RESPONSIBILITIES OF THE ECO/EO

The ECO/EO will undertake the following tasks:

- Ensure **compliance** with the EMPr at all times during all phases (pre-construction, construction, operational and rehabilitation);
- Ensure **compliance** with relevant management conditions of the EA (once issued) during all phases;
- To work in close co-operation with the engineer, contractor(s) and Municipality (holder);
- Meet with the contractors when they will create the stockpile areas to set out the environmental parameters within which they must work (pre-construction and construction phase);
- Meet with the geotechnical team before investigations commence to set out the environmental parameters within which they must work. Where investigations are undertaken during the relevant avifaunal breeding period, ensure that a specialist is appointed, that the required walk-through is completed, and that the team is briefed on the applicable restrictions.
- **Ensure that the specialist has been advised of work in sensitive areas where required in terms of the specific conditions of the EA / EMPr.**
- Provide an **Environmental Induction (Environmental Education)** with **all** contractors (involved in the geotechnical investigation and stockpile areas) prior to the commencement of any work (pre-construction phase (prior to commencement of activities)). The staff must also be specifically made aware of all fauna Species of Conservation Concern (SCC);
- Indicate where **all no-go areas** are to be demarcated and to ensure adherence to these delimitations at the induction session **BEFORE** any site clearance commences on-site (pre-construction phase);
- Indicate where **plant rescue** may be necessary, and what species should be rescued on this site (pre-construction phase);
- Indicate where **erosion protection and siltation prevention measures** are required or need to be supplemented and to ensure correct implementation;
- Advice on **rehabilitation measures** to be implemented;
- Check up on general environmentally friendly construction practices (e.g. no littering, safe and secure environment, contamination risks, etc.);
- Ensure that the correct earthworks practices are adhered to; e.g. **no** encroachment into the surrounding vegetation, separation of topsoil and subsoil, correct stockpiling and stripping of topsoil);
- Provide a report back at site meetings (if necessary) (during the pre-construction and construction phase) to report on and assess the success of the environmental control and to determine any further environmental control measures which may be necessary;
- It is recommended that the ECO/EO provides the contractor and Holder (Municipality) with feedback following the visit to provide mitigation measures for implementation. The contractor must then ensure that these measures are implemented as soon as possible;
- The ECO/EO has the discretion to undertake more frequent 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;

- The ECO/EO is to keep a site diary; a photographic record of activities taking place on site as well as copies of all monthly reports submitted to the Department, a schedule of current site activities including the monitoring of such activities and complaints register of all public complaints and the remedies applied to such complaints;
- **ECO/EO monitoring requirements are specified under each activity specifications.**
- **Any issues noted on site(s) must be immediately reported to the contractor and resolved;**
- It must be noted that the **ECO/EO HAS THE AUTHORITY TO SUSPEND WORK ON SITE FOR ANY ACTION BEING UNDERTAKEN THAT DOES NOT COMPLY WITH THE ENVIRONMENTAL REQUIREMENTS OF THE SITE.** Such a stop order has immediate effect and will be communicated through the resident engineer to the contractor responsible.

4.1.4 SPECIALIST MONITORING

For the geotechnical investigation, where work in suitable avifaunal habitat is planned **during August to December**, the required nest-search measures must be implemented. **Specialist input must be obtained where the ECO cannot confidently identify the relevant SCC or where active or potentially active nests are encountered.**

As per the specialist, Confluent Environmental;

Primarily along access routes and at each geotechnical site, active searching for nests and nestlings are to be conducted by the ECO for avifaunal SCC in their laying season (August to October for Black-crowned Night Heron and August to December for Knysna Warbler) in suitable habitat. Should no work take place during these seasons, adherence to this recommendation is not necessary.

Should nests be found and positively identified as/ suspected of being the avian SCC construction of boreholes and test pits are to cease at that location until after fledging has occurred and the nest has been abandoned following which they may continue.

The specialist is to walk and mark a preferred path to the test pits and boreholes prior to clearing of vegetation. Paths through dense vegetation are to be hand cut. If a nest is encountered, work on that pathway is to cease and an alternative route must be chosen by the ECO. If no alternative route exists, then work on that route must cease until fledging has occurred and the nest has been abandoned following which, work may continue.

4.1.5 OTHER

Role	Minimum responsibility
Holder: George Municipality	Ensure approvals, budget, appointments and contractual implementation; ensure EO / ECO briefed / appointed as the case may be; place necessary mechanisms to prevent permanent depot/spoil use; ensure closure and audit.
Engineer / Project Manager	Integrate environmental requirements into designs, programmes, specifications, access and earthworks; coordinate with ECO.
Contractor / Geotechnical team	Implement method statements and all site measures; train personnel; correct non-compliance; maintain records.

Site Agent / Environmental Representative	Day-to-day control, inspections, incident reporting, complaints, records and liaison with ECO or EO.
Specialist, where required	Advise on fauna, plants, wetlands, visual screening, erosion or other specialist matters where triggers or uncertainty arise. NB co-ordination between the ECO / EO and the specialists.
Independent auditor	Undertake audits at the frequency required by the Environmental Authorisation and Regulation 34.

5 GENERAL ENVIRONMENTAL PRACTICES

The following general environmental practices are applicable to the Geotechnical investigation and stockpile sites / construction camp site usage. Please also note the specific environmental requirement for the Geotechnical investigation and stockpile sites / construction camp sites below in section 6.

5.1 IMPACT MANAGEMENT OUTCOMES OF THE PROJECT

The following impact management outcomes have been identified through the assessment:

Impact	Management	Impact Management Outcome
Loss of indigenous vegetation and habitat	- Limit clearing to approved stockpile sites and only when the site is to be used; / Limit clearing to the geotechnical investigation points. - Undertake search-and-rescue where required; - Clearly demarcate no-go areas; - Rescue topsoil as prescribed - Rehabilitate following investigation (the investigation points and the access tracks where required and advices by the ECO). - Rehabilitate disturbed areas (stockpile areas and respective access roads) with retained topsoil and seed to stabilise	Loss of indigenous vegetation is minimised and confined to authorised areas, with disturbed areas rehabilitated to a stable and functioning ecological condition.
Impacts on species of conservation concern, including the George Golden Mole	- Pre-construction ecological walk-throughs; - Search-and-rescue procedures; - Environmental awareness training; - Minimise habitat disturbance.	Injury, mortality and habitat loss for species of conservation concern are minimised and biodiversity conservation objectives are maintained.
Soil disturbance, erosion and sedimentation	- Implement stormwater controls, diversion berms, silt traps and erosion protection measures; - Rehabilitate exposed areas promptly.	Soil erosion and sediment transport are prevented, protecting surrounding ecosystems and maintaining site stability.
Loss of topsoil resources	- Strip, stockpile and protect topsoil separately; - Utilise topsoil during rehabilitation.	Topsoil resources are conserved and reused to support successful rehabilitation and revegetation.
Impacts on water resources and stormwater quality	- Maintain stormwater management infrastructure; - Prevent contamination; - Contain sediment-laden runoff.	Surface water quality and natural drainage patterns are maintained and downstream aquatic systems are protected.
Dust generation	- Apply dust suppression where required; - Manage stockpile surfaces; - Limit vehicle speeds; - Maintain haul roads.	Dust emissions remain within acceptable levels and nuisance impacts on surrounding receptors are minimised.
Visual impacts	- Maintain approved stockpile heights and profiles; - Implement housekeeping measures;	Visual intrusion is reduced and the site remains compatible with surrounding land uses.

	Rehabilitate disturbed areas following closure.	
Noise disturbance	- Restrict activities to approved working hours; - Maintain machinery and equipment.	Noise impacts on surrounding receptors remain within acceptable levels.
Waste generation and littering	- Remove litter regularly; - Separate reusable and non-reusable materials; - Dispose of waste at authorised facilities. - Ensure proper management of the sites to ensure that the public do not dump waste on the stockpile sites.	Waste generation is minimised and the site remains free of litter and unlawful dumping.
Spread of alien invasive species	Remove and control alien invasive vegetation during site preparation, operational phase and rehabilitation.	Alien invasive species are controlled and indigenous ecological functioning is improved over time.
Resource consumption and waste of construction materials	- Reuse suitable excavated and road-building materials; - Segregate stockpiles by material type.	Construction materials are reused

5.2 IMPLEMENTATION TIMEFRAMES

The impact management actions contained in the EMPr must be implemented during the relevant project phase and maintained for as long as the associated environmental impact or risk persists. The following implementation timeframes apply:

Project phase	Implementation timeframe
Pre-commencement phase	Before any site establishment, vegetation clearing, stockpiling, access-road preparation, test-pit excavation or borehole drilling commences. This includes obtaining the required approvals, appointing the ECO / briefing the municipal EO, approving method statements, completing environmental induction, demarcating authorised footprints and no-go areas, undertaking micro-siting, and completing any required nest or fauna checks liaison with the specialist NB.
Site-establishment phase	Before and during the establishment of the stockpile areas, construction camps, haul roads and geotechnical access routes. Required fencing, signage, sanitation, waste facilities, hazardous-material storage, erosion controls, silt controls and dust-management measures must be installed before the relevant activity begins.
Geotechnical investigation phase	For the full duration of access preparation, test-pit excavation, drilling, installation of monitoring boreholes and initial rehabilitation. Access confirmation with specialists and confirmation of the sensitive species restrictions where applicable. Test pits must be backfilled and rehabilitated immediately after inspection, preferably on the same day. Disturbed access routes and working areas must be rehabilitated as soon as they are no longer required.
Stockpile operational phase	Continuously throughout the period during which material is delivered, stored, managed or removed. Controls relating to site establishment, distance from residential areas, residential visual buffers, dust, stormwater, erosion, waste, hazardous substances, traffic, fauna, security and alien invasive plants must remain effective for the full operational period. NB prevention of illegal dumping – controls to be in place at all times.
Construction camp sites operational phase	Continuously during use for purpose. Controls relating to accepted material, stockpile heights, residential visual buffers, dust, stormwater, erosion, waste, hazardous substances, traffic, fauna, security and alien invasive plants must remain effective for the full operational period. Controls to prevent illegal dumping must remain in place at all times.

Groundwater-monitoring phase	During every monitoring visit and for the full authorised groundwater-monitoring period. Existing access routes must be used and monitoring must be undertaken on foot where vehicle access is unavailable. Boreholes must be securely capped after every monitoring event.
Rehabilitation and decommissioning phase	Immediately after a stockpile area, haul road, construction camp, test pit, borehole area or temporary access route is no longer required. Rehabilitation must include removal of foreign material and temporary infrastructure, decompaction, contour restoration, topsoil replacement, revegetation, erosion control and alien invasive plant management.
Post-closure monitoring phase	Rehabilitation must be inspected at approximately three and six months after closure. Erosion, failed vegetation establishment and alien invasive plant recruitment must be corrected as soon as identified. Further monitoring and corrective action must continue where the required rehabilitation outcomes have not yet been achieved.
Incident and non-compliance response	Immediately upon identification of an incident, environmental damage or non-compliance. Activities presenting an immediate environmental risk must cease until the impact has been contained and the ECO / EO has approved the corrective measures or recommencement of work.
Alien clearing	Ongoing management of alien species in all areas is a requirement. Stockpile sites to be kept free from alien species. Geotechnical test pits to be kept free from alien species in addition to checking the temporary access roads.

Ongoing requirement

All mitigation measures must be implemented **proactively and before the associated impact occurs**, rather than only in response to environmental damage. Measures such as fencing, no-go demarcation, erosion control, spill preparedness and dust management must therefore be operational before the relevant activity commences. Monitoring, maintenance and corrective action must continue until the ECO confirms that the applicable impact management outcome has been achieved.

5.3 ENVIRONMENTAL INDUCTION (EDUCATION)

All construction staff (associated with the geotechnical investigation and stockpile area / construction site camp creation and management) must be briefed by the ECO/EO in an environmental education programme regarding the environmental status and requirements of the site, **prior** to any activities commencing on site. This will include providing general guidelines for minimizing environmental damage during construction, as well as education with regards to basic environmental ethics, such as prevention of littering, the lighting of fires, etc.

Staff must be made aware of the SCC in the area and the need to liaise with the specialist / ECO/EC as required. Sufficient time must be allocated to ensure that there is time to comply with specialist requirements.

5.4 METHOD STATEMENTS

Before the contractor begins on site(s), a method statement must be provided to the ECO/EO setting out the following:

- Location of the construction camp site/area
- Access to the sites
- Demarcation of the working areas

- Plant rescue and topsoil rescue
- Temporary stormwater / erosion and sedimentation control
- Protection of natural features
- Cement and concrete batching
- Reshaping and rehabilitation

The ECO/EO is to approve the method statement(s) **before** the works may commence. A pro-forma method statement showing what is required is attached in Annexure D.

5.5 HERITAGE RESOURCES

During both Geotechnical investigation and stockpile area/ construction site camp establishment, if any human remains or significant archaeological materials are exposed during earthworks, then the find should be protected from further disturbance and work in the immediate area should be halted and Heritage Western Cape must be notified immediately.

These heritage resources are protected by Section 36(3)(a) and Section 35(4) of the NHRA (Act 25 of 1999) respectively and may not be damaged or disturbed in any way without a permit from the heritage authorities.

Any work in mitigation, if deemed appropriate, should be commissioned and completed before construction continues in the affected area and will be at the expense of the developer.

The **“Chance Finds”** procedure must be followed if required; see Annexure G.

5.6 SITE AGENT

The contractor shall appoint a responsible agent to ensure that they comply with this EMPr and all its conditions. This party is to report directly to the ECO/EO and will need to attend the induction and be briefed on the requirements by the ECO/EO.

5.7 FIRE PROTECTION

The contractor should take all reasonable and active steps to avoid increasing this risk of fire (especially to prevent damage to surrounding properties and vegetation).

The contractor shall ensure that all personnel are aware of the fire risk and the need to extinguish cigarettes before disposal.

Cigarettes may **not** be disposed of onsite and must be disposed of properly in receptacles for this purpose (sand or water container).

The contractor shall identify the authorities responsible for fighting fires in the area and shall liaise with them regarding procedures should a fire start.

The contractor shall ensure that his staff are aware of the fire danger at all times and are aware of the procedure to be followed in the event of a fire.

The contractor shall also ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency (e.g. in ablution facility or storage containers).

5.8 ABLUTION FACILITIES

Ablution facilities must be in place as soon as activities commence on-site in a location appropriate to the works being undertaken.

Contractors must provide chemical ablution facilities for all personnel working on the site.

Toilets shall be of a **neat** construction and shall be provided with doors and locks and shall be secured to prevent them from blowing over.

Sanitation provision and servicing shall be to the satisfaction of the ECO/EO.

Failure to use the chemical toilet provided and making use of the vegetation either on or off-site **will result in maximum penalty fine being awarded in addition to requiring the contractor to clean up.**

5.9 WASTE MANAGEMENT

No littering, waste dumping or burning is allowed on site or in the surrounding environment. Waste must be collected in designated lidded bins or stored in a secure area when work is not taking place, and all waste must be transported to an authorised disposal facility off site.

Any small items or building materials which can be carried away by medium-large animals should be safely stored in containers or locked away in a designated area to prevent interference from animals, causing possible harm to them and preventing them from removing such items from site.

5.10 VEHICLE/MACHINERY USE AND MANAGEMENT

The following are to be implemented:

- Avoid heavy vehicle use during wet conditions.
- Drip trays or drip pans beneath stationary machinery and during refuelling.
- Immediate repair of leaking vehicles and machinery.
- No refuelling, servicing, hazardous-material storage, chemical toilets or waste storage within watercourses, wetlands or their approved buffers.

6 SPECIFICALLY REQUIRED ENVIRONMENTAL MANAGEMENT PRACTICES

6.1 GEOTECHNICAL INVESTIGATION SPECIFICS

Note that the appointment of an ECO/EO as discussed above remains applicable for the geotechnical investigations.

If the investigation is to be undertaken during August to December in suitable avifaunal habitat, the required nest-search measures must be implemented. Specialist input must be obtained where the ECO/EO cannot confidently identify the relevant SCC, where active or potentially active nests are encountered, or where the work falls within the August to October period identified for Black-crowned Night Heron.

Any changes to the method statement provided by SMEC (Annexure D) must be approved before continuation.

6.1.1 PROGRAMME

Investigations are to be undertaken during daylight hours so that the site can be adequately monitored for fauna during work hours.

Contractor to provide the ECO/EC a programme for the investigation and liaison with the specialist to be facilitated by the ECO/EO.

Records of environmental training (5.3 above) (attendance register and training content) must be kept. Please refer to Annexure C of this EMPr.

6.1.2 ACCESS DETERMINATION AND SITE SPECIFICS

Together with the contractor the ECO/EO or specialist (as the case may be) are to mark out the access route with least disturbance to each site prior to commencing with the work. Routes are to be marked with suitable stakes or stones.

A photographic record of the proposed route or track shall be prepared prior to the use of the route or track.

Existing fences may not be damaged or removed. Only existing gates will be used and shall be returned as found (open or closed).

As per the specialists - Disturbance to be limited by selecting access points using **existing** tracks and pathways (Figure 21 & Figure 22). The access route selected should always prioritise existing disturbance areas over undisturbed natural (fynbos) vegetation, even if this means travelling over a longer distance. Access must also prioritise low gradient slopes over steep slopes.

The disturbance footprint associated with each test pit is limited to a 5m x 5m area (unless agreed to an alternative by the ECO/EC and specialist).

All areas outside of the access route(s) and investigation footprint will be regarded as strict no-go areas for activities.

- Test pits may need to be dug by hand using shovels where practical.

- Where feasible, a portable drilling rig may need to be used (that can be moved from the vehicle's closest 'low disturbance parking point' to the borehole drilling point) to limit disturbance in the riparian area.



Figure 21. Area B indicating existing tracks (yellow arrows) from which access can be obtained to geotechnical investigation points.



Figure 22. Area D and Area E showing existing tracks (yellow arrows) and roads that can be used to access geotechnical investigation points.

Faunal (animal) factors

- Walk through with the **specialist in addition to the ECO/EO** if the investigation is to be undertaken during **August to October**.
- The ECO/EO/specialist, depending on when the investigation is undertaken, is to walk and mark a preferred path to the test pits and boreholes prior to clearing of vegetation.
- Paths through dense vegetation are to be hand cut.
- If a nest is encountered, work on that pathway is to cease and an alternative route must be chosen by the ECO/EO.

- If no alternative route exists, then work on that route must cease until fledging has occurred and the nest has been abandoned following which, work may continue.

6.1.3 SITE SELECTION

Aquatic factors to take into account:

- The ECO/EO is to inspect watercourse areas where test pits or drilling are to be undertaken with the appointed contractor and agree on a site-specific approach following the mitigation measures in this report in each case. The ECO presence can be limited to an initial site investigation, followed by an inspection of sensitive areas at conclusion of the works to ensure agreed actions were followed.
- Disturbance of vegetation can be mitigated by selecting the less vegetated and/or less steep of two slopes above a watercourse. E.g. at Area A, the western slope is less steep with much less dense and sensitive vegetation than the eastern slope. It is therefore recommended that access be obtained from the south-western slopes as far as possible (Figure 19 & Figure 20, as extracted from the aquatic specialist report by Confluent Environmental).

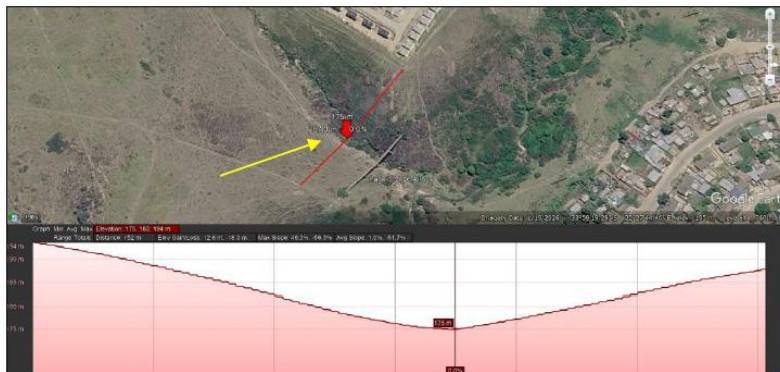


Figure 19. Google satellite image of Area A indicating the elevation profile (red line) across the valley with more dense vegetation and a steeper slope on the north-eastern side. Access here should be from the south-western slope (yellow arrow).



Figure 20. Example where the southern bank is less vegetated than the northern bank at Area C. In this instance, access should be prioritised from the southern bank.

Faunal (animal) factors to take into account:

Micro-siting of test pits and boreholes to avoid areas where active Golden Mole tunnels were found is recommended. This would involve moving the test pit / borehole 50cm to avoid tunnels, which is unlikely to influence the findings of the geotechnical investigations.

Should signs of fauna with limited mobility or an SCC be found within the demarcated area (e.g. a snake in a test pit), a search and rescue operation should be undertaken to relocate fauna to a suitable location in similar habitat nearby. The ECO or an experienced animal handler should be contacted to undertake this at the commencement or re-commencement of establishment of boreholes/test pits. Pictures / videos must be provided, and the ECO must be informed. No works may commence until the ECO is satisfied that all fauna with limited mobility and/or SCC have been successfully removed from the demarcated footprint area.



Figure 12. Evidence of Golden Mole (*Chrysochloridae*) foraging tunnel shown to be 3cm wide.

Figure 5: Extract from specialist assessment showing what evidence of Golden Mole foraging tunnel looks like

Box 1: Best practice principles for ALL fauna encounters during construction or operational phases of projects

If any animals are seen on site, a photo or a video should be taken if possible (to assist in identification) and all fauna encountered on site should be reported to the ECO immediately. This is particularly important when:

- An animal is harmed or compromised in any way during construction.
- Ground-dwelling animals their nests or eggs are unearthed during earthworks (e.g. moles, tortoise eggs, terrapins/frogs estivating).
- An animal with limited mobility is found (e.g. tortoises, moles, chameleons).
- Any potentially dangerous animal is encountered. This includes any potentially venomous animal (e.g. snakes, scorpions) or any medium-large animal that has become cornered in an enclosed area such that it cannot escape (e.g. porcupines, monkeys, baboons, antelope). It is critical in the case of snakes/ scorpions to get pictures/videos to aid in identification and appropriate treatment of anyone needing medical assistance.
- Any animal that shows a reluctance to escape or move away from the construction site thereby increasing its exposure to harm or increasing the risk of injuring people on site.

The ECO should provide guidance or assistance to get all animals to safety, treating any injured animals, and issuing instructions on when to continue with construction (once they are satisfied that all animals have been removed from site) or put additional mitigation measures in place to protect animals on the site from harm.

For any injured animals or animals to be removed from site (domestic or wild):

A local SPCA or animal welfare society can collect and treat most animals and should be the first point of call for assistance. If they cannot directly assist, they will revert and notify the relevant authorities/vets.

For any assistance with snake removals/relocations, identifications, or bite treatment contact the African Snakebite Institute. The contact details of a suitably qualified snake handler are provided at the following link: <https://snakeremoval.co.za/george>. Also available are the following emergency contacts.

SNAKEBITE EMERGENCIES:

Poisons Information Helpline	+27 861 555 777
Dr Jenna Taylor	+27 83 631 4816
Dr Christoff Bell	+27 73 174 0199
Johan Marais	+27 82 494 2039
Jason Seale	+27 82 781 6498
Arno Naude	+27 83 739 9303
Dr PJC Buys (Namibia)	+26 481 127 5109

GET THE FREE APP:



(Scan this code with your phone's camera.)

Floral (plant) factors to take into consideration:

The specialist recommended micro-siting the location of investigation points *if* there are avoidable biodiversity features (e.g. moving a hole 50cm to avoid digging out a *Leucadendron* sp.)

6.1.4 PLANT RESCUE

Prior to any clearing within the investigation footprint, the ECO/EO must identify indigenous plants that need to be rescued. Rescued plants may either be transplanted directly into suitable open space areas beyond the testing footprint or kept in a temporary nursery, planted into black plastic bags and watered as required, for later use in site rehabilitation.

6.1.5 TOPSOIL RESCUE AND SOIL MANAGEMENT

The contractor must strictly follow the 'last out, first in' system of soil replacement for test pits, as per the method statement from SMEC.

The layer of topsoil shall be removed first and placed in a separate heap. The Engineering Geologist shall instruct on the depth of topsoil to be removed. (From the previous Geotechnical investigation, it was shown to be an average of 400mm - 500mm thick).

The different layers of soil will be removed and placed in heaps next to the pit in manageable heights. Heaps shall not be more than 1.5 m high. Excavated soil must be placed on geofabric or tarpaulin to minimise contact with surrounding vegetation and reduce the risk of seed dispersal and soil loss from disturbed soil.

Heaps will be placed no closer than 1 meter to the pit to avoid collapse.

The different soils must not mix.



Figure 1 Example of stockpiling topsoil



Figure 2 Example of stockpiling in-situ material

Figure 6: Extract from SMEC method statement showing the example of stockpiling topsoil and in-situ material

Borehole rotary core drilling to follow the same methods as above.

As indicated in the SMEC method statement:

- Move all equipment to borehole location and set up rig over borehole position.
- Dig sump (0.5m X 0.5m X 0.5m) for return drilling water and line with plastic sheeting or use plastic baths as and when necessary.
- Commence by opening guard and attaching core barrel, close guard, start pump and commence drilling. Once the run has been completed, pull back with hydraulics until core barrel coupling is visible, loosen head with pipe wrench, lift hydraulic head up to the top, open guard and remove core barrel by hand.
- Next run, lower second core barrel into the hole and add BWY rod to the core barrel and tighten by hand, lower hydraulic head and tighten the head by rotating the head. Close the guard, start the pump and commence drilling. This format will continue until hole has reached depth required.
- Place all recovered core/ samples in core boxes. Mark depth on boxes as appropriate.
- Record all drilling observations on drillers report.
- On completion of hole flush all remaining drilling mud from hole using clean water.
- Remove temporary casing if necessary.
- Install piezometers at certain boreholes for future monitoring of groundwater.
- Backfill boreholes that will not be used for future monitoring and place concrete marker block to engineers' instructions or contract specifications.

Backfill sumps, level ground surface, place the topsoil, and remove all waste from site.



Figure 4 Example of core drill set up



Figure 5 Example of trailer mounted rigging

Figure 7: As extracted from SMEC method statement- example of core drill set up and trailer mounted rigging



Environmental Practice for Rotary Core Borehole Drilling within 32 m of a Watercourse

Issues	Mitigation
Diversion of the stream	No drilling within the river stream is expected therefore no diversion if required. Drilling operations to be limited to the riverbanks.
Disturbance of vegetation	This will be limited to the 5 m x 5 m area allocated for drilling operations. All equipment such as drill rods and tools to be placed on plastic liners or geofabric.
Water Contamination	Ensure zero discharge of contaminants to the river. Collect and dispose of drilling mud and cuttings in a designated containment tank or drums.
Oil leaks from the drilling rig	Use spill trays and drip pans under all fuel/oil storage and equipment.
Pumping of water from the river	No water to be pumped from the river. Only use from designated water sources provided by the George Municipality such as the wastewater treatment works.

Important notes:

1. A site-specific environmental method statement shall be submitted by the Geotechnical contractor on appointment for review by the environmental agent.
2. A SMEC staff shall always be on site to enforce the environmental compliances when drilling in the riverbank and all positions on site
3. The drilling works shall try to avoid use of any environmentally unfriendly drilling fluids

Should excavations be left open overnight, they are to be appropriately fenced (e.g. construction shade net fencing) to prevent animals falling into the hole.

6.1.6 DECOMMISSIONING OF THE SITES AND REHABILITATION

Test pits must be backfilled immediately following excavation with topsoil replaced last.

After the test pits are closed, disturbance and site access has been concluded, the contractor must seed the area with kweek grass across the 5m x 5m footprint.

Disturbed geotechnical investigation sites and access routes must be inspected for alien invasive plant establishment following rehabilitation. Any alien invasive species recorded must be removed and controlled as part of the site rehabilitation programme.

6.1.7 ONGOING WATER MONITORING

Persons conducting water chemistry and water table monitoring are to **replace covers for boreholes** after testing is concluded to prevent animals from falling in. Sites are to be accessed on foot where an existing vehicle track is not available.

Decommissioning and rehabilitation must follow the mitigation measures included under Section 6.1.6.

6.1.8 MONITORING

Record	Responsible	Frequency	Minimum content
Fauna / nest / micro-siting record	ECO/EO / specialist	Before sensitive work and when encounters occur	Checks, features avoided, relocation, photographs and instructions.
Pre-commencement compliance record	ECO/EO	Before establishment	Approvals, appointments, layout, no-go areas, induction and method statements.
ECO inspection report	ECO/EO	Twice weekly during establishment/testing; additional high-risk inspections	Activities, photos, compliance, incidents, complaints, corrective actions and close-out dates. To be submitted to the contractor, engineer (where applicable), DEADP and the Holder
Geotechnical point close-out	Geotechnical team / ECO	At each point	Coordinates, footprint, soil replacement, backfill/cap and rehabilitation photos.
Complaints register	Holder / Contractor	On receipt; review monthly	Complainant where supplied, issue, investigation, response and closure.
Rehabilitation report	ECO	At closure, 3 and 6 months	Contours, soil stability, vegetation cover, aliens, erosion, remaining actions. To be submitted to the engineer (where applicable), DEADP and the Holder

Note no environmental audit is required for geotechnical investigations – this is a quick, site specific, single action item to be signed off by the ECO / EC on completion.

6.2 STOCKPILE AREAS AND CONSTRUCTION CAMP SITES

As the stockpile areas and temporary construction camp sites have the following specific environmental requirements:

Stockpile material: The stockpile areas is to be used for the temporary stockpile of granular material taken from spoil areas originating from other George Municipal projects and, subject to prior approval by George Municipality, from projects undertaken by other public entities such as SANRAL or the Western Cape Government.. This material must not include building rubble, municipal waste, organic material, rubber products, plastic products or any other material not accepted at the George Municipal Waste Facility.

Temporary construction camp sites are defined as follows:

A1.3.2 DEFINITIONS

Construction camps - are all areas used for erecting offices, stores, workshops, testing facilities, plant parking areas, and equipment and material storage areas.

General Obligations - the Contractor's General Obligations shall include the following:

- Setting up, providing, insuring and maintaining the personnel, **construction camps**, staff accommodation, furniture, office equipment and stationery, other temporary structures, fencing and construction equipment on the site and their removal on completion of the contract.
- Providing transport to, from and on the Site of the Works for all permanent and temporary staff and local labour, including transporting local employees to and from their places of residence when or where necessary.
- Compliance with the requirements of the Conditions of Contract and with all the general requirements included in this Chapter 1.
- Compliance with all legislative and regulatory requirements.
- Assessing, dealing with and/or insuring all risks associated with the Contractor's General Obligations and with the construction, maintenance and protection of the Works.
- The protection and/or safeguarding of private property and livestock.
- The provision of security for all the Contractor's personnel, facilities and equipment on the Site of the Works, including quarries, borrow pits, stockpile areas and storage yards as well as for any traffic accommodation facilities and equipment that may be placed on the approaches to, or the exit from, the Site of the Works.
- All other general obligations, overhead costs, financing charges, insurance costs and all other general items which are not specifically included in, or covered by, this Standard Specification.
- The preparation and submission of all designs and drawings prepared by the Contractor for the temporary works or any alternative design proposals.

6.2.1 ACCESS, HAUL ROADS, STOCKPILE AREAS AND DEMARCATION OF NO-GO AREAS

Access to the defined areas is to be from existing roads and haul roads as indicated on the SDP.

Within the stockpile sites, the area will be used for material handling and will include **sufficient turning space** for vehicles to manoeuvre without needing to move beyond the designated stockpile area.

As per the visual specialist, VRM Africa:

- **Stockpiles** should be located a minimum of **25m buffer** from any residential structure (formal or informal). These areas should be retained as a No-Go area.
The ECO/EO are to agree to the location of the haul roads and stockpile areas
- **Construction Camps Sites** to be setback **50m** from residential property boundaries. Construction camp sites should be screened with a shade netting fence around the construction camp.

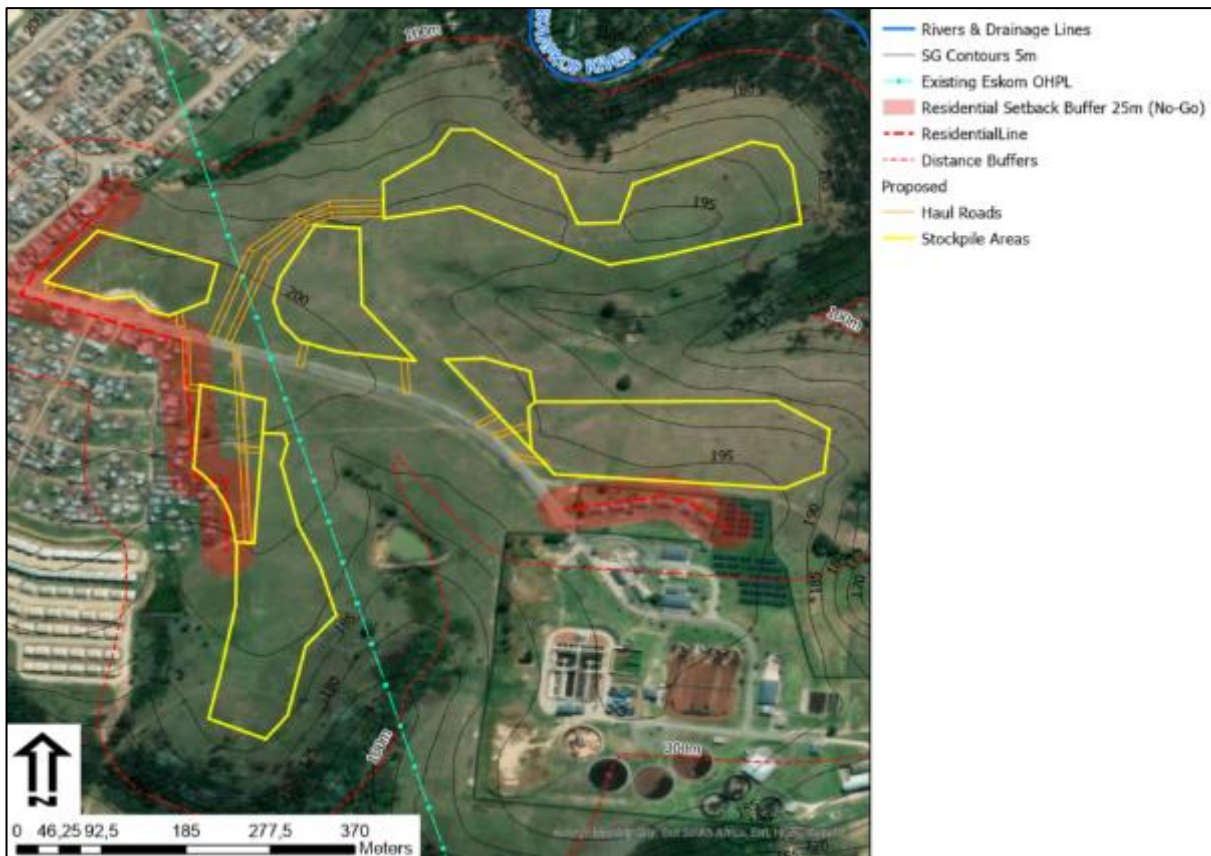


Figure 8: Extract from specialist report showing the red coloured areas that is regarded as no-go areas where no haul roads or stockpile material may be located within 25m of the residential areas. Note construction camps are to be set back further at 50m.

Stockpile areas/construction camps are to be surveyed and pegged.

Install a perimeter fence around the surveyed perimeter of the stockpile area. This fence can be basic (e.g. wire game fence) but may be upgraded depending on the security requirements of the site.

When installing the above fence, dig in a layer of 70% shade cloth attached to the perimeter fence (e.g. with wire or cable ties) to double up as a silt fence on areas where runoff will exit the site (Figure 23). If it cannot be attached to the perimeter fence for some reason, then it should be dug into place approximately 50cm on the inside of the fenceline with dropper supports. This shade net may be attached along the full length and height of the fence to minimise dust, and provide screening for nearby residents (Confluent Environmental, 2026).

Areas beyond the defined haul roads and stockpile areas will be regarded as **strict no-go areas**, therefore, no disturbance permitted beyond these defined areas.

All people working on the sites during the construction and operational phase **must** be made aware of the boundaries in which work is to be done.



Figure 23. Example of silt fence attached to perimeter fence of a construction area.

Figure 9: Extract from the specialist assessment showing an example of a silt fence attached to the perimeter fence of a construction area.

6.2.2 TOPSOIL RESCUE

Grub the site to remove vegetation and the upper 30cm of topsoil and create a demarcated topsoil windrow stockpile around the perimeter of the site. Topsoil must be stored to a **maximum of 2m high** and must be retained as such during operation of the stockpile area.

The windrows should be placed in such a manner as to not generate ponding or be exposed to drainage lines where the topsoil can be washed away.

The topsoil is to be used for rehabilitation as part of the decommissioning phase.

Topsoil to be stored in a berm around the edge of the stockpile areas where it must be seeded immediately with Kweek (*Cynodon dactylon*) grass and oats seed to stabilise it and reduce losses. The entire perimeter of the stockpile area where runoff could occur should have either a topsoil berm or a silt fence.

The windrows must be monitored for the growth of alien invasive vegetation which must be removed as soon as they appear.

6.2.3 SOIL EROSION AND STORMWATER MANAGEMENT

- Stringent mitigation measures must be imposed during use to minimise runoff, possible silt run-off and contamination of water leaving the site, with the use of silt-fencing, rows of onion bags, mulch, brushwood, sandbags and deflection berms (the choice depending on the situation). These mitigation measures are essential in all exposed areas.
- Areas requiring erosion control mechanisms are to be identified by the contractor and ECO/EO. Instructions by the ECO/EO are to be given to the contractor as required.

- In the event of erosion damage or silt movement, the contractor will be liable for a fine and is responsible for the clean-up and required to reinstate the conditions to normal as determined by the ECO/EO.
- In the case of contaminated water run-off, silt can be stopped by means of sandbags and following the rain the contaminated area(s) should be cleaned. All measures must be taken to avoid contaminated water entering any open space area in any way.
- It is the responsibility of the **contractor** to ensure that their works are protected from damage which may be caused through runoff of rainwater from the stockpile site. The use of sandbags, mulch bags or any other appropriate methods of slowing down the flow of water within a trench is required.

6.2.4 VISUAL MITIGATION MEASURES

As per the visual specialist, VRM Africa:

(Site 4 – site-specific) Given the close proximity of the Site 4 Stockpile/Construction Camp Site to residential units within the Outeniqua WWTW, establish a visual screening hedgerow of Bitou (*Chrysanthemoides monilifera*) along the outside of the fenceline, between construction camp/stockpile establishment and WWTW boundary.

- **0.75–1.0m centre-to-centre spacing** in a single row for a dense, continuous screen — canopy closure achievable within roughly 12–18 months given the species' rapid growth rate.
 - replace plants to maintain continuous visual screening for the duration of construction
- *ECO to prepare a Vegetation Establishment and Dust Monitoring Plan prior to construction, including defined re-seeding triggers.*
 - *Record baseline wind rose / prevailing wind direction for the site to inform stockpile orientation and screening requirements relative to residential receptors.*
 - *Take special consideration for berg-wind conditions for planning of stockpiles to ensure that dust impacts will be minimised.*

6.2.5 CREATION OF THE PLATFORM AREAS

As per the SMEC method statement:

Before any stockpiling may be done the area shall be cleared and grubbed as indicated on the drawing. The area to be cleared and grubbed shall be 2,0 m wider than the footprint of the stockpile or to 2,0m beyond the outer edge of temporary banks, as applicable for topsoil berm.

Clearing must only take place when the relevant stockpile area is required for use. Areas must remain vegetated until then to minimise dust generation, erosion and unnecessary disturbance. Level surfaces must be created as far as possible to avoid preferential flow paths and ponding after rainfall.

Stockpile areas shall be constructed with a minimum slope of 2 % to ensure proper drainage. The surface (floor) shall be scarified to a depth of 150 mm, watered, and compacted to a minimum density of 90 % of MDD. Further instructions will be given for the treatment of soft in situ material with load bearing strength, in accordance with the roadbed treatments specified.

On steep sloping landforms, a platform shall be constructed so that the cross fall does not exceed 5 %. The platform shall be constructed of fill material in layers compacted to a minimum density of 90 % of MDD. The compacted surface for stockpiling shall be firm and clean of loose material.

6.2.6 MATERIAL DELIVERY AND REMOVAL

Full-time or otherwise effective security to prevent illegal dumping and unauthorised access

All material delivered to or removed from the stockpile area must be strictly monitored to ensure that accepted material complies with the defined purpose of the stockpile area and that all removals are directed to authorised locations.

6.2.7 STORMWATER AND STOCKPILE RUNOFF MANAGEMENT

The Employer and / or Contractor, respectively, shall ensure that stockpiled material **does not wash away during normal rainfall events**.

Temporary banks must be constructed on the high side of stockpiles to divert surface runoff water.

Care must also be taken to **prevent** runoff water from damming up against the stockpiles.

On the lower side of the material stockpile, temporary banks with open earth drains (temporary measures) and silt traps, to contain any stockpile material that is washed down, shall be constructed.

The top of the stockpile must be shaped so that stormwater is prevented, as far as practically possible, from running down the stockpile slope.

Where required by the approved site-specific stormwater design, a suitably sized pipe, not less than 300 mm in diameter, must be installed to convey runoff safely past or through the lower stockpile slope without causing erosion. The final position, capacity and outlet protection must be approved by the Engineer and ECO.

6.2.8 HEIGHT RESTRICTIONS

As per the visual specialist VRM Africa:

Table 1: Height restriction of stockpiles

General stockpiles	Maximum height of 12m
Stockpiles adjacent to residential areas Site 1, 4 & 5	Maximum height 4m, to reduce visual intrusion and wind prominence

6.2.9 LONG-TERM STOCKPILE AREAS MANAGEMENT

Where stockpiles remain in place for longer than six months within the authorised temporary use period, they must be shaped to appear natural and lightly compacted.

Seed long-term stockpiles with a Kweek grass and oats mixture; target established vegetated cover within 6 months. No alien invasive vegetation growth on the stockpiles is permitted and must be removed as soon as they appear.

Re-seed stockpile areas without delay where vegetated cover has failed to establish and dust nuisance risk is identified.

6.2.10 OPERATION OF THE HAUL ROADS

As per VRM Africa:

- Implement wheel-wash or rumble strips at exits where material is tracked onto paved roads.
- Apply generic haul road and stockpile dust mitigations
 - Enforce reduced vehicle speed limits on unpaved haul roads.
 - Apply water or an approved dust palliative to haul roads during dry or windy conditions.
 - Increase watering frequency on, or temporarily cover, exposed stockpile and topsoil surfaces during high-wind events.
 - Minimise the area of exposed/disturbed ground open at any one time through progressive stripping and rehabilitation.
 - Time dust suppression (wetting) of haul routes and exposed surfaces to coincide with periods of concentrated large-vehicle activity near sensitive receptors, rather than a fixed schedule alone.

6.2.11 DECOMMISSIONING AND REHABILITATION OF THE HAUL ROADS AND STOCKPILE AREAS/ CONSTRUCTION CAMP SITES

- All solid waste must be removed from the site and disposed of appropriately depending on whether it is hazardous or not.
- **No** liquid or solid waste can be disposed of in the local environment.
- Any spilled hazardous waste or materials must be cleaned up and disposed of appropriately.
- Rip compacted hard-impact areas (subsoil) (stockpile areas, construction camps, temporary roads) to 0.5m depth to alleviate prior to rehabilitation.
- Reshape previously impacted areas to appear natural relative to the surrounding landscape.
- Re-apply stockpiled topsoil to disturbed areas.
- Once topsoil has been replaced, the area should be completely seeded with a moderate to dense coverage of *Cynodon dactylon* (Kweek) grass seed. This should be thoroughly watered to ensure establishment of the grass. Since native fauna are likely to colonise the vegetation that is reintroduced, it is recommended that vegetation be selected to facilitate this (that is, native plants rather than exotic or alien ones). This also serves the purpose of preventing invasive alien plant infestation of the recently disturbed stockpile site.
- Once the grass seed has germinated, the perimeter fencing should be removed from the site.
- The stockpile sites should be inspected 3-months and 6-months post-closure to remove any alien plants that have established.

6.2.12 MONITORING

Record	Responsible	Frequency	Minimum content
Pre-commencement compliance record	ECO/EO	Before establishment	Approvals, appointments, layout, no-go areas, induction and method statements.
ECO inspection report	ECO/EO	Twice weekly during establishment; monthly during operation; additional high-risk inspections	Activities, photos, compliance, incidents, complaints, corrective actions and close-out dates.

			To be submitted to the contractor, engineer (where applicable), DEADP and the Holder
Material movement register	Operator / Contractor	Each delivery and removal	Source, type, approximate quantity, acceptance/rejection and destination.
Dust and visual inspection	Site Agent / ECO/EO	Daily by operator; ECO/EO at visits; every two months for vegetation cover	Visible dust, wind, road condition, covers, height, screening and vegetation establishment.
Stormwater / erosion inspection	Site Agent / ECO/EO	Weekly and before/after significant rain	Silt controls, runoff, ponding, rutting, erosion and repairs.
Waste / hazardous substances	Contractor	Weekly and after removal/spill	Bins, skips, disposal slips, bunding, leaks, spills and contaminated soil.
Complaints register	Holder / Contractor	On receipt; review monthly	Complainant where supplied, issue, investigation, response and closure.
Rehabilitation report	ECO	At closure, 3 and 6 months	Contours, soil stability, vegetation cover, aliens, erosion, remaining actions. To be submitted to the engineer (where applicable), DEADP and the Holder
Environmental audit	Independent auditor	As required by EA and Regulation 34	Compliance, performance against outcomes and recommended corrective action.

6.2.13 WASTE MANAGEMENT

- It is recommended that an integrated waste management approach must be used that is based on waste minimisation and must include reduction, recycling, re-use and disposal where appropriate.
- A demarcated area must be created for refuse and waste management during construction and where applicable, operation.

- **Refuse** is to be collected in two separate containers, one for recyclable materials (glass, metal, paper and plastic) and the other for non-recyclable materials. These are to be disposed of through the municipal waste collection that currently services the area.
- Building waste is to be removed by the contractor to an approved waste disposal sites.
- **Note that the bins need to have lids on at all times.**
- The contractor shall ensure that the site is maintained in a neat and tidy condition and kept free of litter.

The contract staff must be clearly briefed on the 'no litter policy'. The site is to be kept clean of litter, even if it is not caused by the contractor staff

7 PENALTIES FOR NON-COMPLIANCE

Penalties in terms of Chapter 9 of the Western Cape Bill on Planning and Development as published in the Extraordinary Provincial Gazette No 5183, 3 October 1997, are applicable for any action, which leads to damage to the natural environment.

In addition to the penalties in terms of the Act (NEMA), spot fines up to a maximum value of R10 000 per offence can be instituted at the discretion of the ECO for any breach or non-compliance in terms of the EMPr and EA (FINES ISSUED WILL INCREASE EXPONENTIALLY FOR REPEAT OFFENCES).

In the event of damage being caused, the contractor will be responsible for the cost of cleanup, repair or rehabilitation as necessary, as well as being liable for the fine.

8 CONCLUSION

This EMPr is binding on all contractors on site and constitutes Best Practice for all phases of the described activities.

This EMPr may be updated with specific conditions required by the Environmental Authorisation (EA).