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PRE-CONSTRUCTION, CONSTRUCTION AND OPERATIONAL PHASE

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

PROPOSED TRUCK STOP AND ASSOCIATED INFRASTRUCTURE ON ERF 56 AND 57, MOSSDUSTRIA, MOSSEL BAY LOCAL MUNICIPALITY, WESTERN CAPE.

APPLICANT:	CONFUEL (PTY) LTD
ENVIRONMENTAL CONSULTANT:	SHARPLES ENVIRONMENTAL SERVICES CC AUTHOR: MISS MADELEINE KNOETZE REVIEWER: MRS. BETSY DITCHAM (EAPASA: 4372)
DEA & DP PROJECT REFERENCE:	16/3/3/6/7/1/D6/29/0113/23
SES REFERENCE NUMBER:	CT13/EMPR/06/23
DATE:	JUNE 2023

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

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

(1) An EMPr must comply with section 24N of the Act and include— (a)details of– (i)the EAP who prepared the EMPr and (ii)the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	• APPENDIX A- EAP CV's • 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 preferred site, indicating any areas that should be 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 and mitigated as identified through the environmental impact assessment process for all phases of the development including— (i)planning and design; (ii)pre-construction activities; (iii)construction activities; (iv)rehabilitation of the environment after construction and where applicable post closure; and (v)where relevant, operation activities;	Section 6 - 10
(f)a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i)avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii)comply with any prescribed environmental management standards or practices; (iii)comply with any applicable provisions of the Act regarding closure, where applicable; and (iv)comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	

(g)the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	
(h)the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	
(i)an indication of the persons who will be responsible for the implementation of the impact management actions;	
(j)the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	
(k)the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	• Section 11 -12 • APPENDIX *D*
(l)a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	
(m)an environmental awareness plan describing the manner in which— (i)the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii)risks must be dealt with in order to avoid pollution or the degradation of the environment; and	• Section 14 • APPENDIX H
(n)any specific information that may be required by the competent authority.	

1. DOCUMENT DETAILS

Project Ref. No:	CT13/DEMPR/06/23
Conditions of Use:	This report is the property of the sponsor, *Sharples Environmental Services cc* (*SES*), who may make allowance to publish it, in whole provided that: 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.
Disclaimer	**This Environmental Management Programme has been compiled in line with Appendix 4 of Environmental Impact Assessment (EIA) Regulations of 2014, as amended (GNR 326 of 2017). This EMPr has been submitted to the Competent Authority as part of the EIA process followed in terms of the EIA Regulations of 2014, as amended. Even though numerous renditions of this report exist, this report (in its final state), aims to replace any other version of this document, upon authorisation of the proposed development by the Department of Environmental Affairs and Development Planning (DEA&DP).* **All technical developmental information contained in this EMPr was provided by Confuel (Pty) Ltd and SES does not take any responsibility regarding the accuracy of the information.* **This EMPr and the preliminary impacts identified is based on the expected sensitivity of the receiving environment based on the observations made by the appointed Environmental Assessment Practitioner (EAP) and the specialists qualified to make such interpretations.*

2. ABOUT THIS EMPR

This document is intended to serve as a guideline to be used by *Confuel (Pty) Ltd* during the pre-construction, construction, post-construction and operational 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 Appendix 4 of the Environmental Impact Assessment Regulations of 2014, as amended (Government Notice Regulation [GNR] 326 of 2017), which stipulates the minimum requirements of an EMPr and with reference to the "Guidelines for Environmental Management Programmes" published by the Department of Environmental Affairs and Development Planning (DEA&DP) (2005).

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

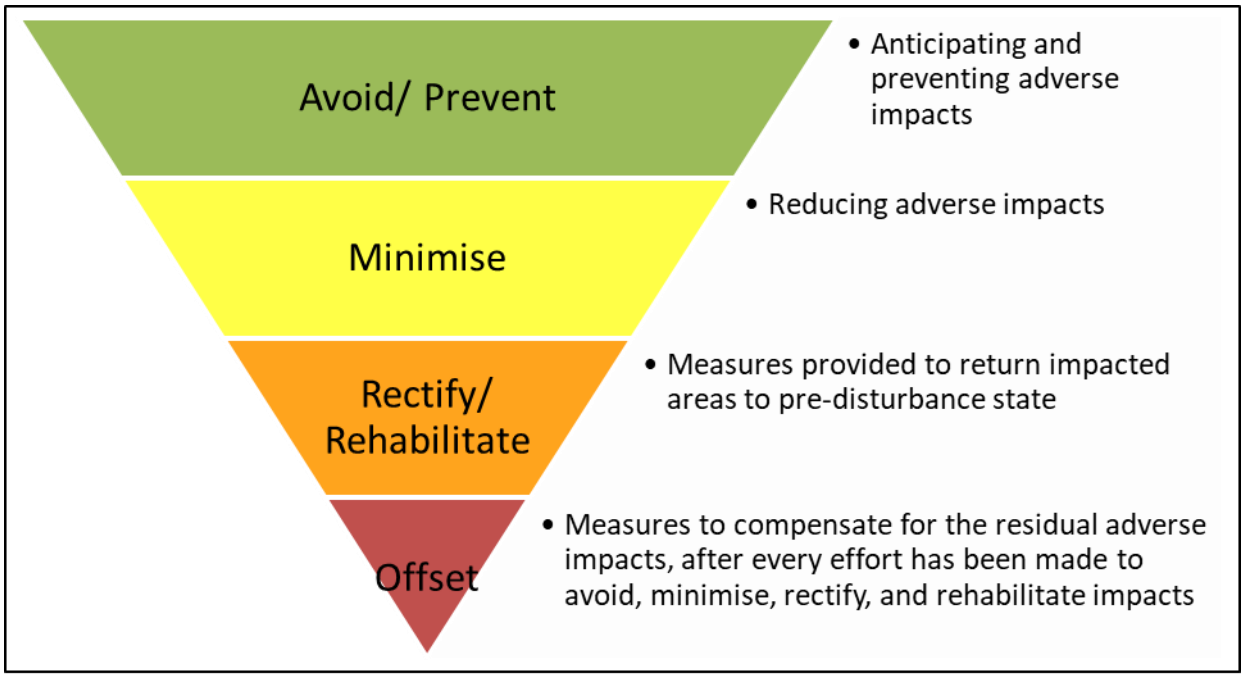


Figure 1. Mitigation hierarchy

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

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

2.1. Environmental legislative requirements of the proposed development

The 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).

Since this development proposal triggered listed activities in terms of the EIA Regulations, Listing Notice 1 and 3, a Basic Assessment Process was required. This EMPr acts as a standalone document submitted with the Basic Assessment Report submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) Region 3, for Environmental Authorization.

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

Activity #	Listing Notice 1. Description of Activity as per GN No. R 327
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 m^3.

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.
Activity #	**Listing Notice 3. Description of Activity as per GN No. R 324**
2	The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres. i) Western Cape ii) In areas containing indigenous vegetation.
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 (vii) Within critical biodiversity areas identified in bioregional plans;

2.2. Important caveat to the report

In the past, some developments have had a devastating impact on the environment even though they have had 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.

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. *Confuel (Pty) Ltd.* must retain a copy of this EMPr and an additional copy must be kept on site at all times during the pre-construction, construction, post-construction (in the form of landscaping the site and alien invasive plant management), and operational phases of the development.

This EMPr must be included in all contracts compiled for contractors and subcontractors employed by *Confuel*, 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). Note: This EMPr is to be replaced by the approved EMPr, upon completion of the Environmental Authorisation process.

Important note: *This document was specifically compiled in terms of the requirements of the licence to be obtained from the Department of Mineral Resources and Energy. Once the Environmental Authorisation process has been completed and the accompanying EMPr has been approved the approved EMPr will replace this document as the working document.*

4. DETAILS OF THE EAP & TECHNICAL/SPECIALIST INPUT

This EMPr 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.

Table 1: EAP Details.

Role:	Name:	E-Mail Address:	Qualifications:	Registration/ Memberships	YEARS OF EXPERIENCE
Author:	Ms. Madeleine Knoetze	madeleine@sescc.net	• B.Sc (Environmental Sciences) (NMMU)	• IAIA (SA)	• 8 years.
Reviewer:	Mrs Betsy Ditcham	betsy@sescc.net	• B.Sc Honours (Wildlife Management) (UP) • B.Sc (Zoology and Ecology (UCT)	• IAIA (SA) • EAPASA (Reg Nr : 1480)	• 14+ years

5. DESCRIPTION OF THE ACTIVITY

The proposed development is an initiative of Confuel (Pty) Ltd and aims to provide the industrial area of Mossdustria with a reliable, conveniently located truck stop and fuelling facility. The proposed development will be located on erven 56 and 57, Mossdustria, Mossel Bay Local Municipality, Garden Route District Municipality (previously Eden District Municipality).

The zoning of the proposed development area is Industrial Zone II, and is located within an Industrial Node in terms of the Spatial Development Framework (SDF) of the Mossel Bay Municipality. In accordance with the Land Use Scheme of the Municipality (2021) consent Use for this land use would be required for the purpose of developing the proposed development.

The proposed development will be located on the properties with the following SG-codes:

- Main development site:
    - Erf 56, Mossdustria – C05100140000005600000
    - Erf 57, Mossdustria – C05100140000005700000

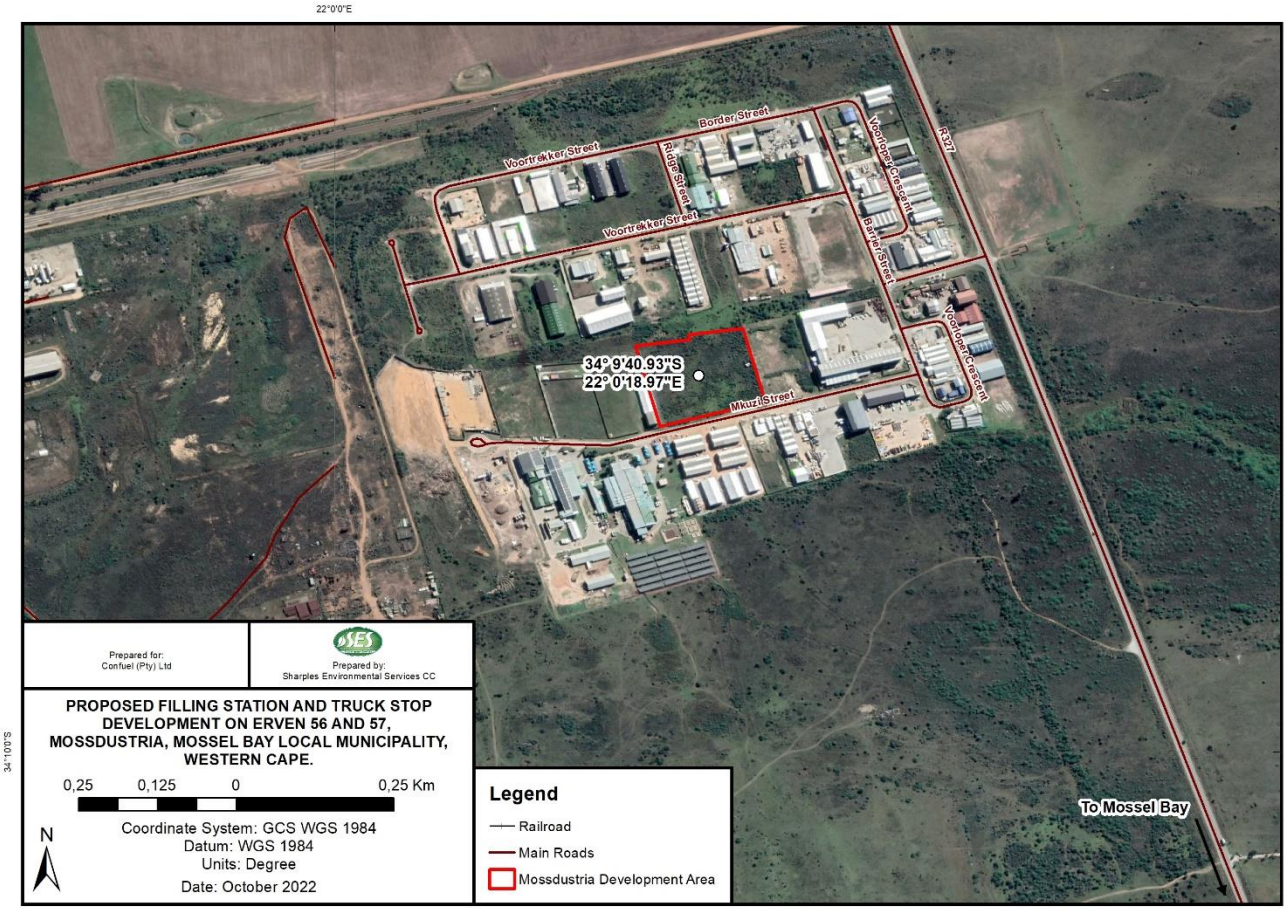


Figure 2: Proposed Location of the Filling Station and Truck Stop

The proposed development will be equipped with a services building, a canopied filling area (including several filling islands), parking areas (that will be able to accommodate double- and single-wagoned trucks), an aboveground tank farm (diesel) (with a combined storage capacity of 482 m^3), with observation wells, two water reservoirs (with a combined storage capacity of 740 m^3), site access, fencing and services connections (water, sewer and electricity infrastructure).

The proposed development will aim to service clients only registered with the Applicant's client network. Therefore, only companies and associated drivers registered with the Applicants management network will be granted access to the proposed facilities. The facilities will not be open access, in other words, no uncontrolled off-the-street access will be permitted. The facilities will not be available for use by regular light motor vehicles. The only access by such vehicles will be into the administrative area of the proposed development.

The table below provides a summary of the environmental sensitivities observed for the proposed development:

Specialist Company	Specialist Details	Sensitivity of receptors	Summary of findings
HERITAGE AND PALAEONTOLOGICAL OBSERVATIONS			
ASHA Consulting (Pty) Ltd	Jayson Orton (Heritage Consultant) Barry Millsteed (Palaeontological Consultant	Negligible	**Archaeological and Cultural Heritage Theme** From a cultural heritage and landscape perspective, based on the nature of the proposed project and the nature of the receiving environment of the proposed development. **No heritage resources of significance were identified within the site.**
		Negligible	**Palaeontological Theme** According to the SAHRIS Palaeosensitivity map as being of high sensitivity. Based on the findings of the appointed specialist, through the assistance of the geotechnical report, it was determined that the soil profile is in excess of 1m deep across the entire site and that the soil consists of an anthropogenic horizon at the top, followed by a clay horizon and then a residuum composed of weathered sandstone cobbles and sand and clay. These deposits are suggested to have no palaeontological potential. It is evident that sensitive bedrock is much deeper then any depth that will be penetrated by the proposed development (especially since the tank farm will be stationed above ground) and that impacts to fossils will thus not occur.
AQUATIC BIODIVERSITY ASSESSMENT			
Confluent Consulting (Pty) Ltd	James Dabrowski	Negligible	**Aquatic Biodiversity Theme** According to the findings of the aquatic biodiversity specialist, no watercourses (drainage lines/wetlands) were identified on the proposed development site. A small depression was noted on site during the site visit, however the specialist noted that this feature is not considered a wetland, rather it would be a feature that had been developed as a result of the recent clearance of the site, including the rainfall events that occurred prior to the site visit conducted by the specialist, has led to the formation of the feature on site. A drainage line was observed approximately 250m east of the proposed development site. This feature was identified as a wetland by both the NFEPA and the National Wetland Map-5 mapping regime. This was confirmed to not be a wetland by the specialist. Therefore, the proposed site is not located within any watercourses (as defined by the NWA (Act 36 of 1998), or within the regulatory area as defined by GN 509 of 2016 promulgated in terms of the NWA (Act 36 of 1998).
TERRESTRIAL BIODIVERSITY AND PLANT SPECIES ASSESSMENT			
Confluent Consulting (Pty) Ltd	Bianke Fouche	Low	**Terrestrial Biodiversity Theme** The proposed development area is located within the North Langeberg Sandstone Fynbos. This ecosystem type is not an ecosystem which requires to be protected in terms of the Revised National List of Ecosystems which are Threatened and in Need of Protection promulgated under the National Environmental Management: Biodiversity Act (Act 10 of 2004). The site has been described as part of the Critical Biodiversity Area and Other Natural Areas regime in terms of the Western Cape Spatial Biodiversity Plan (2017). However, based on the transformed nature of the site Erven 56 and 57 do not meet the definition for being considered CBA1 areas, as the vegetation on the site is not in a natural condition, and it is not feasible or practical to use these properties to contribute towards the biodiversity targets of the Western Cape. Based on the condition of the vegetation on site, the sensitivity of the site to re-infestation by alien invasive species, and the location of the site (being in an industrial area), the Site Ecological Importance (SEI) was determined to be Low, with the fringes of the site determined as Very Low, as these areas are more prone to infestation by alien invasive plant species.
		Very High	**Plant Species Theme** During the site visit only **one** Species of Conservation Concern (SCC) was noted, *Hermannia lavandulifolia*. The establishment of this species' dispersal in the proposed development site follows the site clearance event that took place in 2022. The specialist noted that the this species is one of six species with a likelihood of occurrence in the area.

Specialist Company	Specialist Details	Sensitivity of receptors	Summary of findings
			In total, 67 plant species, including the SCC and the alien invasive species, were noted on site during the site visit conducted on the 15th of March 2023. The following alien invasive species of specific concern (due to their Category 1b status in terms of the NEMBA) were found on site: *Cirsium vulgare, Echium plantagineum, Acacia cyclops, Acacia saligna, Cenchrus clandestinus, Datura stramonium and Verbena bonariensis.* The specialist indicated that a permit from CapeNature would be required for impacting on the *Hermannia lavandulifolia* specimens on site. Additionally, an Alien Invasive Species Management Plan must be in place prior to the commencement of the proposed works, if approved.
AGRICULTURAL COMPLIANCE STATEMENT			
Johann Lanz	Johann Lanz	Very Low	**Agricultural Theme** An agricultural impact is a change to the future agricultural production potential of land. The significance of the agricultural impact is directly proportional to the extent of the change in production potential. In this case, the site is non-agricultural land within an industrial area . The development will cause no loss of agricultural production potential. and the development will not therefore result in any change to that potential.
ANIMAL SPECIES COMPLIANCE STATEMENT			
Cossypha Ecological	Robyn Phillips	Low	**Animal Species Theme** The site is mostly comprised of patches of bare ground and secondary patchy vegetation, scattered with common indigenous and alien grasses and shrubs. Faunal activity on the site was very low with only common and generalist birds and small mammals recorded. Some of the species recorded on the site included Barn Swallow *Hirundo rustica*, Karoo Prinia *Prinia maculosa*, Cape Bulbul *Pycnonotus capensis*, and Common Mole-Rat *Cryptomys hottentotus*. No faunal SCC were recorded during the site surveys. **No faunal SCC were recorded during the site surveys.**
GEOTECHNICAL AND GEOHYDROLOGICAL ASSESSMENT			
Terra GeoTechnical	Eugene van der Walt	Low	**Geotechnical** During the geotechnical investigation undertaken for the site, it was found that no problems were foreseen for the shallow foundations and deep service trenches up to 2m below ground level. During the investigations, no rock – and/or pedocrete outcrops were encountered. Additionally, no groundwater seepage was encountered. However, pedogenic material (calcified material) was identified across the site, indicating the occurrence of a fluctuating water table or soil moisture evaporation. The sidewalls of the test pits generally remained stable for at least 1 hour. Based on the laboratory testing done, it was found that the clayey alluvium and the reworked residual sandstone, found on site is potentially expansive, and both were deemed moderately compressible. Both material classified as worse than G9-type materials according to the COLTO Classification system and has since not been recommended for any design layer works under foundations or roads.
		Low	**Geohydrological** According to the inputs received from the Geotechnical Investigations Report, two boreholes were used to evaluate the groundwater resource within proximity to the proposed development. These boreholes are located within 2.5 km of the proposed development footprint, with only one located within 1 km (925 m) from the development site.

Specialist Company	Specialist Details	Sensitivity of receptors	Summary of findings
			• Samples were taken of groundwater abstracted from both boreholes (i.e.: downstream and upstream of the proposed development) and submitted to the relevant water laboratories for testing. The samples were taken directly from the discharge pipe, and thus represents the water being utilized from these boreholes. The following results were obtained: o **Borehole GZ00190 (Borehole 1)** ▪ The water is deemed of Dangerous quality with regard to the South African drinking water standards. This is due to the high Chloride value of 1205 mg/l. The water also exhibits high Electrical Conductivity and Sodium counts. o **Borehole GZ00189 (Borehole 2)** ▪ The water is deemed of Marginal quality with regard to the South African drinking water standards. This is due to the moderate Chloride value of 336 mg/l.
TRAFFIC IMPACT STATEMENT			
Element Consulting Engineers	HC Lourens	Negligible	**Traffic Impact** The following observations were made by the specialist: • The site distances at the access point onto Mkuze Street are excellent in both direction in terms of horizontal and vertical alignments. • Existing traffic volumes are very low and below the expectation for the existing industrial uses in vicinity to the proposed development site. • Based on the fact that the Mossdustria complex has been relatively developed to capacity, the long-term traffic growth is low (<1%) and will eventually reach zero in the long-term. • All trips will be distributed to the N2. • No mitigation measures or road upgrades are required from a capacity or geometrical design perspective. • The proposed development will have a negligible impact on the capacity and Level of Service (LOS) of the adjacent road network during either the morning or afternoon peak hours.

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/landscaping and operational phases of the proposed development.

Code of Conduct
The purpose of the Code of Conduct (CoC) is to minimise the impact of the activities associated with the construction phase on the environment. The rules and regulations prescribed in this CoC are intended to ensure that the impacts on the environment are not prejudiced by the construction activities. Failure to adhere to or any breach of 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 and operational phases 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/developer, 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 / developer / 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 which are subject to environmental approvals 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. These plans must be included as part of the environmental site file. Any changes (which required amendments to the environmental authorisation) of these plans must also be contained in the beforementioned site file;
  - Variations of the building plans must be approved by the engineer / holder / developer prior to being implemented; and
  - All buildings and associated infrastructure is to comply with the relevant SANS.
- **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**
  - The contractor must comply with the Occupational 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 Mkuzi Road warning them of the construction. Signage would need to be clearly visible and include, amongst others, the following:

- 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;
- 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.
- Construction works may only occur between 07:00 and 17:00, where employee hours are managed in line with the limits of the National Labour Law.

6.2. Site Demarcation

Prior to the commencement of any additional land-clearing or construction activities, the outer boundary of the construction working 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.

Since the entire site will be used for the purpose of the proposed development footprint, it is recommended that the site be fenced off with permanent fencing (such as ClearVu fencing or brickworks as stipulated on the site layout plan), where ClearVu fencing is used, this fence must be lined with shaded cloth in order to limit the visual and dust impacts of the proposed development during the construction phase.

However, should the holder / developer opt for temporary demarcation measures during the construction phase, the following guidelines are to be implemented on site throughout the beforementioned phases:

- All areas earmarked as no-go and open space areas are to be demarcated using barrier netting erected with poles planted no more than 3 m apart from one another in order to ensure that the barriers do not collapse.
- The contractor is to inspect the demarcations daily to ensure that the measures are in sound order.
- The effectiveness of the barrier netting must be inspected by the ECO during their site scheduled site visits.
- The Contractor is to ensure that no construction workers or vehicles are to always remain within the demarcated areas.
- No vegetation clearance must be allowed outside of the designated working areas.

6.2.1. No-Go Areas

For the purposes of the construction works to take place on site, there were no no-go areas identified within the boundaries of the proposed development site. However, for the purpose of the proposed development, all areas outside the approved parameters of the proposed development will be considered no-go areas. This is in alignment with the requirements brought forward by the Terrestrial biodiversity and Plant species specialist.

This must be adopted to limit the impacts of the construction phase. Only the area to be developed must be cleared to ensure there are no unmanaged open areas impacted upon by the proposed development which would be left vulnerable to wind and water erosion. It should be noted that, based on the current site conditions and the results of the pre-application site evaluation, the EAP did not

identify any sensitive areas within the boundaries within the boundaries of Erven 56 and 57. This was confirmed by the specialists appointed to evaluate the conditions of the site.

Should the boundary fences not be constructed upon initiation of the construction works, it is recommended that 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. The temporary demarcation measures as described above, is the preferred demarcation measure.

The areas outside of 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 and no dumping of any material (construction 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 re-enforce the demarcation. Any interaction with No-Go Areas must be communicated with the Contractor and ECO prior to any actions.

For the purpose of this proposal, the No-Go Area should be considered any area beyond the proposed development footprint.

6.2.2. 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. The site camp may not exceed the boundaries of the primarily affected properties (Specifically Erven 56 and 57).

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 on site throughout the construction phase and must be kept by the managing agent of the development throughout the operational phase. The environmental file is to include the following:

- A copy of the Environmental Authorisation (once obtained).
- A copy of the Water Use Licence (once obtained) or any other relative permits.
- A copy of the approved EMPr.
- Updated waste slips.
- Disposal slips or cleaning slips (ablution cleaning).
- All EMR's (Environmental Monitoring Reports) and ECO instructions.
- Copies of Environmental induction register/s.
- The Protocol for Chance Palaeontological Findings.
- A Complaints Register.
- Updated method statements.
- Any and all emergency procedure/s applicable to site activities.
- An Incident Register.

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

As stated earlier, since the proposed development will be located in its entirety on Erf 56 and 57, it is recommended that a permanent fence is erected upon inception of the development. 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 during the construction phase of the proposed development. The extinguishers must be in a working condition, within their service period and be maintained according to the relevant standards. 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 must 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 must 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 personnel are aware that creating fires within the site is prohibited.
- Should he/she choose to create one beyond the demarcated area, he/she is solely responsible for the management.
- He/she should ensure that:
    - Utilize a metal barrel and contain the fire within, outside of the proposed development boundary.
    - 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.
- The smoking area must be positioned away from any areas storing hazardous goods.

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.

If possible, recyclable waste must be separated (different bins provided for different waste types) on site and be recycled by the appropriate facilities. A waste management plan has been developed and included as AppendixAPPENDIX E of this Environmental Management Programme. This plan must be implemented throughout the construction and operational phases of the project.

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. 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. An incident log must be maintained on site for the duration of the construction and operational phases of the project.

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 Directorate: Pollution and Chemicals Management, in terms of Section 30(3) of the National Environmental Management Act of 1998, as amended (Act 107 of 1998).

6.3.5. Potable Water

An adequate supply of potable water must be provided to construction workers at the site camp. It is the Contractor's duty to ensure that the labour has adequate access to potable water throughout construction phase, and to monitor weather conditions, to ensure that labour has enough drinking water on hotter days, 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. The provision of ablution facilities must be provided and upkept in line with the Occupational Health and Safety Act (OHSA) (Act No 58 of 1993) (OSHA).

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. Such area must be suitably sized to provide facilities for all members of the workforce.

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.
- 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 must 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, though limited, encounter fauna (both domestic and wild) during the construction period. This must be included in the environmental awareness training completed with all site personnel before any construction commences (APPENDIX H 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 must 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, must be available on site, for use in case of an emergency.

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

As vegetation regrowth occurred prior to the commencement of the construction phase, the following measures must be implemented:

- An Independent Environmental Control Officer must oversee compliance with all the prescribed environmental requirements and mitigation measures listed here and will be on site regularly.
- As the Vulnerable plant Species, *Hermannia lavandulifolia*, was identified on site, a permit from CapeNature for the removal/relocation of the plants is required. Subsequently, a search and rescue operation must be performed to ensure that no plants of protection value is destroyed as a result for the proposed construction works.
- Only the area required for the proposed development footprint must be cleared/trimmed of vegetation once the removal of the SCC has taken place.
- 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 are not to 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).
- Additional stripped vegetation, where feasible, 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 (APPENDIX G).
- 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.

6.5. Alien Invasive Species Control

Due to the previously cleared nature of the development site, the site has been left vulnerable to the colonisation of exotic invasive and other weed species. Infestations and any spread of these 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 Regulations and Lists, respectively(GNR 1020 of 2020; GNR 1003 of 2020).

The following alien invasive species of specific concern (due to their Category 1b status in terms of the NEMBA) were found on site: *Cirsium vulgare, Echium plantagineum, Acacia cyclops, Acacia saligna, Cenchrus clandestinus, Datura stramonium* and *Verbena bonariensis*.

Removal of species should take place throughout the construction, operational, and maintenance phases. APPENDIX G provides the Alien Invasive Management Programme which must form part of the construction contract and includes an after-care period which will be required. The alien invasive species on site must be managed throughout the life of all phases of the proposed development.

6.6. Topsoil and Subsoil Management

Since the entirety of the site has been cleared in the second half of 2022, limited quantities of topsoil have been retained on site. Topsoil and subsoil 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 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 within the development footprint.
- 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.
- 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). Alien and weed control must be done in accordance with the Alien invasive management plan as provided in APPENDIX G.
- 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. – This will be specifically applicable to the Garden area as identified in the layout plan.

6.7. 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 (Please see APPENDIX E for the Waste Management Plan compiled for the proposed development). Separate waste bins/skips that are weather (rain and wind) 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. Skips must not be allowed to overflow and should be furnished with a cover to prevent dispersion of the waste during extreme weather conditions. 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 facilities must be kept on file and must be available on request.

Chemical toilets present a risk to the surrounding environment and must be managed accordingly. Chemical toilets must be kept within the site camp (not be linked to the storm water drainage system), on a level surface and secured from blowing over. Chemical toilets must be regularly emptied, by a

registered cleaning company and the waste disposed of at an appropriate wastewater disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets.

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

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

6.8. Erosion Control and Stormwater Management

Stormwater must be managed in accordance with the appropriate Stormwater Management Plan (SWMP) specifically designed for the purpose of the proposed development. Additionally, the SWMP must comply with the requirements of the Mossel Bay Local Municipality By-laws on Storm Water Management based on Sustainable Drainage Systems (SUDS) and the Municipal By-law on Municipal Land Use Planning: To regulated and control Municipal Land Use Planning. The SUDS systems attempt to maintain or mimic the natural flow systems as well as prevent the wash-off of urban pollutants to receiving waters. Further to this, the holder / developer 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 sediment-laden surface water from draining into river systems in proximity to the site. Stormwater must be prevented from entering or running off site.
- Sheet runoff from access roads and the walkways is slowed down by the strategic placement of berms;
- Diversion channels should be constructed ahead of the open cuts, and above emplacement areas and stockpiles to intercept clean runoff and divert it around disturbed areas into the natural drainage system downstream of the site.
- 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.

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 (as per the mitigation measures provided by the Terrestrial Biodiversity and Plant Species Specialist).
- 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 that form as a result of the works should be ongoing during the construction phase and not left until the end of the construction period.

It may be necessary to implement small-scale erosion protection measures at the construction site, to prevent soil erosion. Such measures may include the use of shade netting, geo-fabric, brush-packing or similar barriers in areas susceptible to erosion and along exposed slopes. The storm water management plan should adhere to the principles of sound storm water management as well as the Mossel Bay 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 the surrounding natural areas.

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.

6.9. Excavations and Earthworks

Any major earthworks with bulldozers and heavy machinery must be conducted 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 must be handled as described in this Section 6.6 of this EMPr.
- Excavations must take place only within the approved demarcated site.
- Excavations must follow the contour lines where possible.
- Excavations must be closed overnight, over weekends, holiday periods, and during any other planned site closure periods. Where this is not possible, adequate (as agreed upon by the ECO and engineer) demarcation measures and signage must be made undertaken around any excavation exceed a depth of 500 mm.
- Excavations must be temporarily cordoned-off by shade cloth or barrier fencing to obstruct visual impacts and to prevent the harm to animals or unauthorised persons that may fall into excavations.
- 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.

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 Fossil Finds Procedure (FFP) included as APPENDIX E of this EMPr must be followed.

6.10. Visual Impact.

The proposed development has the potential to cause a visual impact during the construction and operational phases. 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 industry and road users as possible. If possible, site demarcation 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 must be avoided, and construction vehicles must enter and leave the site during working hours (07:30-17:30).

6.11. 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.

The following noise management measures will be implemented during the operational phase of the proposed development:

- The 'Quiet time' for the truckers will be 10 pm. Therefore, the facilities will not permit any loud speaking or music after 10 pm on any given day.
- The according to the National Road Traffic Regulations as Amended (GN 458 of 2012). promulgated in terms of the National Road Traffic Act of 1996 (Act No. 93 of 1996) no persons are legally not allowed to drive between midnight and 4 am.

- The site will also be furnished with security staff which that will ensure compliance with the facility's "House rules".
- Amongst the "House rules", no persons will be permitted to use/consume or sell alcohol on the premises.
- No persons from the street will be allowed on site. Only truckers and staff members registered in the systems used on site will be permitted to access the facilities.
- All male and female quarters will be kept separate.

As such, all of these measures will result in the sufficient management of noise on site.

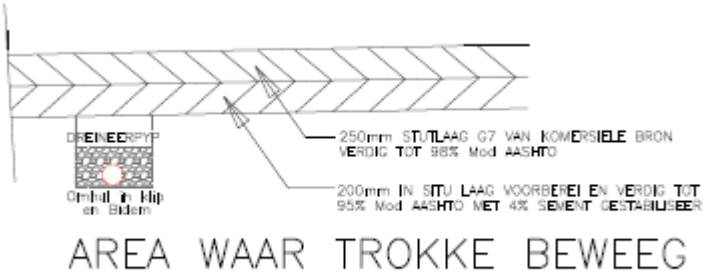
6.12. Dust Management.

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/m^2/day, and dust fall rates in non-residential areas may not exceed 1200mg/m^2/day, measured using reference method ASTM D1739.

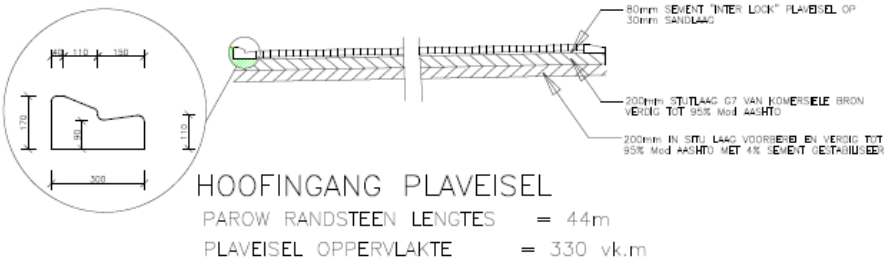
A Complaints Register must be available at the site office for inspection by the ECO, in case of complaints, such as those related to dust. This should form a part of your Environmental File.

The dust management measures proposed for the operational phase of the proposed development will be mainly attributed to the foundational works done during the construction phase. These works will include:

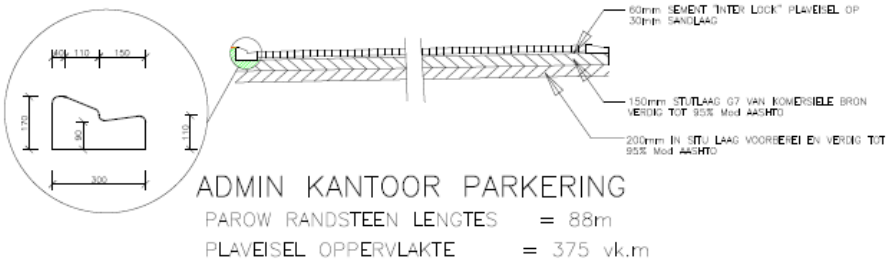
- General area:
    - 200 mm of in situ layer which has been prepared and compacted to 95% Mod ASSHTO, stabilized with 4% cement;
    - A layer of 250 mm commercially sourced G7 material, compacted to 98% Mod ASSHTO.



- Main entrance:
    - A 200 mm in situ layer prepared and compacted to 95% Mod ASSHTO, stabilized with 4% cement;
    - 200 mm commercially sources G7 material, compacted to 95% Mod ASSHTO; covered by
    - 30mm sand layer with an 80 mm cement interlocking pavement.



- Office parking area:
    - A 150 mm in situ layer prepared and compacted to 95% Mod ASSHTO, stabilized with 4% cement;
    - 200 mm commercially sources G7 material, compacted to 95% Mod ASSHTO; covered by
    - 30mm sand layer with an 60 mm cement interlocking pavement.



During the operational phase of the proposed development, the following dustfall monitoring will be done for a period of 12 months:

- Four monitoring points will be used for the purpose of monitoring the proposed development site. These monitoring points will be the four corners of the proposed development area.
- Monthly reports will be compiled by a suitably qualified specialist. The reports will be kept on site and should the Air Quality Officer request access to these report, such access will be granted.
- Should exceedances be recorded during the monitoring period (Non-residential area: 600 <Dustfall rate<1200; where two (2) events of exceedance are acceptable within a year (for not sequential months)), additional adaptive measures will be adopted.
- Records will be kept of all dust related complaints received by the surrounding landowners and property occupiers.

The monitoring will be done in accordance with the National Environmental Management: Air Quality Act of 2004 (Act no. 39 of 2004) in terms of the National Dust Control Regulations (GNR 827 of 2013).

Additional measures to be incorporated into the operational phase of the proposed development:

- Traffic speed of all persons accessing the site are not to exceed the recommended speed limit of the site. Notice boards of speed limits are to be erected throughout the site (in practical locations).
- Where practical, the site will be landscaped in order to reduce the amount of bare surfaced areas.

6.13. Heritage Resources

No heritages resources were identified or are likely to occur on site. This includes graves, human remains, archaeological material and paleontological material. However, should any of these

materials be uncovered during construction activities, they must be immediately reported to Heritage Western Cape. Burials must not be disturbed or removed until inspected by a professional archaeologist.

6.14. Completion of Construction works

Upon completion of the construction phase, and after each maintenance event, all disturbed areas, including the area around the access road and the undeveloped areas (areas where hard surfacing will not be done):

- 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, and which will not be paved as part of the proposed development proposal, 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.
- Disturbed areas, especially areas where excavations have taken place where no hard surfacing will take place, must be shaped as appropriate, 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 landscaping and stabilisation must be removed from the site and disposed of at an appropriate disposal site.
- Final landscaping and stabilisation of the site must be done to the satisfaction of the ECO and must adhere to all conditions/ requirements of the Environmental Authorisation.

7. ENVIRONMENTAL IMPACT MANAGEMENT: PLANNING AND DESIGN PHASE

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

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

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

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

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

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

Impact Management Objective: ***To appoint a suitably qualified and experienced environmental control officer and an environmental audito,r and***		
Potential impact to avoid	• Failure to appoint an ECO and Environmental Auditor will result in non-compliance with the requirements of the EMPr. • Non-compliance and site closure due to the site not undergoing the necessary assessments and approval processes.	
Impact Management Outcome	The requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
Environmental Auditor & Control Officer • A suitably qualified and experienced Environmental Auditor must be appointed before any activities commence on site. • A suitably qualified and experienced Environmental Control Officer (ECO) must be appointed before any activities commence on site. • The appointed ECO must adhere to the requirements stated in Section 11 of this EMPr. • The appointed ECO must be advised of the construction start date, at least two weeks in advance, prior to the commencement of any construction activities on site, so that the ECO can perform a pre-commencement inspection, ensure any pre-construction conditions of the environmental authorization are completed, and plan for environmental awareness training of construction workers (see Section 14 for Environmental Awareness Plan and APPENDIX H for Environmental Awareness Training Booklet).	Confuel (Pty) Ltd	During design phase
Performance Indicator	• A qualified ECO and Environmental Auditor is appointed prior to the commencement of any construction activities (including pre-construction set-up activities) on site. • Ensure all required licences, permits, authorisations and permissions have been obtained prior to the commencement of the proposed development's construction activities.	

7.2. Objective 2: Detailed Design, Site Layout Plan

Impact Management Objective: ***To compile a detailed design and site layout plan that takes cognisance of the sensitivity of the receiving environment.***		
Potential impact to avoid	Substantial deviation from the conceptual layout plan may result in: • Non-compliance with the Environmental Authorisation during construction. • Triggering of additional listed activities not authorised in the Environmental Authorisation. • An increase in the severity of the impacts identified and those which will be assessed as part of the EIA Process or may result in new impacts not previously assessed and not provided for in the EMPr, resulting in environmental degradation. • Visual disturbance.	
Impact Management Outcome	Development is compliant with recommendations of the EMPr.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General: • The final detailed design & layout must adhere to the conceptual layout to be assessed during the EIA process. • The final detailed design & layout must adhere to any conditions of the Environmental Authorisation (EA) and any additional licences or permits obtained. • If the final detailed design differs significantly from that assessed during the EIA process, 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.	Confuel (Pty) Ltd	During design phase
Performance Indicator	Detailed designs and site layout plans are approved and adheres to the conditions of the EA and EMPr, prior to the commencement of construction.	

7.3. Objective 3: Legislative compliance

Impact Management Objective: ***Legislative compliance***	
Potential impact to avoid	Commencement of activities without all relevant permits/permissions/licences/approvals including registered servitudes, permits to remove specific vegetation, etc. as well as commencing without implementation of specialist recommendations, 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	All permits, permissions, licences, approvals, and specialist input are acquired, and the proposed development is compliant with the respective conditions.

IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<u>General</u> • 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, etc. • Ensure all relevant permits/licenses/approvals are in place and are valid prior to commencing with works. These include: o Environmental Authorisation o A permit obtained from CapeNature in terms of the Nature Conservation Ordinance (19 of 1974, amended 2000) for the search and rescue (removal) of the Vulnerable plant species found on site. o A Major Hazard Installation Risk Assessment (MHI) is to be undertaken prior to the commencement of the construction phase; o Approvals from the relevant departments within the Mossel Bay Local Municipality in terms of the applicable municipal by-laws: ▪ By-law on Municipal Land Use Planning: To regulate and control Municipal Land Use Planning; ▪ Integrated Zoning Scheme By-law: To regulate and control Municipal Zoning; ▪ Municipal Stormwater By-law; ▪ Municipal By-law on Community fire safety; ▪ Municipal Air Quality Control By-law;	Confuel (Pty) Ltd	During design phase

▪ Municipal By-law on outdoor advertising and signage; ▪ Municipal By-law Relating to the Regulation of the Electricity Supply, as amended; ▪ Municipal By-Law on Stormwater control; ▪ Municipal By-law on traffic and parking; and ▪ Municipal By-law on Water services. • A wholesale licence is required in terms of the requirements as imposed by the Department of Mineral Resources and Energy in terms of the National Petroleum Products Act (Act No. 120 of1977). • Ensure that the Contractor has accepted the approved EMPr and Environmental Authorization (and any other relevant permits/licenses, etc), as a part of their Tender Document, to ensure that they are fully aware of their responsibilities in terms of the implementation of these documents. • Ensure that the Contractor provides method statements for activities intended to be undertaken, and these are checked and approved by the ECO as well as the Engineer. • Inform ECO of planned works ahead, so as to ensure inductions are undertaken timeously. • Involve ECO in selection of site camp location. <u>Unplanned/Planned Shutdown:</u> 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, to minimize dispersion. • Ensure all excavations are backfilled, and recommended landscaping/stabilisation is commenced at the very least. • Ensure heavy machinery is stored safely. • Contact the ECO to undertake an inspection and advise on any appropriate measures that need to be undertaken.		

• It is important to note that the Environmental Authorization (once obtained), all licences, and the EMPr (once approved) are considered legal and binding documents, therefore regardless of reason for shutdown compliance with these conditions must be met, or the Competent Authority must be informed of the reason and estimated duration of shutdown. Climate Change Considerations including adaption, must be integrated into the final design, and mitigation must be integrated into the construction scope of works, where necessary, all financial provision must be made: • Daily assessment of weather conditions should be completed during construction stage, to ensure conditions are viable for labourers to be working outside (ie: temperatures are not excessive). • Potable water should be available for consumption during construction, to keep labourers hydrated. • Implement rainwater capturing system for temporary storage of water to be utilized for washing tools, etc. • Utilize hand sanitizer for washing hands. • Request that labour use their own water bottles, to be filled up, rather than drinking from taps. • Increase fire risk: o Position fire safety equipment at all proposed reservoir sites. o Establish non-smoking signage at all reservoir and pump station sites, to remind maintenance teams that this activity must be avoided. o During development fires should be strictly prohibited, smoking must be discouraged on site. (If the Contractor allows this activity there must be a designated area within the site camp, with an appropriate bin to contain discarded cigarettes, with an appropriately heavy cover, only permitted within the site camp where it can be controlled) No smoking is permitted within the working corridor. o If security is positioned on site, at night, they must be briefed on fire hazard risks. o During construction and operational activities no uncontrolled fires are allowed. o Ensure emergency numbers are readily available with a working cell-phone on site, the foreman responsible the team is to ensure that he has these emergency numbers, and can contact emergency services immediately		

Performance Indicator	The project does not incur delays, excessive costs and penalties due to unobtained permits and non-compliance with required permits, permissions, licences, and approvals.

8. ENVIRONMENTAL IMPACT MANAGEMENT: PRE-CONSTRUCTION PHASE

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

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

- Identification and Demarcation of working areas.
- Establishment of site camp and associated site facilities.
- Pre-construction ECO visit.

8.1. Objective 1: Idenfication and Demarcation of working areas.

Impact Management Objective: ***Implement search and rescue plan and identify & demarcate No-Go and working areas.***		
Potential impact to avoid	• 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	Future construction activities will be restricted to within the designated areas & all areas indicated as no-go areas, will be protected from disturbance, i.e., beyond the development footprint or areas not assessed in terms of search and rescue, as of yet.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General • Inform ECO of planned works ahead, so as to ensure inductions are undertaken timeously. • Involve ECO in selection of site camp location. • Ensure all labour and sub-contractors undergo environmental inductions. • Ensure flora permits are in place timeously (PNCO only) – allow at least 1 or 2 months before commencement. • Perform search and rescue of the protected species on site prior to any establishment of any site equipment/construction materials, including erecting the fencelines. Environmental Awareness and Training (EAT) – Ensure all labour are informed and plant operators are aware of risks, issues, dos and don'ts and no-go areas.	Contractor (General) and ECO	Pre-construction phase (prior to arrival of construction equipment, machinery, or workers on site)

Working Areas
• Ensure the relevant ECO is present and consulted for demarcation.
• Demarcate/fence off the working area with fencing to:
  o contain potential overflow into the surrounding sites;
  o obstruct visual impacts;
  o Prevent harm to fauna that may fall into open excavations, therefore ensure all excavations are covered or closed overnight.
• The temporary fencing (if used) 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 demarcated construction footprint must be considered no-go areas.
 	
Landowners;
• Notify all surrounding 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.		

Performance Indicator	No-go areas, working areas and areas for site camp facilities have been identified and appropriately demarcated to the satisfaction of the ECO, before construction activities commences on site.	

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 equipment required to implement the provisions of the EMPr are provided on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General • The site camp and associated site facilities must be set-up and managed in accordance with the general environmental management measures specified in Section 6 of this EMPr. • The site camp must be strategically set up in a manner that will promote good environmental management during construction/ demolition, and to respond to potential emergencies (including fires, spillage of hazardous substances etc.) that may arise. • The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Frequent stormwater outlets must be maintained (if necessary), to prevent erosion at discharge points. **Site Camp Establishment** If in an area that contains vegetation, utilize disturbed areas only, and: • Ensure site selected is inspected and approved by ECO. • Utilize disturbed or transformed areas for site camp establishment. • Site camp facilities must be the minimum area reasonably required to accommodate the site camp facilities and must not be allowed to impact areas not within the designated footprint. • Ensure the site camp is positioned on a levelled area and is easily accessible. • Ensure site camp is fenced off with appropriate fencing and shade cloth, to block out activities within.	Contractor / Confuel (Pty) Ltd	Pre-construction phase (prior to start of construction activities)

• 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.
• Ensure an Environmental File is established on site that remains on site for the duration of construction, for auditing purposes. This file should contain as a minimum:
  o Copies of audit reports.
  o Copies of disposal/cleaning slips related to waste disposal at a registered waste disposal site and from company appointed to clean toilets.
  o Copies of purchase orders for rehabilitation material etc.
  o Copies of all approvals, including: Environmental Authorization, EMPr, and any other license/permit/approval.
  o Incident register.
  o Complaints register.
  o Copies of induction registers.
• 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:
  o Plan positioning of Potable Toilets for labour working along the route.
  o Consider designating a vehicle for the transportation of labourers to toilets. The vehicle can be equipped with a spill-kit
  o 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.
  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.
  o Ensure an adequate quantity of toilets are provided at each working area.		

• **Hazardous substances including oil/fuel etc. should be:**
  o Stored in bunded areas, on hardened/impermeable surfaces, where the barrels/drums/containers are protected from the natural elements.
  o Hazardous substances storage area must be treated as a no-go zone to unauthorised personnel.
  o Appropriate signage indicating what kind hazardous/flammable materials are stored.
  o Material Safety Data Sheet (MSDSs) must be available.
  o A fire extinguisher and contact details for the fire department and other emergency numbers must be positioned in close proximity.
  o A spill kit must be positioned inside the hazardous substances storage area.
  o May only be decanted/filled on the aforementioned surface or with the use of drip trays.
  o If any spills do occur, the solid must be excavated and disposed of as hazardous waste at an appropriately registered facility.
 	
<u>Waste Management:</u>
• Designate areas for temporary waste storage, this area should be:
  o Protected from wind/rain displacement.
  o 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. • The waste management plan included as APPENDIX E of the EMPr must be adhered to.		
Performance Indicator	Appropriate, well organised, and properly equipped site facilities are available on site prior to commencement of construction activities. The location and set up of the facilities don't impact on the natural resources.	

8.3. Objective 3: Pre-Construction ECO Inspection and Due Diligence

It is essential that the appointed ECO 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 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 commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training (see Section 14 and APPENDIX H), of construction workers. • The ECO must ensure all relevant items are in place in terms of Section 6 and 8 of this EMPr where necessary, and all relevant pre-construction requirements have been complied with in terms of the EA. • Ensure the project timeframe has taken the relevant requirements of the EA and EMPr, into account. • The ECO is to take photographs of the site prior to the establishment of ALL facilities (including the site camp), for record purposes. • The ECO is to ensure that the Environmental File is in place on site, with all the relevant content, and emergency numbers for the relevant authorities are available. • The ECO is to consult with the Contractor regarding relevant dates for environmental inductions (with regard to new labour).	Contractor	Start of construction phase
Performance Indicator	A pre-commencement site inspection is conducted by the appointed ECO before construction activities commence on site.	

9. ENVIRONMENTAL IMPACT MANAGEMENT: CONSTRUCTION PHASE

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

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

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

- Erosion, Earthworks and Land clearance
- Floral Habitat Loss and degradation
- Groundwater and soil contamination
- 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.

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 soil disturbance may result in some areas being susceptible to soil erosion, during heavy rainfall events, after completion of the activity. Stockpiled soils and materials can be displaced in heavy rainfall and windy conditions, resulting in sediment dispersal.		
Impact Management Outcome	Stormwater systems are not impacted significantly.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
General: • Ensure site is demarcated appropriately. • Ensure programme of works includes site stabilisation 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 demarcated working area (this includes stockpiling, if necessary, on site). **Stockpiling:** • Ensure stockpiles do not exceed 2m's in height. • 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. • Remove alien invasives/weeds established on stockpiled soils prior to re-instatement. • Continue with weed management throughout construction, in line with the requirements of APPENDIX G of this report. **Excavations:** • Ensure excavations are undertaken as per specifications (SANS). • Ensure that excavations are not left open overnight. If it is necessary to do so, the working areas' demarcation must be checked by the safety officer to ensure that ether is no potential for		Contractor	Construction phase

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:** • After backfilling an area, immediately commence with site stabilisation, and continue with weed management. • Ensure dust creation is controlled, as detailed in the EMPr. • No surfaces should be left exposed for extended periods of time – Dust management measures as proposed for the site must be implanted upon finalisation of buildings to be erected on site. **Alien invasive management:** • Ensure that alien invasive species are identified, and measures are taken to consistently remove alien invasive species from within the development footprint – implement weed management plan/alien invasive management plan as per EMPr. • Stockpiled alien invasive species cleared from site, should be contained and removed from site as soon as possible, so as to not allow dispersal. • Indigenous vegetation must be utilized where possible (with specific reference to the designated garden area identified on the site layout plan). **Erosion Management** • Suitable measures must be implemented in areas that are susceptible to erosion. Areas must be rehabilitated, and a suitable cover crop planted once construction is completed. • Topsoil must be stripped and stockpiled separately and replaced on completion. • If natural vegetation re-establishment does not occur, a suitable grass must be applied. • Be mindful of weather conditions that may cause runoff. • Utilize silt fences, if necessary, at demarcated construction footprint, to capture runoff. **Soil Contamination** • 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 on stie, 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 scavenging fauna, and other pests. **Topsoil** • 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 growth. **Stormwater and Erosion Control** • Stormwater Management Plans must be developed for the site and should include the following: - The management of stormwater during construction. - The installation of stormwater and erosion control infrastructure. - The management of infrastructure after completion of construction. • Temporary drainage works may be required to prevent stormwater to prevent silt laden surface water from draining into river systems in proximity to the site. Stormwater must be prevented from entering or running off site. • To ensure that site is not subjected to excessive erosion and capable of drainage runoff with minimum risk of scour, their slopes should be profiled at a maximum 1:3 gradient. • It is important that the landscaping/stabilisation of the 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. **Operating Procedures in the Site** • Construction shall only take place within the approved demarcated site boundaries. • 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. **Excavations** Whenever any excavation is undertaken, the following procedures shall be adhered to: • Topsoil shall be handled as described in this EMPr. • 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 landscping 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. **Soil Aspects** • Sufficient topsoil must be stored for later use during post-construction activities, particularly from outcrop areas. • Topsoil shall be removed from all areas where physical disturbance of the surface will occur. • All available topsoil shall be removed after consultation with the botanist and horticulturalist prior to commencement of any operations. • The removed topsoil shall be stored on high ground within the site footprint outside the 1:50 flood level within demarcated areas. • Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads. • The stockpiled topsoil shall be protected from being blown away or being eroded. The application of a suitable grass seed/runner mix will facilitate this and reduce the minimise weeds. **Monitoring:** • 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 ***Specialist proposed mitigation measures:*** • Before the start of construction on the site, durable materials should be used to fence off areas that fall outside of the Project Area of Influence disturbance strip and clearly show where construction vehicles are allowed and where parking areas are on the site. • Shade cloth used as fencing should be hammered into the ground using wooden pegs, and clear signs for "no-go" areas for vehicles should be placed strategically on the site. • For once off deliveries, clear indications on the nearby roads should be put up to guide truck drivers to the construction site, thus avoiding divers getting lost and causing unnecessary disturbance.		

• Weather reports must be checked daily to avoid heavy machinery and activities requiring a lot of water use on the site during rainy weather. • Following a rainfall event, all construction on the site must cease temporarily. • Sandbags should be available on the site where vehicles are refuelled so that any accidental spills can be contained and stopped quickly. • All construction vehicles should be checked for leaks on a daily basis at the start of each day. Vehicles that have leaks must not be allowed to operate on the site until they have been repaired. • Staff operating earth moving machinery need to be informed that these vehicles may not operate outside of the PAOI.		
Performance Indicator	The terrestrial and aquatic environment is not significantly impacted as a result of soil erosion.	

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

<u>Impact Management Objective:</u> 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 in the surrounding area is minimised.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<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 the approved footprint is to take place. • 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 the main site boundary.	Contractor	Construction phase

• Avoid intact forest vegetation pockets where possible. **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 carried through the operational phase. • Weeds and alien species must be cleared by hand before the post-construction/operational phase of the areas commences. Removal of alien plants are to be done according to the Working for Water Guidelines. • The Contractor is responsible for the removal of alien species within all areas disturbed during construction activities. Disturbed areas include (but are not limited to) access roads, construction camps, site areas and temporary storage areas. • In consultation with relevant authorities, the Engineer may order the removal of alien plants (when necessary). Areas within the confines of the site are to be included. • 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. **Fires** • 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.

Soil Aspects

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

Specialist recommendations

- Clearing of vegetation of the two erven is not permitted. The construction site must be planned and designed before construction starts, so that areas for equipment and material storage are defined and occur on level ground on the site near site offices.

- Ongoing monitoring and clearing of IAPs on site.
- Materials used during construction must be sourced responsibly to minimise the risk of further introductions of new IAPs. No waste dumping or burning is allowed on site. All material waste is to be collected in bins and transported to a waste disposal facility.

- Adequate ablution facilities that are regularly cleaned and maintained on the site, with at least one toilet per ten construction staff.
- Areas for resting and lunch is to be clearly indicated on the site. Theses areas must contain waste disposal bins that are cleaned on a weekly or bi-weekly basis.
- Concrete and cement mixing is not to occur near muddy areas. Where mixing of concrete and cement occurs, the area must be bunded or surrounded by an impermeable material to prevent any runoff into the surrounding environment and existing road.
- Stockpiles of materials and soil must all be covered by a geotextile or plastic covering, which must also be bunded (e.g., sandbags) when the piles are not in use on the site. This will prevent the material from washing away and contaminating the substrate of the site which likely still contains useful seeds and soil organisms.

- The use of filled sandbags can reduce the intensity of water flow over the site in strategic areas where water flow is anticipated to be altered during construction.

o Before the start of construction on the site, durable materials should be used to fence off areas that fall outside of the PAOI disturbance strip and clearly show where construction vehicles are allowed and where parking areas are on the site. o Shade cloth used as fencing should be hammered into the ground using wooden pegs, and clear signs for "no-go" areas for vehicles should be placed strategically on the site. o For once off deliveries, clear indications on the nearby roads should be put up to guide truck drivers to the construction site, thus avoiding divers getting lost and causing unnecessary disturbance. o Weather reports must be checked daily to avoid heavy machinery and activities requiring a lot of water use on the site during rainy weather. o Following a rainfall event, all construction on the site must cease temporarily. o Sandbags should be available on the site where vehicles are refuelled so that any accidental spills can be contained and stopped quickly. o All construction vehicles should be checked for leaks on a daily basis at the start of each day. Vehicles that have leaks must not be allowed to operate on the site until they have been repaired. o Staff operating earth moving machinery need to be informed that these vehicles may not operate outside of the PAOI. o Before the start of construction on the site, durable materials should be used to fence off areas that fall outside of the PAOI disturbance strip and clearly show where construction vehicles are allowed and where parking areas are on the site. o Shade cloth used as fencing should be hammered into the ground using wooden pegs, and clear signs for "no-go" areas for vehicles should be placed strategically on the site. o For once off deliveries, clear indications on the nearby roads should be put up to guide truck drivers to the construction site, thus avoiding divers getting lost and causing unnecessary disturbance. o Weather reports must be checked daily to avoid heavy machinery and activities requiring a lot of water use on the site during rainy weather. o Following a rainfall event, all construction on the site must cease temporarily. o Sandbags should be available on the site where vehicles are refuelled so that any accidental spills can be contained and stopped quickly.		

• All construction vehicles should be checked for leaks on a daily basis at the start of each day. Vehicles that have leaks must not be allowed to operate on the site until they have been repaired. • Staff operating earth moving machinery need to be informed that these vehicles may not operate outside of the PAOI.		
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: • Ensure contact numbers for emergency assistance is available. • Reptiles such as lizards are less mobile compared to mammals, and some mortalities could arise. - Should vegetation regrowth be significant prior to the commencement of the construction phase of the proposed development, it is recommended that a faunal search and rescue be conducted before construction commences, although experience has shown that there could still be some mortalities as these species are mobile and may thus move onto site once construction is underway. - A reptile handler should be on call for such circumstances. • Respective permits to be obtained beforehand (if applicable). • No animals are to be harmed or killed during the course of operations.	Contractor	Construction phase

• Should vegetation regrowth take place prior to the commencement of the construction phase, it will be important that clearing activities are kept to the minimum and take place in a phased manner. This allows animal species to move into safe areas and prevents wind and water erosion of the cleared areas. • Workers are NOT allowed to collect any flora or snare any faunal species. All flora and fauna remain the property of the landowner and must not be disturbed, upset or used without their expressed consent. • No domestic animals are permitted on the sites. • Trees and shrubs that are directly affected by the operations may be felled or cleared but only by the expressed written permission of the ECO. • Where landscaping will be done, indigenous vegetation must be used as far as reasonably possible. ***Specialist mitigation regarding floral SCC:*** • A plant rescue must be undertaken, with rescued plants being in the care of a relevant indigenous flora horticulturalist. The horticulturalist for the site must be in possession of the appropriate permit from CapeNature to move, sell, buy, donate, receive, cultivate, and sell threatened flora. • Rescued plants are not to be planted in more natural vegetation surrounding Mossdustria, rather they can be kept and cultivated as a reserve for revegetation in other projects where open spaces need rehabilitation with plants indigenous to the area. • The PAOI must be clearly defined using construction netting and/or appropriate fencing, and information boards where necessary. This will prevent impacts on SCC outside of this designated construction area. • Materials used during construction must be sourced and transported responsibly to minimise the risk of further introductions of new IAPs and contamination of the site, and especially the areas surrounding the site. • All staff are to be briefed and informed about the SCC found on the site and the potential of the site to support additional SCC. The brief should include highlighting areas that are marked as "no-go" areas on the site. ***Specialist mitigations regarding faunal SCCs:***		

• An experienced, independent Environmental Control Officer (ECO) must be appointed to oversee the construction activities and compliance with the EMPr. • During construction, no wild animals may under any circumstance be handled, removed, or be interfered with by construction workers. No wild animals may under any circumstance be hunted, snared, captured, injured, or killed. This includes animals perceived to be vermin, • Alien plant eradication and control must be undertaken throughout the construction and the operational phase.		
Performance Indicator	Construction team limit disturbance to the surrounding vegetation and faunal species.	

9.4. Objective 5: Prevention of groundwater and stormwater contamination

Impact Management Objective: ***To prevent the site from presenting an unnecessary visual impact to the surrounding public.***		
Potential impact(s) to avoid	Should hydrocarbon spills occur on site, there is a potential that such spills can contaminate the ground water table.	
Impact Management Outcome	No groundwater or surface water (runoff) contamination as a result of on-site activities	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General: • All construction vehicles are to remain within road reserves when delivering materials. • Materials and equipment are to be kept in a designated area as determined by the ECO, Contractor and the Consulting Engineer • No maintenance of vehicles is to be undertaken on-site during the construction phase of the proposed development. • A spill kit is required on site at all times. • All spills and incidents are to be reported to both the Site Manager and the appointed ECO immediately. Furthermore, an incident report must be filled out and kept on site for record keeping purposes.	Contractor	Construction phase

• All waste products resulting from the proposed construction activities must be kept in a designated, bunded area in the site camp. • All refuelling activities must be located on an impermeable surface. • Drip-trays must be placed underneath all stationary vehicles within the development footprint. ***<u>Geotechnical specialist:</u>*** • A cut off drain that diverts storm water run-off around the site. • An efficient stormwater drainage system must be installed around all structures, roads and parking bays to effectively catch and drain surface water. • A sheet-wash diversion berm should be constructed upslope of the site (i.e.: north of the site) to prevent surface water from entering the site. • A cut off drain that diverts storm water run-off around the site. • All surface areas where vehicle movement will take place (i.e.: roads and parking bays) must be sealed by means of bitumen, concrete paving or a concrete slab, to prevent the infiltration of liquids into the underlying soil. The soil material underlying this layer must be adequately compacted to prevent ingress of liquids through zones of weakness (i.e.: along joints) within the surface seal		
Performance Indicator	No incidents recorded for the duration of the construction phase No complaints received from surrounding land occupiers during the construction phase	

9.5. Objective 5: Visual Impacts

<u>Impact Management Objective:</u> 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 landscaping/stabilisation of the site's surface 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	Responsible party	Time period
General: • The site camp, toilets, storage facilities, stockpiles, waste bins, and any other temporary structures on site, should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Utilize shade cloth, or other suitable material, along the fence perimeter of the site camp and project footprint. • Waste must be managed according to this EMPr and the mitigation measures listed above in terms of waste management. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy and free of litter at all times. • Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. • The site camp, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Special attention must be given to the screening of highly reflective material. • Use of lighting (if required) must take into account surrounding residents and land users and must present little or no nuisance. Downward facing, spill-off type lighting is recommended. **Vegetation Clearance** • Ensure development boundary area demarcation is established before proceeding. • If possible, stabilisation of the proposed development site must occur as works in a specific area concludes. **Heavy Machinery** • Heavy machinery must remain within fenced areas. • Do not undertake maintenance of heavy machinery on site or on permeable surfaces. **Stockpiling** • Separate subsoils and topsoils. • The topsoil must be stored separately and should not be contaminated.	Contractor	Construction phase

• 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 landscaping purposes. • Clear litter/waste/weeds from topsoil prior to backfilling. • Import topsoil if topsoil is found to be inadequate to support landscaping. • Do not allow stockpiled materials to exceed 2 m in height, and do not position stockpiles along slopes or outside of the project footprint/site camp. **Stormwater measures** • Utilize temporary stormwater structures, e.g. silt fences, to capture runoff before it creates erosion down slopes. **Dust** • Dust suppression methods, such as non-potable water spraying must be used during the construction phase of the proposed refurbishment project. • Vehicular speed must be controlled at all times, with no indiscriminatory driving permitted by any construction or other vehicles on site. • Should excessive dust be recorded by the appointed ECO, corrective measures must be taken by the construction team. • Where practically possible, the proposed dust suppression measures proposed for dust management (by means of compaction of the in situ soil layer followed by stabilisation) must be done as part of the dust management measures, once the foundations of the buildings on site have been lain. **Noise:** • All construction vehicles must be equipped with muffled reverse sirens (which are to the standard of the Occupational Health & Safety Act (Act 85 of 1993)). • No construction activities are permitted between 17:00 and 7:00 (night time hours). • Construction workers are to always remain within the designated site boundary. • Where possible, eating areas must not be located within the vicinity of the neighbouring buildings. **General housekeeping:** • A clean site policy must be adopted at all times during the construction phase.		

• Where possible, storage and disposal of waste must take place in a sustainable manner, where clearly marked recycle bins must be provided to workers at the site camp. • Where possible, waste bins must be placed in strategic areas on site so as to limit the amount of waste scattered (due to wind dispersal) on site. • Regular toolbox talks must be held with the construction crew in order to reiterate the importance of maintaining a clean site. • Construction rubble (such as cement bags) must be discarded promptly. • An adequate amount of waste skips must be placed on site. • Waste skips must not be allowed to overflow. • Waste skips must be closed. • Waste skips must be cleared on a weekly bases or as necessary and the waste slips must be provided to the ECO for record keeping purposes		
Performance Indicator	• Good "housekeeping" is evident on site. • The site does not pose a visual impact to surrounding community.	

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

<u>Impact Management Objective:</u> To create employment opportunities with potential for skills transfer, for members of the local community.		
Potential impact(s) to be promoted.	• A number of temporary job opportunities for skilled and unskilled labour will be created during the construction phase of the development. • Potential transfer of skills from more experienced workers to less experienced workers. • Increase in business for local businesses within the construction industry.	
Impact Management Outcome	Social benefits from the employment opportunities created during the construction phase.	
IMPACT MANAGEMENT ACTIONS		
Promotion measure	Responsible party	Time period

• Positive, therefore no mitigation necessary. • It should be noted that this impact will benefit the local community and address the issue of unemployment within the Western Cape, and South Africa, particularly for unskilled labourers, although temporary. • The applicant is recommended to source local labour, contractors and sub-contractors, as well as utilize local materials and suppliers. • Skills that are transferable to future employment opportunities must be taught.	Confuel (Pty) Ltd. / Contractor	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

<u>Impact Management Objective:</u> To ensure continued functioning of road network and road safety during construction.		
Potential impact(s) to avoid	• Some congestion may occur on Mkuzi 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.	
Impact Management Outcome	The functioning of the surrounding road network remains efficient, and the state of the infrastructure is not hampered.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<u>General</u> • Plan deliveries of materials ahead of time, such as abnormal loads, to occur outside of peak traffic periods. • A delivery schedule must be arranged so as to ensure that no deliveries are made to the site between 17:00 and 07:00.	Contractor	Construction phase

• 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: o Identifying working area as a construction site; o Cautioning against relevant construction activities; o Prohibiting access to construction site; o Clearly specifying possible detour routes and/or delay periods; o Possible indications of time frames attached to the construction activities, and; o Details of responsible contractors and engineers are working on the site. • 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. • Drivers of delivery vehicles must always adhere to the traffic speed and rules of the road. This must strictly implemented on site and must be further encouraged beyond the site boundaries. • No alcohol must be permitted on site (by neither the labourers or must be allowed in the horse of the delivery trucks where applicable). • Random breathalyser tests must be undertaken by the security team in order to ensure that no driver under the influence is permitted onto construction areas of the site. • Where drivers test positive for alcohol, where possible, they must be instructed to stop in an allocated area on site, until they are deemed safe to access the construction areas of the site, or be instructed to be collected by a representative of their company.		

• Such drivers must be reported to the management team of the company for whom they work for and must be further banned from the proposed development area for the remainder of the construction activities. **<u>Landowners;</u>** • 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.		
Performance Indicator	• The surrounding road networks infrastructure remains in its current state. • Limited congestion and traffic.	

9.8. Objective 8: Construction Noises and labour be inconsiderate of neighbours

<u>Impact Management Objective:</u> To prevent the site from presenting an unnecessary visual impact to the surrounding public.		
Potential impact(s) to avoid	• Complaints from neighbouring properties and occupiers of the site. • Disturbance to surroundings,	
Impact Management Outcome	Minimal impacts on the adjacent landowners and occupiers.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<u>General</u> • A complaints register must be available on site. • Strict operating hours for heavy vehicles and construction activities must be implemented. Movement of all plant must be limited between 07h30 and 17h30. • Work on site must be well-planned and must proceed efficiently so as to limit the duration of the disturbance.	Contractor	Construction phase

• Vehicles and equipment must be kept in good working condition. If deemed necessary, machinery and equipment must be fitted with mufflers / exhaust silencers. No unnecessary disturbances must be allowed to emanate from the construction site. • Workers must be educated on how to control noise generating activities that have the potential to become disturbances, particularly over an extended period of time. • Noise levels must comply with the relevant health and safety regulations and SANS codes and must be monitored by the Health and Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors.		
Performance Indicator	• No complaints from surrounding business owners and occupants. • The site does not pose a health and safety impact to surrounding community.	

10. ENVIRONMENTAL IMPACT MANAGEMENT: POST CONSTRUCTION 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:

- Alien invasive species clearance and landscaping
- Boosting local revenue and local economy through the provision of additional fuelling source in local area
- Waste and pollution control
- Visual Impact
- Climate change impacts

10.1. Objective 1: Alien invasive species clearance and landscaping

***Impact Management Objective:* Alien invasive species clearance and landscaping**	
Potential impact(s) to be promoted.	• Infestation by alien invasive species during the operational phase of the proposed development. • The effects of edge effects are seen around the site following the conclusion of the construction works.
Impact Management Outcome	• Limited infestation and establishment of alien invasive species population.

IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
Specialist Recommendation: - Regular effort must be made to keep the site clear of all IAPs, and this is also a requirement by law. - Planting of grass and lawns must be avoided on the site apart from in the open pavers that will be used as parking areas for staff on the site. Here only indigenous grass may be planted, and kikuyu grass (*Cenchrus clandestinus*), a listed invasive species, is banned. - Dumping of garden refuse or leaving stacks of cleared IAP slash in natural and near-natural vegetation is not allowed. Dumping may only occur in designated areas. - General cleanliness and order must be maintained on the site to avoid accidental impacts to the environment. Ensure that there are sufficient bins available on the site, both inside of the offices and on the outside. - Regular maintenance of the diesel tanks on the site. - Trained staff must manage the filling station and washing bay on the site to avoid pollutants running off into the environment. - Where possible, indigenous vegetation must be utilised for the purpose of landscaping (specifically regarding the landscaping of the garden area).	Developer / Facilities management	Operational phase
Performance Indicator	• Increase in employment of local community members and utilization of local businesses and suppliers.	

10.2. Objective 2: Boosting local revenue and local economy through the provision of additional fuelling facilities

***Impact Management Objective:* Boosting local revenue, local and regional economy**		
Potential impact(s) to be promoted.	Positive impacts Local and regional economic growth	
Impact Management Outcome	The logistics industry is provided with a safe area for their drivers to lodge	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
No mitigation proposed. As businesses grow and become more stable, they are able to employ more people, this can lead to: • Sourcing local employees of various skill levels.	Developer / Facilities management	Operational phase

• Employees are able to earn a living to improve the lives, health and safety of their family members and households. • Employees are able to afford to educate their children. • Employees are able to provide 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. • Marketing related: Use of the proposed facilities during the operational phase of the proposed development must be encouraged by all cross-country logistics companies commuting along the N2-Highway, with a keen focus on the existing commuters currently making use of the informal resting areas. • Community upliftment: As the proposed facilities will eliminate the need for truckers to make use of quiet roadways on the fringes of the residential areas, an effort must be brought forth in terms of the municipal community security directive to guide truckers toward the proposed facility. This will not only enhance the safety of the affected community, but also ensure the safety of the trucker in question.		
Performance Indicator	Local economic growth, due to reliability of essential services.	

10.3. Objective 3: Groundwater impact: Impact on the quality of the groundwater as a result of the on-site activities

***Impact Management Objective:* Waste and pollution control**		
Potential impact(s) to be avoid.	• Should proper monitoring of the installed infrastructure not be implemented on site, there is a risk of the proposed development to pollute the underground water resource in the event of infrastructure failure.	
Impact Management Outcome	• No underground water resource contamination.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• All infrastructure is to be inspected on a regular basis in order to ensure that should leakages occur, they can be timeously identified and actions towards mitigation can be taken. • The stormwater system is to be equipped with a grease trap and must be cleaned on a regular basis in order to ensure that no additional hydrocarbons are released into the municipal stormwater system.	Developer / Facilities management	Operational phase

• All materials containing hazardous substances are to be stored in a bunded area prior to the collection and disposal of these materials by a licenced handler. • A Major Hazard Installation Risk Assessment must be undertaken once all infrastructure has been installed. Any mitigation measures provided by the assessor must be incorporated on site. • All applicable Health and Safety Regulations must be adhered to at all times. • An incident register, indicating all mitigation measures undertaken towards rectification, must be kept on site at all times. • A register of all applicable authorities (Muni and emergency services (Police, Fire Department etc) exercising jurisdiction over the proposed development must be kept on site and must be contacted in the event of an incident, where relevant. • A spill kit must be available on site at all times. • Employees must be trained in the proper procedures to follow in the event of a spill/leak incident occurring on site. • All incidents must be reported to the management team. • Grease traps must be maintained as required in order to ensure that lubricants are not allowed to enter the municipal stormwater network. • A bunded area must be available on site for the storage of any hazardous wastes. This includes oil storage containers, rags, collected grease and other lubricants. • Monitoring measures (diesel tank farm monitoring wells) must be installed at the tanks such as a gauging system in order to easily detect any spillages or leaks and an emergency response plan must be available on site at all times, clearly stipulating the emergency procedures to be followed in the event of a spillage/leak of the tank farm infrastructure. • Contingency plans must be compiled for possible spillages of dangerous goods and include details for decontamination and process to be followed. **<u>Specialist recommendations:</u>** • It is recommended that the following actions be taken to obtain the necessary information in order to design a suitable monitoring system for the proposed development: o A monitoring borehole should be drilled on-site, including the installation A monitoring borehole should be drilled on-site, including the installation of a perforated casing throughout the length of the borehole, and the implementation of a steel cap incorporating a small hole through with a bailer can be dropped and the groundwater level measured. The monitoring boreholes should be appropriately designed and constructed. The design of the monitoring wells should be guided by a suitably qualified hydrogeologist o The yield characteristics of this borehole must be determined accurately by means of a pump test.		

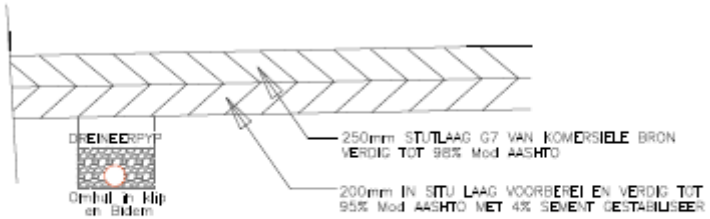
○ The results of the testing work will be utilised to determine the characteristics of the underlying groundwater aquifer (including its transmissivity and the groundwater gradient). ○ All relevant requirements to prevent, monitor and correct spillage as set out in SANS10089-3 should be adhered to as a minimum requirement. • It is recommended that the water quality be monitored on a yearly basis for hydrocarbon pollution.		
Performance Indicator	• No spills and leakages of hazardous substances within the site boundary, which resulted as a direct result of the proposed development activities and associated infrastructure.	

10.4. Objective 4: Nuisance and pollution management: Dust, noise, and visual impacts

Impact Management Objective: ***Visual Impact***		
Potential impact(s) to be avoided.	• Change in sense of place • Should the site not be properly managed, in terms of dust, noise and visual aspects, complaints may be brought forward to the Municipality which could lead to the management team being reprimanded.	
Impact Management Outcome	• Operational phase of the proposed development does not affect the air quality of the surrounding area. • Limited noise impacts are observed on site. • The proposed development conforms to the visual landscape of the surrounding area. • Implementation of the National Veld and Forest Fire Act (Act No. 101 of 1998)	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General: – Utilize natural colours and non-reflective material for the proposed development buildings. – Ensure that the alien invasive plan is implemented throughout the operational phase of the proposed development. – A clean site policy must be implemented throughout the site, with waste bins made available across the site. – A recycling regime (where was is separated into Organic Waste, Plastics and Paper waste, and other waste) must be available at the canteen area. – The Waste Management Plan (where applicable to general waste) must be implemented on site. – A complaints register must be always kept on site. – All aspects of the facilities must be kept in a clean and tidy manner.	Developer / Facilities management / Community	Operational phase

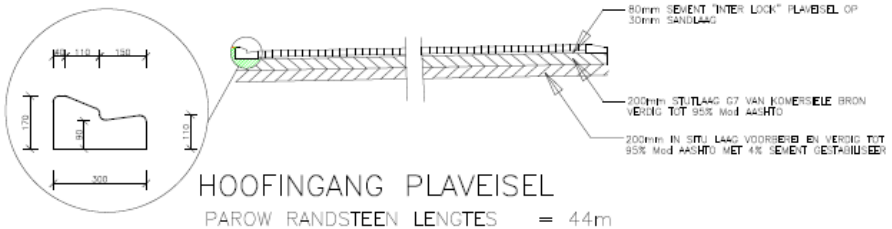
Dust

- The following layer works have been proposed and are supported as sufficient dust management measures for the proposed development site:
    - General area:
        - 200 mm of in situ layer which has been prepared and compacted to 95% Mod ASSHTO, stabilized with 4% cement;
        - A layer of 250 mm commercially sourced G7 material, compacted to 98% Mod ASSHTO.



AREA WAAR TROKKE BEWEEG

- Main entrance:
    - A 200 mm in situ layer prepared and compacted to 95% Mod ASSHTO, stabilized with 4% cement;
    - 200 mm commercially sources G7 material, compacted to 95% Mod ASSHTO; covered by
    - 30mm sand layer with an 80 mm cement interlocking pavement.



HOOFINGANG PLAVEISEL
PAROW RANDSTEEN LENGTES = 44m
PLAVEISEL OPPERVLAKTE = 330 vk.m

o Office parking area: ▪ A 150 mm in situ layer prepared and compacted to 95% Mod ASSHTO, stabilized with 4% cement; ▪ 200 mm commercially sources G7 material, compacted to 95% Mod ASSHTO; covered by ▪ 30mm sand layer with a 60 mm cement interlocking pavement.  – During the operational phase of the proposed development, the following dustfall monitoring will be done for a period of 12 months: o Four monitoring points must be used for the purpose of monitoring the proposed development site. These monitoring points must be the four corners of the proposed development area. o Monthly reports must be compiled by a suitably qualified specialist. The reports must be kept on site and should the Air Quality Officer request access to these report, such access will be granted. o Should exceedances be recorded during the monitoring period (Non-residential area: 600 <Dustfall rate<1200; where two (2) events of exceedance are acceptable within a year (for not sequential months)), additional adaptive measures must be adopted. o Records must be kept of all dust related complaints received by the surrounding landowners and property occupiers. o The monitoring must be done in accordance with the National Environmental Management: Air Quality Act of 2004 (Act no. 39 of 2004) in terms of the National Dust Control Regulations (GNR 827 of 2013). – Additional measures to be incorporated into the operational phase of the proposed development:		

o Traffic speed of all persons accessing the site are not to exceed the recommended speed limit of the site. Notice boards of speed limits are to be erected throughout the site (in practical locations). **Noise** – The 'Quiet time' for the truckers must be 11 pm. Therefore, the facilities will not permit any loud speaking or music after 11 pm on any given day. – The site must also be furnished with security staff which that must ensure compliance with the facility's "House rules". – Amongst the "House rules", no persons must be permitted to use/consume or sell alcohol on the premises. – No persons from the street must be allowed on site. Only truckers and staff members registered in the systems used on site will be permitted to access the facilities. – All male and female truckers and quarters must be kept separate. **Fire prevention management** – Appropriate signage must be located in strategic locations on site at all times. – The site must be properly furnished with the required fire fighting equipment for the type of facilities proposed. – The fire management plan must be submitted to the Local Fire Department for approval. – A Major Hazard Installation assessment must be undertaken by an experienced specialist. – All firefighting equipment and measures must be to the standards of the Municipal By-Laws and the Occupational Health and Safety Act. – All workers on site must be trained in the procedures to follow in the case of a fire-related emergency on site. – No fires of any kind must be permissible on site during the operational phase of the proposed development areas. – No public smoking areas should be provided to the truckers or personnel on site. – Should such an area be provided, by the facilities manager, the area must be located towards the far south of the proposed development site. – Should any individual be caught smoking near the diesel storage farm, the person must be given a warning or be liable to pay a fine.		

Performance Indicator	• No alien vegetation present. • No dead vegetation present. • No complaints from surrounding occupiers	

10.5. Objective 6: Reduced impacts on the surrounding properties.

Impact Management Objective: ***Reduced impact of the operational activities on the surrounding properties***		
Potential impact(s) to be avoided.	• Increased occurrences of theft, vandalism, sexual offences etc in the area. • Depreciation of property values in the surrounding area.	
Impact Management Outcome	No depreciation of property values in the surrounding area.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
Security patrols: • Regular patrols of the perimeter must be done during the nightshift as per a set timeline, • During patrols, the security officers must inspect the perimeter fence, building doors, windows etc. • Additionally, all lights on the premises must be inspected in order to ensure that all areas are well illuminated. • All patrol security officers must be vigilant of common security risks including burglary, break-ins and theft. All incidents must be reported to the shift and facility management team, and must be captured in the incidents. • Photographic evidence must be collected immediately. • No suspicious vehicle parked outside of the premises may be approached. Should concern be warranted, facility management can be contacted or the panic button can be activated. **Access control**	Developer / Facilities management	Operational phase

• All truckers using the facilities must have an account opened with the Customer management unit as all truck entry tickets are run through the Aberrant App. • Customers that do not have an account code needs to park one side (inside premises) and report to the admin office to sign up as a client, only then is a driver allowed near the pumps and able to pour in Diesel. • Tickets will be issued by security VIA the Aberrant App to drivers to allow access which needs to be given to the petrol attendee who will stamp it out and give a proof of payment slip to the driver which must be given to security to exit. • No trucks will be allowed to enter the site without a customer code or approval from management. • Once the slip has been issued, the security must compare the vehicle registration and the drivers name with the information on the ticket. • Truck Horse not allowed to leave the premises without their trailer and approval needs to be obtained by management if alternative arrangements were made. • Mechanics who work on trucks need approval from management or approval on the Entrance Request WhatsApp group to enter the site. Template has been provided to ensure security completes and sends it on the group for management to approve or decline. **<u>Women and Children</u>** • Females and Children accompanying drivers during the day (not over-nighting) are only allowed entry based on the conditions below: o To pour diesel. o No movement out of the vehicle is allowed. o No parking / overnight sleeping allowed. o No overnighting with a male driver is allowed. o If requested to use the restrooms approval needs to be given by management. o Security needs to accompany the female to the restroom and wait outside to ensure the females safety and to accompany her back to the vehicle. o Children is only allowed to use the restrooms if accompanied with the security and the legal guardian of the children. Approval needs to be given by management first.		

○ No entry is allowed for woman who is in a truck with a driver only in Light Commercial Vehicles. **<u>Female Drivers</u>** • Female drivers must notify management before arrival if they intend to overnight. • Female drivers and their trucks will be kept separate under the strict supervision of security. • Female drivers are only allowed to use any of the facilities or canteen with the supervision of security accompanying them. • Security will wait for the female driver to accompany her back to her truck / vehicle. • Female drivers are under no circumstances allowed to roam the site alone. • Female drivers are not allowed near any male driver's trucks. **<u>General measures (include but not limited to)</u>** • NO visitors are allowed for drivers through the small gate. • The small gate must always remain closed and locked. • The small gate is only allowed for security and employees clocking in and out for work. • Security officers will search all employee vehicles when exiting the premises. • All bags, boxes and parcels must be opened and searched. • Before searching commences, the Security Officer will request the staff / visitor whether he/she has anything to declare in his / her possession. • Any unauthorized items must be confiscated immediately and noted in the Occurrence book in red pen. • The alleged transgressor must be detained at the security office and the client and relevant manager must be contacted immediately. • No alcohol will be allowed on site. • No alcohol is allowed with a driver in their truck. • Any alcohol must be confiscated by security IMMEDIATELY. • Security will report any use of alcohol IMMEDIATELY to the manager on shift and to management directly. • Random breathalyser test will be done on drivers by security. • Drivers are not allowed to leave the site per foot, they are only allowed to exit with their truck / vehicle.		

• Any driver found with alcohol will be escorted from the site and will not be allowed back access without approval from management.		
Performance Indicator	No complaints regarding the operational activities on site are received. No depreciation of the surrounding properties.	

10.6. Objective 7: 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 period
General: • Implement all adaption and mitigation measures found to be feasible and reasonable. • Monitor efficiency of all adaption and mitigation measures, during operational phase.	Developer / Facilities manager	Operational phase

Performance Indicator	Local climate remains unchanged as a result of development – no occurrence of field fires, no additional strain on water resources.

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 sub-contractors/consultants are also made aware of these documents. The Contractor is required to ensure that as per EMPr, EA conditions, and other permits or licences:

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

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 landscaping activities. The ECO Reports must be retained by the Holder for a period of at least 5 years, and must be provided to the Competent Authority upon request.

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

- Copies of all approvals, including: Environmental Authorization, Water Use Licence and any other license/permit/approval.
- The findings of all risk assessments
- A copy of the approved EMPr
- Copies of waste disposal slips
- Copies of chemical toilet cleaning/servicing slips
- Disposal slips or cleaning slips (ablution cleaning)
- All EMR's (Environmental Monitoring Reports) and ECO instructions
- Copies of Environmental Induction Register/S
- A Complaints Register
- Updated method statements
- Material Safety Data Sheets for all hazardous substances utilised on site.
- Copies of audit reports
- Risk Management, Prevention and Emergency Preparedness Plan
- An Incident Register
- Copy of induction registers.
- Copies of purchase orders for landscaping material etc.

11.2.2. Method Statements

The Competent Authority and/or the ECO may require the Holder / Developer 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 landscaping.

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 landscaping phases. The ECO is not required to monitor the site during the operational phase of the development.

- Frequency of ECO visits
- The ECO must conduct **bi-monthly** site visits during the construction phase, in addition to the start-up (pre-commencement) and closure (post-construction) 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 immediately 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 landscaping 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, other licences and / or approvals & the 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 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.
- 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 landscaping (although expected to be limited), all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.

11.4. Auditing by Environmental Auditor

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

- Ensuring compliance with the conditions of the environmental authorisation and the 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.

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

- Construction phase:
  - Every 6 months for the duration of the construction activities (as counted from the pre-commencement site visit to be conducted by the ECO).
  - At practical completion of the construction period.
- Operational phase:
  - 3 months after practical completion of the construction period.
  - Annually, for the first 5 years in order to ensure compliance with the monitoring requirements of the operational phase associated with this EMPr and the EA.

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 (this specifically relates to the garden area indicated on the site development plan). 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 2: 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 the proposed site development plan boundaries.	R2 000	R5 000
Failure to provide secured ablution facilities (1:30) on site. With males and females separated.	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 site boundaries.	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 (beyond the site boundary).	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

Finable Transgression	Min Fine	Max Fine
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 operational phase of the proposed development 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 following must be implemented during the construction and, where applicable, the operational phase:

- The construction contractor is responsible for identifying potential significant environmental risks that may arise as a result of pre-construction, construction and post-construction 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) (OHSA) are adhered to during the construction phase. The Holder is responsible for ensuring compliance with the OHSA 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 H), 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 always kept on site (during both the construction and the operational phases).
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 must be handed out to all labourers and must be explained to them.
4. The initial training must be done by the independent ECO, subsequent environmental awareness training must be conducted by the Holder's environmental representative.
5. Weekly checks to be done by the Holder's environmental representative.
6. The ECO to conduct monthly site visits.
7. 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 importance of remaining within the proposed development site footprint.;
- 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.;
- 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.

Operational environmental awareness training must be compiled prior to the commencement of the operational phase and all employees working on site following the conclusion of the construction phase must be trained in line with this plan. This training must be done with every new employee taken on in the operational phase of the project. The training must include, but not be limited to:

- 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
- 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.

APPENDIX A – CURRICULUM VITAES OF EAPS

CURRICULUM VITAE

BETSY-JANE DITCHAM

PERSONAL

Profession: Environmental Assessment Practitioner
Nationality: South African
Languages: English (read, write and speak) & Afrikaans (read, write and speak)
Drivers License: Code B
EAPASA Registration: No. 1480

WORK EXPERIENCE

March 2020 - Present: Sharples Environmental Services cc, Cape Town, WC
Co-Owner and Cape Town Office Manager: Principal Environmental Assessment Practitioner

- Project Management / Client Liaison
- Environmental Authorisation
- Environmental Management Programmes
- Public Participation
- Legal Compliance
- On-site compliance auditing

2018 – Feb 2020: Sharples Environmental Services cc, Cape Town, WC
Cape Town Office Manager: Principal Environmental Assessment Practitioner

- Environmental Authorisation
- Environmental Management Programmes
- Public Participation
- Legal Compliance
- On-site compliance auditing

August 2017 to December 2017: WSP, Cape Town, WC
Assistant Consultant

- Environmental Authorisation
- Legal compliance
- Air quality monitoring
- Public participation

October 2009 to October 2015: Jeffares & Green Engineering & Environmental Consultants, Pinelands, WC
Environmental Scientist

- On-site compliance auditing
- Environmental footprinting (carbon, water, waste)
- Business greening & sustainability
- Environmental authorisations
- In-house newsletter

July 2009 to September 2009: Freelance, Cape Town, WC
Environmental Control Officer

- Environmental auditing of construction related projects

TERTIARY EDUCATION

2005 University of Cape Town

- Bachelor of Science Degree with a double specialision in Zoology and Ecology

2006 University of Pretoria

- Bachelor of Science Honours Degree in Wildlife Management

ACCREDITATION / ASSOCIATION

- **EAPASA** Registration: No. 1480
- **Member IAIA South Africa**
- **Green Building Council of South Africa:** Green Star Accredited Professional

KEY PROJECTS

2020 Mossel Bay Rooikat Projects / Pan African Energy

- Environmental Impact Assessment for the proposed Dual-Fuel Power Plant, in Mossel Bay, Western Cape

2020 George George Municipality

- Environmental Impact Assessment for proposed University Precinct Development at the Garden Route Dam and Associated Infrastructure on a Portion of Remainder Farm 464, George, Western Cape

2020 George GrowGreen

- Waste Registration Process for the Composting Activities being undertaken by GrowGreen in George, Western Cape

2019/2020 Herolds Bay Mr Abraham Jacobus Cronje

- Basic Assessment for the proposed Development of Herolds Bay Country Estate on a Portion of Portion 7 Farm Buffelsfontein No. 204, Herolds Bay, Western Cape

2019/2020 Groot Brak Rooikat Recycling

- Basic Assessment and Waste Management Licence for the proposed Pilot Deploymerisation Processing Plant in Mossel Bay

2019/2020 Plettenberg Bay Status Homes Property Developers (Pty) Ltd

- Environmental Impact Assessment for the proposed Mixed-Use Development on Portion 9 of the Farm Kranshoek No. 432, Knysna Road, Plettenberg Bay

2019 Cape Town City of Cape Town

- Environmental Authorisation Amendment for the Bulk Water Pipeline along Baden Powell Drive, Khayelitsha, WC

2019 Caledon Department of Transport and Public Works Western Cape Government

- Basic Assessment for the proposed replacement and upstream re-alignment of Bridge 0564a, located at Km 23.47 on Divisional Road 1252, crossing the Klein River, south east of Caledon; The replacement of Causeway 12226, located at Km 0.49 on OP4032, on a minor road and close to MR326, linking Stanford with the N2; And the replacement of Culvert 10656, located at Km 3.7 on Divisional Road 1218, east of Stanford

2019 Plettenberg Bay Bitou Municipality

- Environmental Impact Assessment for the proposed Upgrade and Improvement of the existing Stormwater System in Poortjies, Plettenberg Bay

2018 Plettenberg Bay Bitou Municipality

- Environmental Impact Assessment for the proposed New Horizons Mixed-Use Development on Farm Hillview No. 437 & Associated Infrastructure

2018 Plettenberg Bay Bitou Municipality

- Environmental Impact Assessment for the proposed Kwanokuthula Phase 5 & 6 Mixed-Use Development & Associated Bulk Infrastructure

2018 Cape Town City of Cape Town

- Environmental Impact Assessment and Environmental Authorisation Amendment processes for the Proposed Mixed-Use Housing Development at Symphony Way

2018 East London Buffalo City Metropolitan Municipality

- Environmental Impact Assessment for the Proposed West Bank WWTW Marine Outfall Pipeline

2018 Cape Town Xintong Steel

- Environmental Authorisation Amendment for Xintong Steel, Atlantis Industria, Western Cape

2018 Cape Town Private

- Environmental Control Officer for the replacement of Damaged Seawall, Erf 234, Bloubergstrand

2017/2018 Saldanha/Cape Town Transnet

- Ambient and Stack Air Quality Monitoring for Transnet Ports Terminals

2017 Cape Town Strandfoam

- Waste Storage Registration for Strandfoam

2015 Cape Town EcoStandard

- Development of an Environmental Rating Label for Building Products

2015 Cape Town HatchGOBA

- Basic Assessment for the Upgrade of Trunk Road 11/1 (N7) from Potsdam to the Melkbos Interchange

2015 Cape Town Private

- Environmental Control Officer for the Construction of Clifton Terraces, Clifton, Cape Town

2015 Worcester Eskom

- Environmental Control Officer for the Construction of the Badsberg Substation and Associated Powerlines

2014 Saldanha Transnet

- Environmental Control Officer for the maintenance and upgrade of the Sishen/Saldanha Iron Ore Railway line

2014 Cape Town WasteControl

- Accreditation of Service Provider of Waste Management Services in Cape Town

2014 Cape Town Compass Bakery

- Environmental Footprint – Auditing, data analysis, report writing

2014 Cape Town City of Cape Town

- Wastewise III: Community and schools waste education and awareness campaign

2014 Cape Town City of Cape Town

- Environmental Management Plan for the Dido Valley Housing Project

2013 Western Cape Sunspot

- Environmental Impact Assessment for the construction of Solar farms in De Doorns, Riebeek Kasteel, Wolseley, Porterville, Eendekuil, Bonnievale, Klipheuwel and McGregor.

2013 Nationwide National Cleaner Production Centre

- Cleaner production studies for 4 automotive manufactures

2008-2012 Worcester Department of Public Works

- Environmental Control Officer for Upgrade of the medium security prison at Brandvlei Correctional Facility, Worcester

2010-2012 Cape Town City of Cape Town

- Environmental Control Officer for the Various improvements to various WWTW in Cape Town

2011 Cape Town Svenmills

- Environmental Footprint of the textile factory

2011 Cape Town Clicks (V&A Waterfront)

- Environmental Footprint of the V&A Waterfront Store

2011 Cape Town Pick n Pay (Canal Walk)

- Environmental Footprint of the Canal Walk Store

2010 Cape Town Department of Transport and Public Works

- Environmental Control Officer for the Reseal of TR-77

2010 Cape Town City of Cape Town

- Environmental Control Officer for the Infrastructure work on Coastal Park Landfill site

2010 Paarl Novo

- Environmental Control Officer for the Rebuilding of the Packhouse, including environmental training

2009 Oudtshoorn Oudtshoorn Municipality

- Development of the Municipal Strategic Environmental Assessment

2008-2009 Nationwide Department of Envronmental Affairs

- Permit backlog for 581 waste management facilities (landfill & non landfill facilities) in South Africa

2008 Cape Town City of Cape Town

- Environmental Control Officer for the Extension of the Vissershok landfill site

CURRICULUM VITAE

MADELEINE KNOETZE

PERSONAL

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

Nationality: South African

Date of Birth: 18 May 1992

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

Marital Status: Single

Drivers' License: Code B

Health: Excellent

WORK EXPERIENCE

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

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

February 2015 – September 2022: Exigent Engineering Consultants CC: Environmental Assessment Practitioner and GIS Specialist

- Management and compilation of GIS database;
- Layout/map creation;
- Basic Assessment Applications
- Water Use License Applications
- Environmental Monitoring/Auditing
- Stakeholder Engagement
- Reporting
- Environmental Management Plans
- Public /Contractor Awareness Training
- Biodiversity Offset Plans
- Rehabilitation and Protected Areas
- Project Management
- Ecological Impact Assessments
- Wetland Impact Assessments
- Rehabilitation and Monitoring Plans
- Alien invasive Management Plans
- Administration

TERTIARY EDUCATION

2014: Nelson Mandela Metropolitan Municipality

- Bachelor of Science Degree specialising in Environmental Sciences.

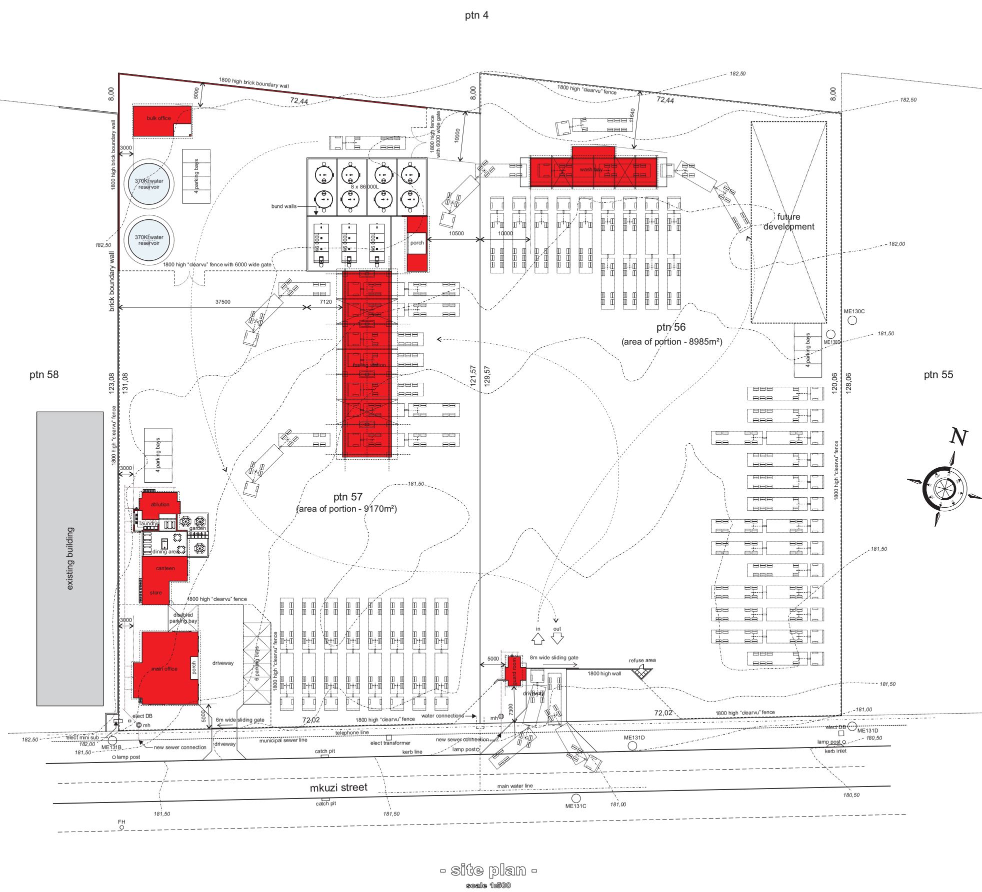
Key projects Involved with

Project	**Province**	**Aspects involved in**
Sharples Environmental Services cc		
Proposed construction of a reservoir located within the Koeberg Nuclear Power Station.	Western Cape	Environmental consulting for the purpose of
Environmental Impact Assessment Consultant for the proposed Hercules Solar PV Cluster - *ongoing*	Western Cape	Environmental Impact Assessment Consulting and report (Scoping) compilation
The proposed truck stop and associated infrastructure on Erf 56 and 57, Mossdustria - *ongoing*	Western Cape	Environmental Impact Assessment consulting and compilation of Environmental Management Programme
Proposed Phase 4 and Phase 5 mixed use developments.	Western Cape	Compilation of Environmental Management Programme
Existing activities occurring on portion 40 of the Farm Diepe Kloof No. 226.	Western Cape	Compilation of Rehabilitation Plan
Proposed Garden Route Dam Mixed Use Development, George	Western Cape	Water Use Licencing Appellant brief documentation.
Exigent Engineering Consultants cc		
Solely NEMA related projects		
EIA Applications		
Installation of a Diesel Generator at the Existing Mhlathuze Transfer Pump Station, Richards Bay.	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a Basic Assessment Report (BAR)
The proposed services station and associated infrastructure on Erf 3961, Empangeni,	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a BAR
The proposed Thermal Energy Power Plant and associated infrastructure development in Richards Bay.	KwaZulu-Natal	All Mapping and data management for the project
		Compilation of the EIA in the form of a Scoping report.
The proposed Good Hope 1 and 2 photovoltaic power plants located near Dealesville, Free State.	Free State	All Mapping and data management for the project
		Compilation of the EIA in the form of a BAR
Proposed Development of a Sewer Line for the Proposed Sammy Marks Township, City of Tshwane.	Gauteng	All Mapping and data management for the project
		Completion of the EIA in the form of a BAR
Proposed external infrastructure Blue Hills housing development, City of Joburg and City of Tshwane	Gauteng	All Mapping and data management for the project
		Compilation of the EIA in the form of a BAR
The Proposed Construction of The External Services for the Proposed Housing Development on a Part (Portion 1) Of Driefontein 146-Ir,	Gauteng	All Mapping and data management for the project
		Compilation of the EIA in the form of a Scoping report and EIA

Project	Province	Aspects involved in
Construction of the Proposed Residential Development on Holding 194 of Erand Agricultural Holdings and Portion 1687 (A Portion of Portion 9) of the Farm Randjesfontein No.405-Jr, City of Johannesburg.	Gauteng	All Mapping and data management for the project
		Compilation of the EIA in the form of a BAR
The proposed Filling Station on Erf 425 and Erf 426 in Pienaarsriver, Bela-Bela Local Municipality.	Limpopo	All Mapping and data management for the project
		Compilation of the EIA in the form of a BAR
The proposed Spitskop photovoltaic power plant located near Northam.	Limpopo	All Mapping and data management for the project
		Assistance with the EIA process in the form of Scoping.
Amendment Applications		
Part 2 Amendment: The proposed Blue Hills housing development located in the City of Johannesburg.	Gauteng	Compilation of application documents and mapping
Amendments to the proposed Northgate Mixed Use Development in North Riding, City of Johannesburg.	Gauteng	Compilation of application documents and mapping
Part 2 Amendment: The proposed Sammy Marks Mixed Use Development, City of Tshwane.	Gauteng	Compilation of application documents and mapping
Solely NWA related projects		
Proposed upgrade of rural roads for the City of uMhlathuze: Phase 3 – Mzingazi Village, Richards Bay,	KwaZulu-Natal	All Mapping and data management for the project
		General Authorisation Motivation in terms of the National Water Act.
Proposed upgrade of the Hammarsdale N3 Interchange	KwaZulu-Natal	All Mapping and data management for the project
		Water Use Licence Application Technical Reporting
Multi-aspect projects		
The Proposed Esikhaleni Mall: Road Safety Improvements: Upgrade of Mthombothi / Mdlebe Ntshona Intersection.	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a Basic Assessment Report
		General Authorisation Motivation in terms of the National Water Act
		Environmental Control Officer
Richards Bay Outfall Sewer Upgrade and Nkoninga pump station, Veld en Vlei.	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a Basic Assessment Report
		Compilation of the Water Use Licence Application, Rehabilit Documentation
		Rehabilitation Plan compilation
Upgrade of Water Supply Infrastructure for Khoza water supply area phase 1: Empangeni.	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a Basic Assessment Report

Project	**Province**	**Aspects involved in**
		General Authorisation Motivation in terms of the National Water Act
Proposed rural roads upgrade in Mandlazini – Phase 2, Richards Bay.	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a Basic Assessment Report
		General Authorisation Motivation in terms of the National Water Act.
Proposed upgrade of Melmoth Sanitation (Phase 3): Outfall Sewers and Waste Water Treatment Works, Melmoth	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a Basic Assessment Report
Zamokuhle Trust Agricultural Development, Mkuze	KwaZulu-Natal	All mapping for the project
		Assisted in completing the EIA which was a complete Scoping and EIA project
		Environmental Control Officer
Proposed Ritchie Motors Double Lane Traffic Circle in Richards Bay Central.	KwaZulu-Natal	All Mapping and data management for the project
		Completion of the EIA in the form of a Basic Assessment Report
		General Authorisation Motivation in terms of the National Water Act.
		Rehabilitation Plan compilation
Environmental Control Officer (only)		
Re-establishment of the rural road P537, Esikhaleni	KwaZulu-Natal	Environmental Control Officer
Aquadene Housing development – Internal Infrastructure	KwaZulu-Natal	Environmental Control Officer
Bronberg X9 & X13 Housing development	Gauteng	Environmental Control Officer
Bronberg X32 Housing development – External services	Gauteng	Environmental Control Officer
Derdepoort Erf 452 – Housing development	Gauteng	Environmental Control Officer
Hoewe X321 Housing development – External services	Gauteng	Environmental Control Officer
Louwlardia X56 and X57 – External services	Gauteng	Environmental Control Officer

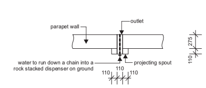
APPENDIX B – LAYOUT PLAN



- site plan -

Electrical Legend

- Ceiling Lights - 53
- Internal Wall Lights - 14
- External Spot Lights - 7
- High Bay Lights - 12
- Recessed Down Lights - 0
- Braai Lights - 0
- Light Switches - As per electrician
- Ceiling Fans - 0
- Air Conditioners - 6
- 15Amp Wall Plugs - 46
- Tv Points - 1
- Distribution Boards - 1 x Main and 6 x Sub
- Gas Geysers - 3



- spout design for conc roofs -

scale 1:50

SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Single Clear Glass

MAIN OFFICE

Nett Floor Area (m²) 151,57m²
Total Glazed Area (m²) 34,71m²
% Glazed Areas to Floor 22,90%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 194,38$
$A_T \times C_U = 212,20$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 18,0494$
$A_T \times C_{SHGC} = 19,7041$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Single Clear Glass

BULK OFFICE

Nett Floor Area (m²) 52,74m²
Total Glazed Area (m²) 13,05m²
% Glazed Areas to Floor 24,74%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 73,08$
$A_T \times C_U = 73,84$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 6,7856$
$A_T \times C_{SHGC} = 6,8562$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Double Clear Glass

GUARD ROOM

Nett Floor Area (m²) 14,47m²
Total Glazed Area (m²) 7,20m²
% Glazed Areas to Floor 49,76%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 17,35$
$A_T \times C_U = 20,26$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 1,6109$
$A_T \times C_{SHGC} = 1,8811$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Single Clear Low E Glass

IT ROOM / LOCKER ROOM

Nett Floor Area (m²) 10,95m²
Total Glazed Area (m²) 2,88m²
% Glazed Areas to Floor 26,30%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 11,69$
$A_T \times C_U = 15,33$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 1,0855$
$A_T \times C_{SHGC} = 1,4235$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

ESTIMATED ENERGY CONSUMPTION

Legend	Description	Watts	Quantity	Total Watts
	Ceiling Lights	11W	53	583
	Wall Lights	11W	14	154
	External Spot Lights	200W	7	1400
	High Bays Lights	85W	12	1020
			Total	3157
			Floor Area	1011,98m²
			Watt/m²	3,12Watt/m²
			Permitted 17Watt/m²	

MAXIMUM ANNUAL ENERGY DEMAND AS PER SANS 10142 = 97945,93Kw

(Watt x Hours per day x 365 days) / 1000 = Estimated Annual Energy Consumption

(3157 x 5 x 365) / 1000 = 5761,53
ESTIMATED ANNUAL ENERGY CONSUMPTION: **5762kW**

The design complies with the minimum requirements of SANS 10400-XA:2011 for Energy Consumption.

Schedule of Rights

Use Zone	Industry Zone 2		Permissible	Actual
Site Area	18155m²			
Coverage (%)			75,00%	8,13%
Coverage (Actual)			13616,25m²	1477,28m²
F.A.R.			1,5 (27232,50m²)	* 0,0814 (1477,28m²)
Height			Max 12,00m	Tank Height 10,83m
Building Lines	Side Boundaries - 0m			Max Bldg Height 6,98m
	Rear Boundary - 0m			
	Street Boundary - 0m	* Special F.A.R. Note:		
Total Area	1477,28m²	Total Floor Area - 2079,53m² Double Volume Area - 0,00m² **F.A.R. Floor Area - 2079,53m²**		

Parking Requirements	Gross Lettable Office Area	Bays Required	Bays Provided
4,0 Parking Bays/100m² of Gross Lettable Office Space	344,74m²	13,79 Bays	18 Bays
Parking for Trucks	n/a	30 Bays	30 Bays
Disabled Parking	n/a	1 Bays	1 Bays

window schedule

Top-Hung Charcoal Aluminium Windows & Doors

Block	Type	Size / Quantity
main office	6T12	(600 x 1200) 3 off
main office	12DT21	(1200 x 2100) 2 off LH 1 off RH
main office	24DDT21	(2400 x 2100) 3 off
main office	30DDT21	(3000 x 2100) 1 off
main office	double hinged door	(1700 x 2100) 1 off
main office	hinged door	(900 x 2100) 3 off
main office		813 Timber Frames 3 off internal
bulk office	15DT12	(1500 x 1200) 1 off RH 1 off LH
bulk office	21DDT12	(2100 x 1200) 3 off
bulk office	hinged door	(900 x 2100) 1 off
bulk office		813 Timber Frames 1 off internal
canteen / store / ablution block	12T6	(1200 x 600) 2 off LH 2 off RH
canteen / store / ablution block	15T9	(1500 x 900) 1 off RH
canteen / store / ablution block	6T12	(600 x 1200) 7 off
canteen / store / ablution block	12DT12	(1200 x 1200) 1 off RH 1 off LH
canteen / store / ablution block	12DT21	(1200 x 2100) 1 off LH 1 off RH
canteen / store / ablution block	15DT12	(1500 x 1200) 1 off RH 1 off LH
canteen / store / ablution block	double hinged door	(1700 x 2100) 1 off
canteen / store / ablution block		813 Timber Frames 7 off internal 1 off external
guard room	6T12	(600 x 1200) 1 off
guard room	9T12	(900 x 1200) 2 off
guard room	912	(900 x 1200) 4 off
guard room		813 Timber Frames 1 off internal 1 off external
locker room / IT room	12DT12	(1200 x 1200) 2 off RH 2 off LH
locker room / IT room		813 Timber Frames 2 off external

GENERAL NOTES
All work to be in accordance with the National Building Regulations and the Local By-laws.
Any errors, discrepancies or omissions are to be reported immediately.
All levels, dimensions and steps are to be checked and verified on site before commencement of any work.
Work to figured dimension only - drawings are not to be scaled.
Foundations to boundary walls are not to encroach any boundaries.
All electrical and plumbing work are to be carried out by registered tradesmen.
Brick re-inforcing to be installed every 5th course in brickwork.
Two courses of brick re-inforcing at window head height.
Provide dpc to walls at floor slab level, under all window sills and to all changes in floor level.
Vertical dpc where required.
Windows to be a minimum of 10% of floor area with opening sections as prescribed.
All re-inforced concrete work and floor slabs to engineer's detail.

DRAINAGE NOTES
Minimum depth of sewer to be 500mm.
All plumbing and drainage work and installation of sanitary fittings to comply to the relevant Local Authority by-laws, regulations and requirements.
Provide IE's to all bends, junctions, change of direction and gradients with suitable markers at ground level.
Fall of all drain pipes to be between 1:60 and 1:40.
Provide approved reseal traps to all waste fittings.
Provide AE at foot of all soil stacks.
IEs to waste pipes to be fully accessible at all times.
All drain pipes passing under building or footings to be encased in concrete of minimum 100mm thickness around pipe.
Pipe sizes: Soil pipes, vents & wc 110mm
Asvp 50mm
Bath, shower and wash troughs 38mm
Basins and bidets 32mm

GLAZING NOTES
Under 0,75m² - 3mm glass
0,75 - 1,50m² - 4mm glass
1,50m² and above - 6mm glass
All fenestration to be in comply with the requirements of SANS 204 and SANS 10400-XA

ROOF NOTES
Sheeted Roofs

0,5 mm thick S-rib Chromadek Dolphin Grey roof sheeting on 76 x 52 purlins.
Trusses of 114 x 38 Grade 4 timber and 228 x 38 rafters (bolted) at 1200 centres or to manufacturer's specification.
76 x 38 wall plates.
Roof pitch to be as shown on section.
Roof overhang to be as show on section.
All ceilings to owners specification.
Flashing if and where required.
Aluminium powder coated gutters & down pipes - To match wall colour (where applicable).
200 x 80 SM barge boards - same as roof colour.
900 wide paved strip around perimeter of dwelling.

FLAT CONCRETE ROOFS (Where applicable)
Concrete roofs to be in accordance with engineer's design.

STAIR NOTES (Where applicable)
All risers to be 170mm.
All treads to be 300mm.
1000mm high balustrades.
1000mm high handrails.
Minimum Stair Headroom to be 2100mm.
All work to be in accordance with the National Building Regulations and the Local By-laws.

CHIMNEYS
All chimneys to comply with Part V of the National Building Regulations where applicable.

POOLS
Pool to be finished only in a Charcoal or Portland Grey colour.
Pool safety to comply with National Building Regulations and SABS 1390 where applicable.

UTILITY NOTES
External wall colour - Earthy colours.
All external windows and doors to be charcoal aluminium.
Internal electrical installation to comply with SABS 0142.
TV aerials, satellite dishes and air-conditioners to be positioned to have minimum visual impact (to be screened or painted to match exterior colour).
No Solar Geysers or Solar Panels to be visible from any street.
900mm wide grey cement paving around buildings to prevent erosion from rain water.
Staining and/or sealing to external timber doors - Natural wood colour.
Colour/finish of any exposed timber - Treated with Carbolinium.
All Buildings to be built in accordance with the approved building plans.
Solar panels to be placed in inconspicuous position where applicable.

SPECIAL ROOF NOTES
9,5mm rhino ceiling boards - R-Value 0,045
Approved underlay - R-Value 0,75
135mm thick non-combustable (in accordance with SANS 10177-5) fibre blanket - R-Value 3,38

All floor slopes including bunds to be 1:100 to sumps and bund drainage points.
All bund outlets to have lockable steel gate valves.

PROPOSED NEW TRUCK STOP
on
Stands 56 and 57 Mossdustria Township
MOSSELBAY
for
Confuel (Pty) Ltd

signature owner: ....

signature architect: ....

drawing
Site Plan
Calculations
Window Schedule

J Keyser in association with WF Botha PrSArchT

SACAP Registration Number: **ST1277**

PO Box 9483
Cinda Park
1463

Cellular Numbers: J Keyser +27 62 177 8198
WF Botha +27 83 289 4836

drawn	scales	drawn
J Keyser	As Shown	August 2022

area

Room		Area		Total
Main Office	-	165,84m²		
Entrance Porch	-	6,80m²	-	172,64m²
Ablution			-	36,69m²
Laundry			-	14,29m²
Dining Area			-	58,77m²
Cafeteria			-	44,46m²
Store			-	25,49m²
Bulk Office	-	60,25m²		
Porch	-	8,75m²	-	69,00m²
Guard Room	-	18,68m²		
Entrance Porch	-	1,01m²	-	19,69m²
Filling Station			-	360,75m²
Wash Bay			-	164,84m²
Diesel Depot Office	-	13,76m²		
Diesel Locker Room	-	13,76m²		
Diesel Depot Cov Patio	-	17,84m²	-	45,36m²
Diesel Depot			-	465,30m²
		Total Area	-	**1477,28m²**

Rev	Description		Date
Rev 1	Fire Plan added	Date	22 August 2022
Rev 2	Locker Room/IT Room added	Date	12 August 2022
Rev 3	Tank Sizes reduced/Wall thicknes reduced using Maxi Bricks	Date	January 2023

File Name:
56 and 57 Mossdustria - Johan Pretorius - New Truck Stop (FINAL04).cdr

Sheet 1 of 9 Sheets

APPENDIX C - SCREENING TOOL

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/D6/29/0113/23

Project name: Mossdustria Truck Stop

Project title: Proposed development of a truck stop and associated infrastructure on Erf 56 and Erf 57 in Mossdustria, Mossel Bay Local Municipality, Garden Route District Municipality.

Date screening report generated: 05/06/2023 13:59:47

Applicant: Confuel (Pty) Ltd

Compiler: Sharples Environmental Services cc

Compiler signature:

……

Application Category: Infrastructure|Localised infrastructure|Storage|Dangerous Goods|Hydrocarbon|Petroleum

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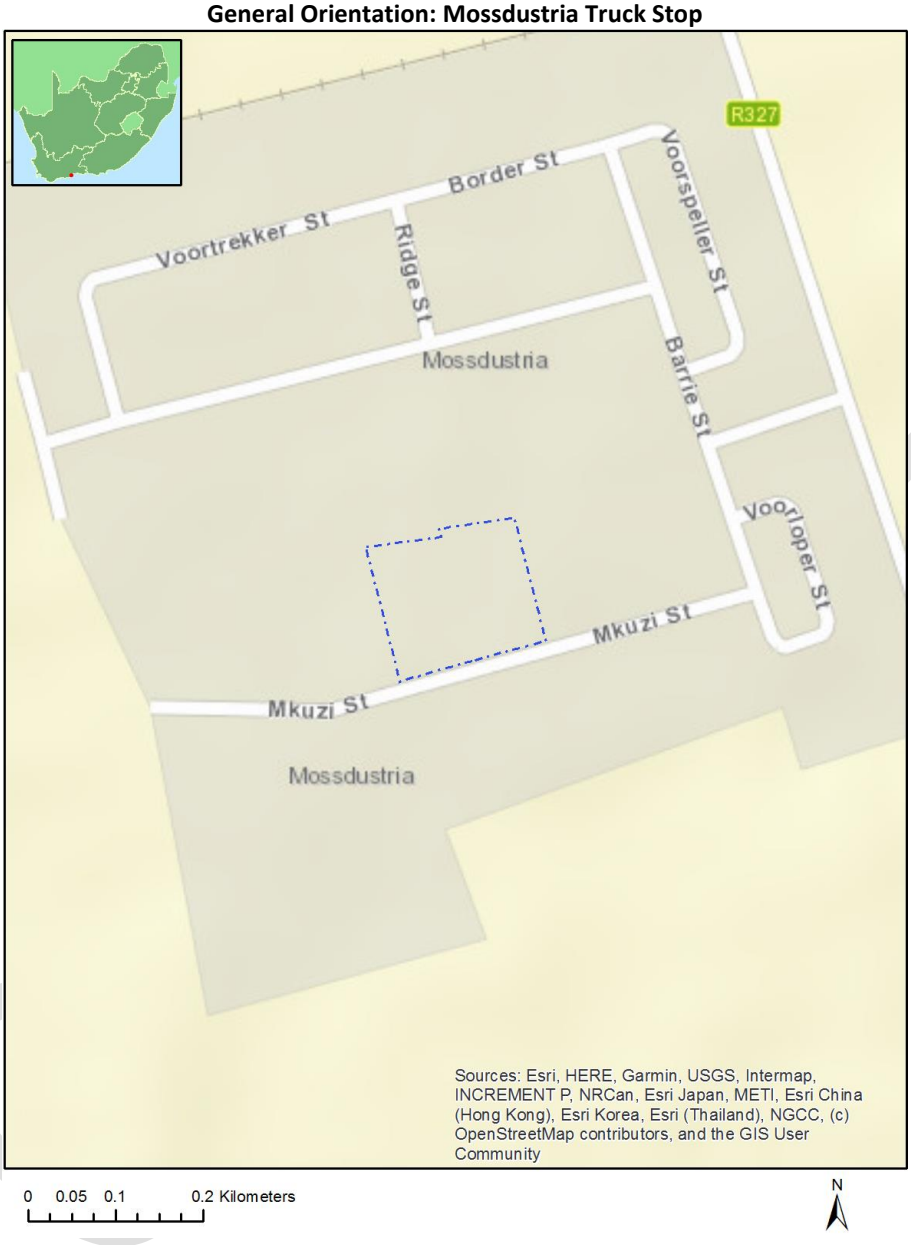
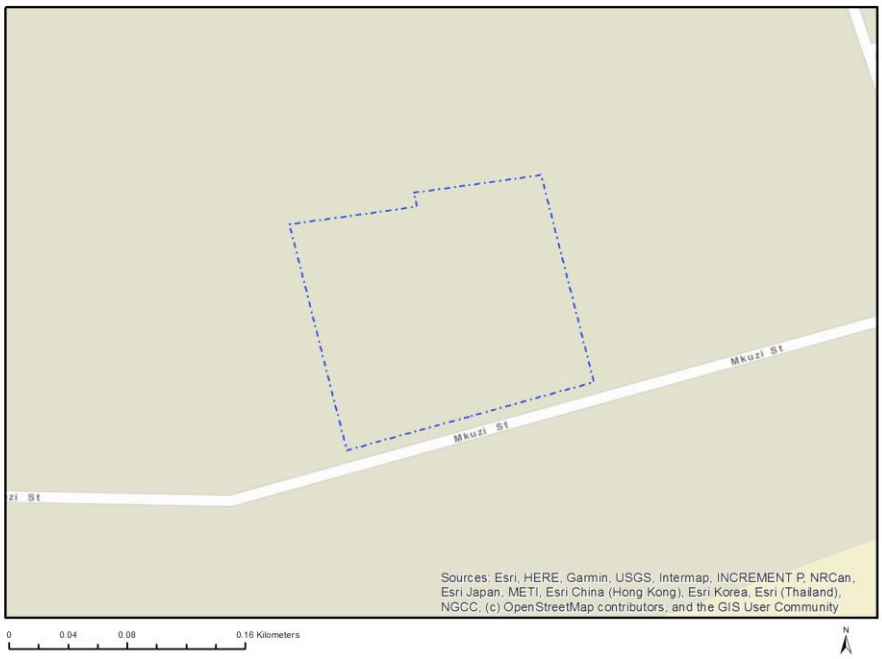
Proposed Project Location

Orientation map 1: General location

General Orientation: Mossdustria Truck Stop



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	MOSSDUSTRIA	56	0	34°9'40.39S	22°0'20.17E	Erven
2	MOSSDUSTRIA	57	0	34°9'41S	22°0'17.45E	Erven

Development footprint[1] 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.

[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.

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: **Infrastructure|Localised infrastructure|Storage|Dangerous Goods|Hydrocarbon|Petroleum**.

Relevant development incentives, restrictions, exclusions or prohibitions

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

Incentive, restriction or prohibition	Implication
Strategic Gas Pipeline Corridors-Phase 2: Mossel Bay to Coega	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2022_Q4_Metadata.pdf

Proposed Development Area Environmental Sensitivity

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

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

Specialist assessments identified

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

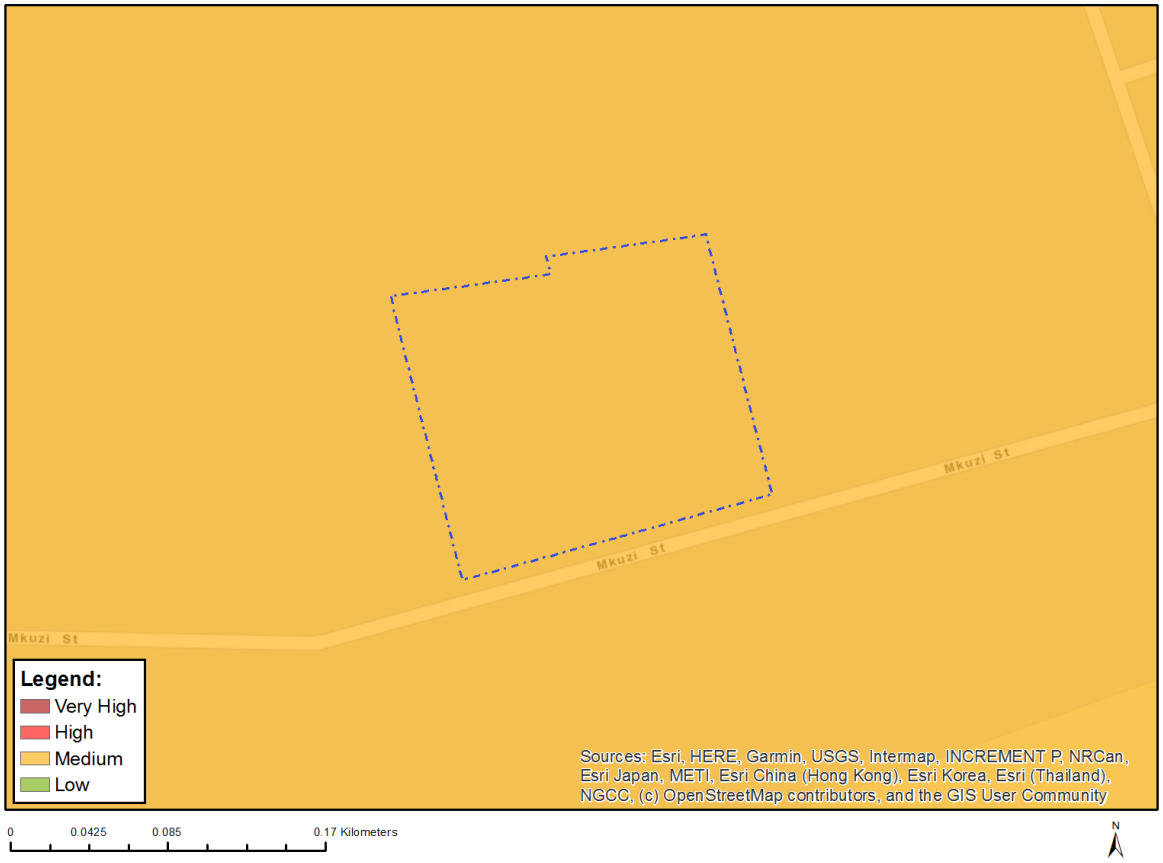
No	Specialist assessment	Assessment Protocol

1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
8	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
12	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

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

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

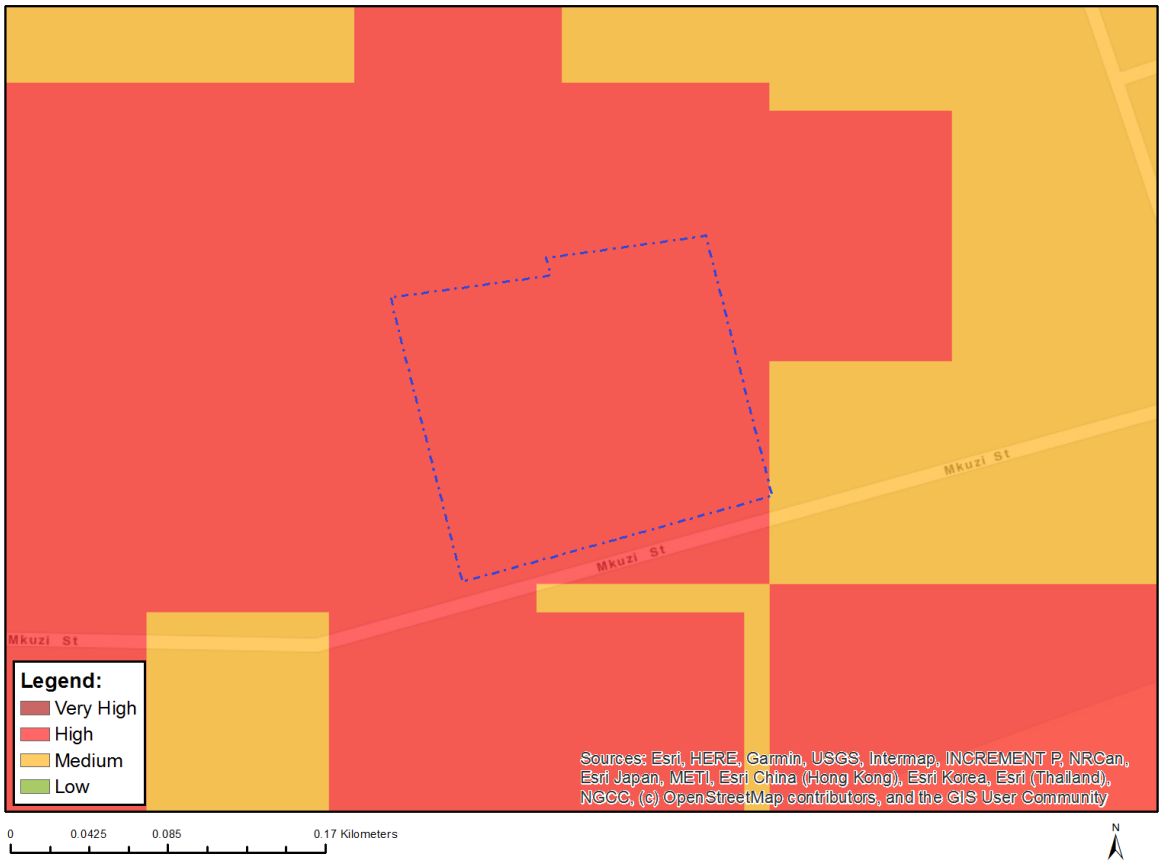


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

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

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



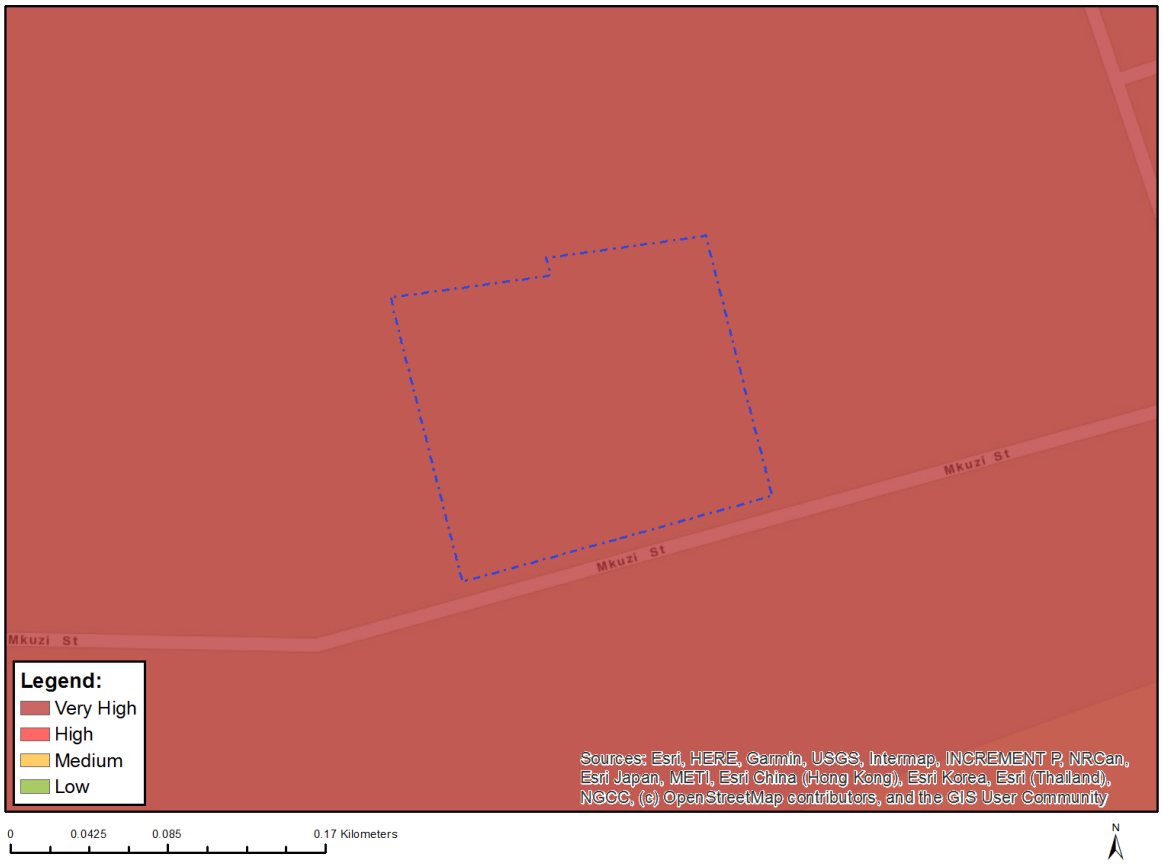
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their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

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus ranivorus
High	Aves-Neotis denhami
High	Aves-Polemaetus bellicosus
High	Aves-Circus maurus
Medium	Aves-Bradypterus sylvaticus
Medium	Aves-Afrotis afra
Medium	Sensitive species 8
Medium	Invertebrate-Aneuryphymus montanus

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

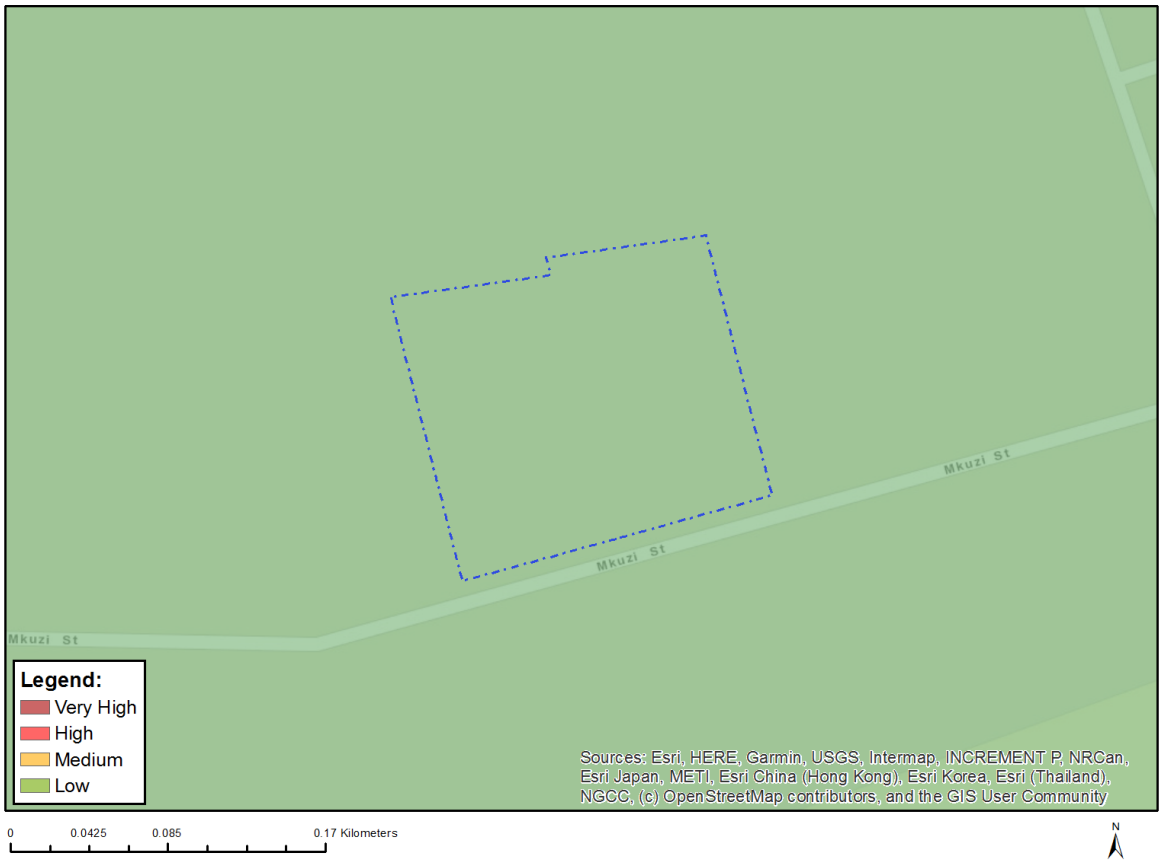


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	FEPA Subcatchment

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

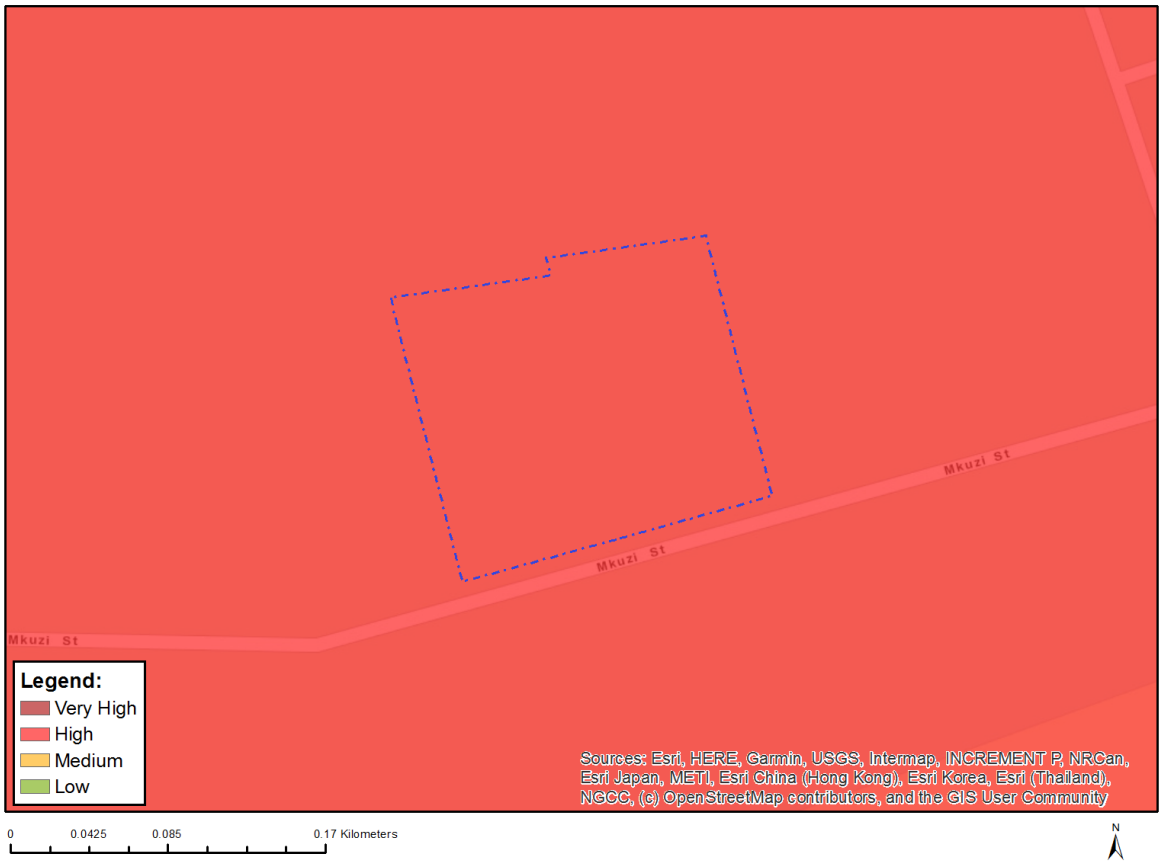


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

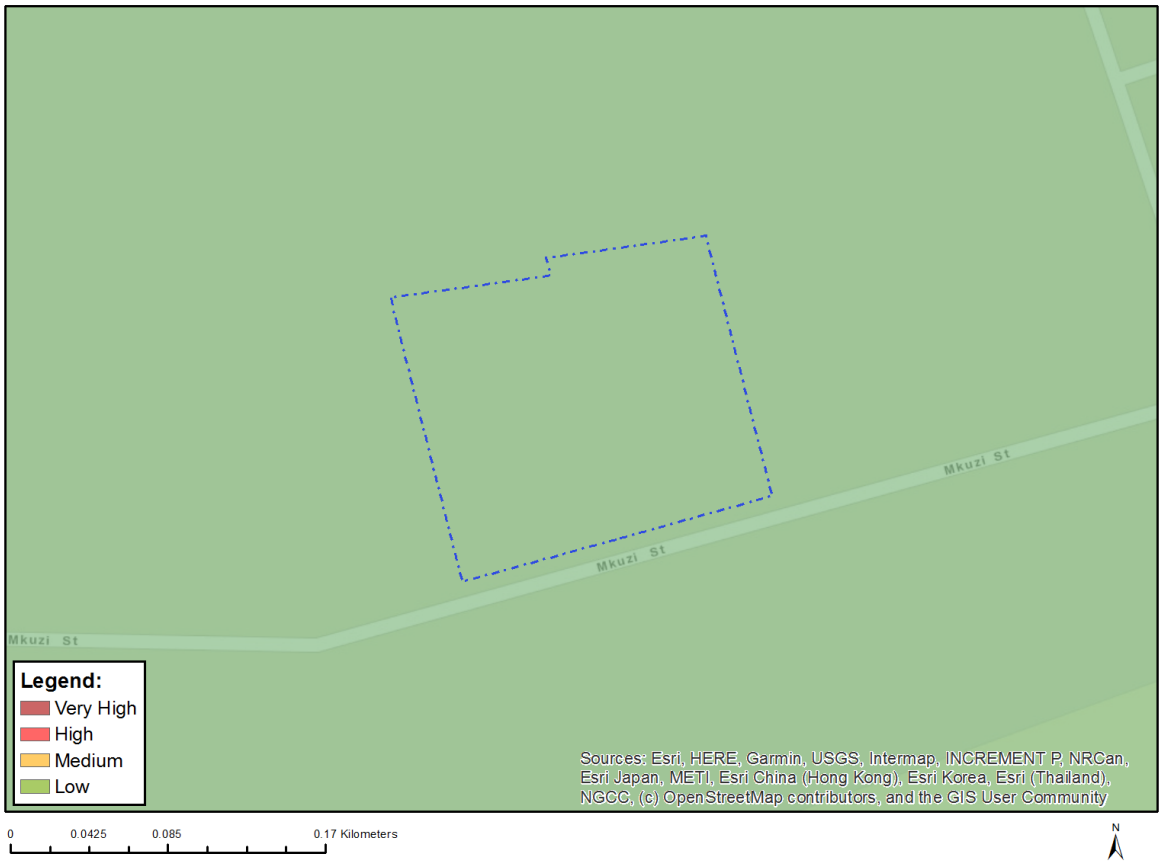


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

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

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

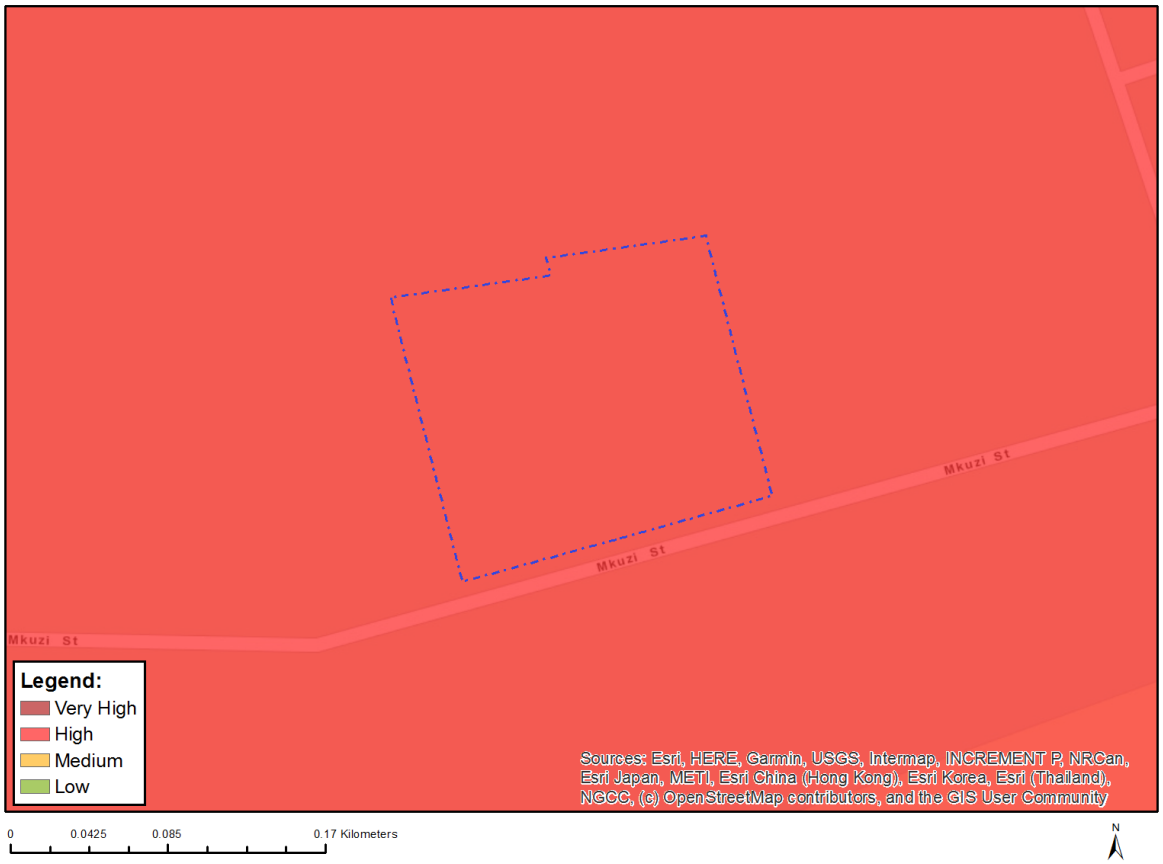


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

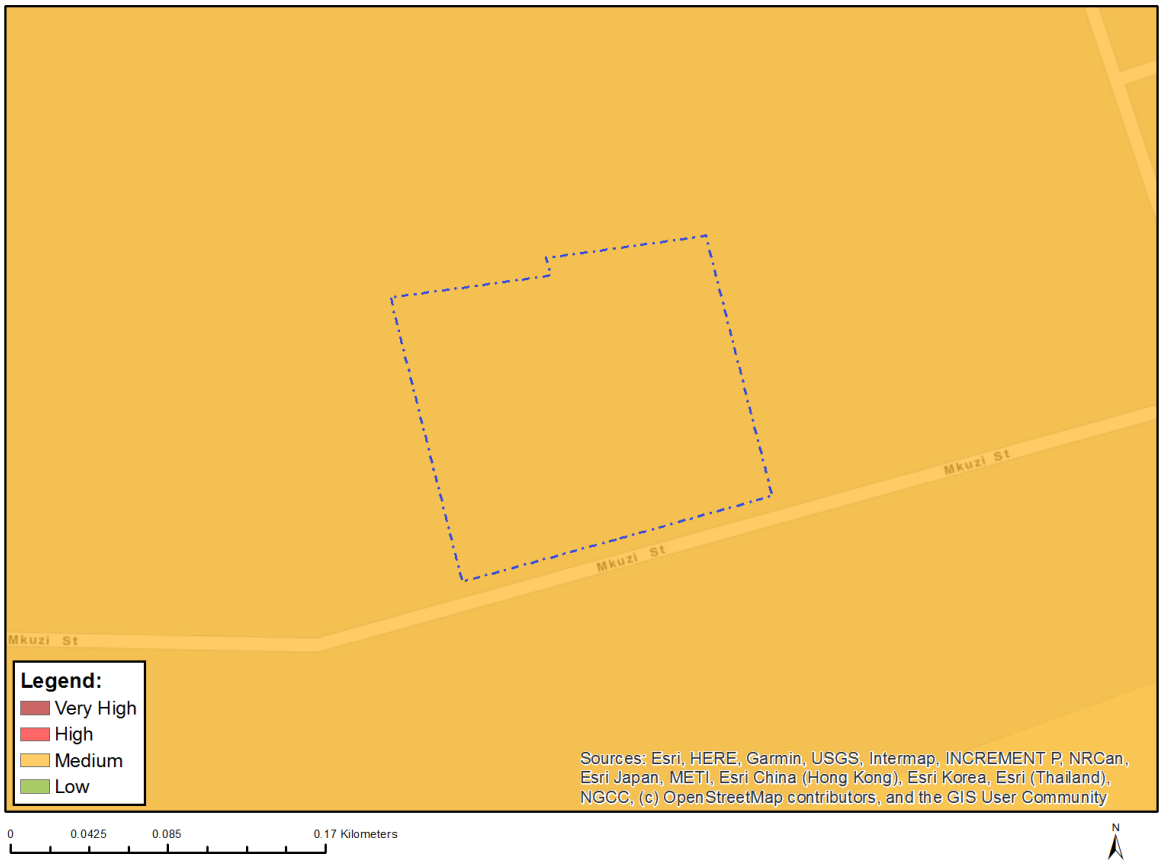


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

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

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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

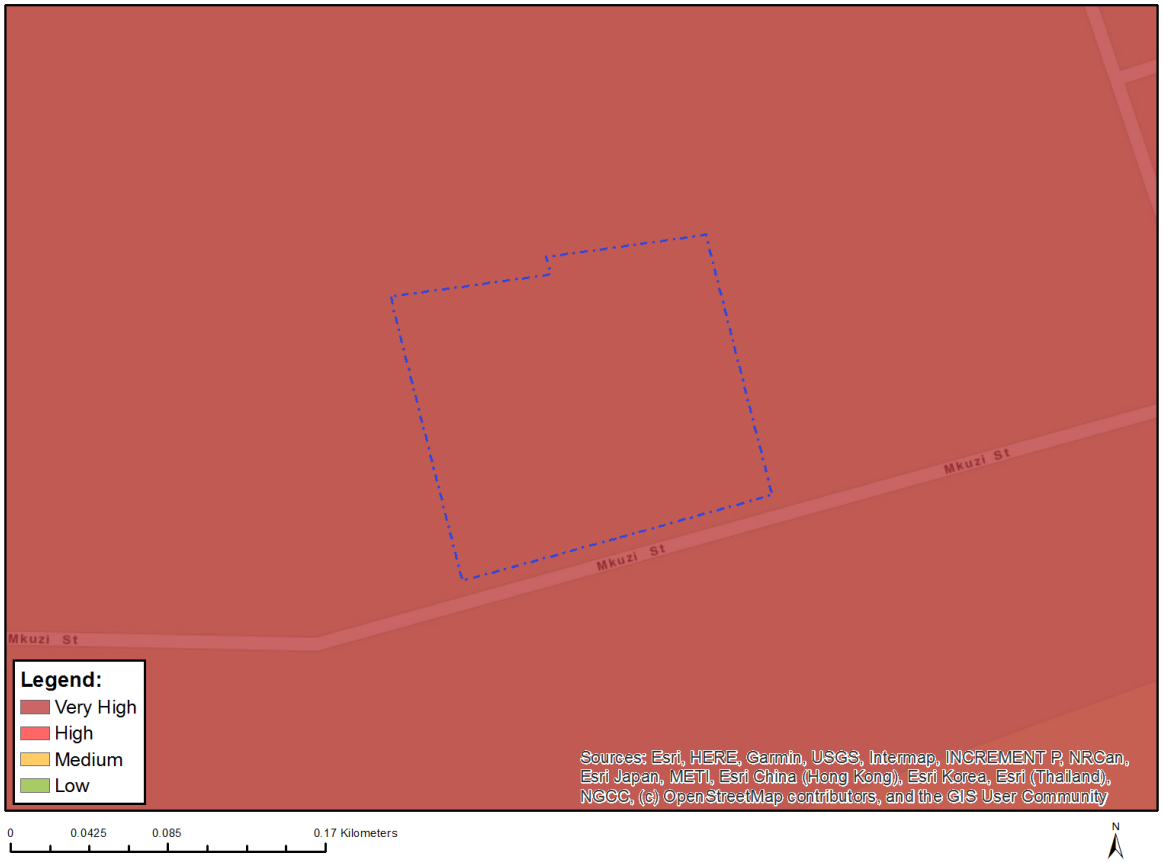
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Lampranthus ceriseus
Medium	Lampranthus diutinus
Medium	Lampranthus fergusoniae
Medium	Lampranthus foliosus
Medium	Lampranthus pauciflorus
Medium	Ruschia leptocalyx
Medium	Argyrolobium harmsianum
Medium	Aspalathus campestris
Medium	Aspalathus obtusifolia
Medium	Lebeckia gracilis
Medium	Leucadendron galpinii
Medium	Leucospermum muirii
Medium	Leucospermum praecox

Medium	Wahlenbergia polyantha
Medium	Selago glandulosa
Medium	Selago villicaulis
Medium	Erica unicolor subsp. mutica
Medium	Hermannia lavandulifolia
Medium	Sensitive species 153
Medium	Sensitive species 268
Medium	Thamnochortus muirii
Medium	Sensitive species 1024
Medium	Agathosma eriantha
Medium	Agathosma muirii
Medium	Agathosma riversdalensis
Medium	Euchaetis albertiniana
Medium	Muraltia cliffortiifolia
Medium	Muraltia knysnaensis
Medium	Polygala pubiflora
Medium	Nanobubon hypogaeum
Medium	Sensitive species 516
Medium	Drosanthemum lavisii
Medium	Sensitive species 800
Medium	Sensitive species 500
Medium	Sensitive species 654
Medium	Agathosma microcarpa

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity

X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 1: Terrestrial
Very High	FEPA Subcatchment

APPENDIX D - ROLES & RESPONSIBILITIES

ROLES & RESPONSIBILITIES

Duties and Responsibilities of the Holder

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

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

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

Duties and Responsibilities of the Contractor

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

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

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

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

damage identified throughout the operational phase of the proposed extension will be the contractor's responsibility to repair.
- Should third parties be called to the site to perform clean up and rehabilitation procedures, the Construction Contractor will be responsible for all associated costs.

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

Duties And Responsibilities of the ECO

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

- Competency of the ECO

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

- Duties of the ECO

The duties of the ECO include, but are not limited to:
- Conduct a pre-construction site inspection to ascertain the pre-commencement condition of the site (i.e. the status quo);
- Conduct environmental awareness training, which must include;
    - A brief description of the surrounding environment
    - Importance of the EMPr
    - Roles and responsibilities
    - Identified environmental risks
    - Mitigation measures to be implemented
    - No-go areas
    - Emergency procedures (Hydrocarbon spill)
- Undertake regular site visits to monitor compliance with all mitigation, monitoring and management measures contained in the EMPr and the Environmental Authorisation, during the pre-construction, construction and rehabilitation phases of the development;
- Evaluate the achievement of the performance indicators associated with each impact management objective specified in this EMPr;
- Liaise with site contractors, engineers and other members of the development team with regard to the requirements of the EMPr;
- Provide guidance as and when required regarding the implementation of the environmental management measures contained in the EMPr and EA, so as to assist the Holder and contractor in remaining compliant with these measures;

- Assist in finding environmentally acceptable solutions to construction problems;
- Ensure that the working areas, site camp facilities, access roads and no-go areas are properly demarcated;
- Ensure that proper topsoil management practices are adhered to on site;
- Ensure that proper waste management & pollution prevention strategies are practised on site;
- Examine method statements, where required;
- Recommend additional environmental protection measures, should this be necessary;
- Furnish contractors with verbal warnings in case of contravention of the EMPr;
- Recommend that the competent authority furnish errant contractors with predetermined fines, when verbal and / or written warnings are ignored;
- Ensure satisfactory rehabilitation of disturbed areas on site, after construction is complete;
- Keep detailed records of all site activities that may pertain to the environment, and produce **monthly** compliance-monitoring reports (ECO Reports) for submission to the Holder, and the Competent Authority at regular intervals during the construction phase;
- Submit a final post-construction inspection report, within 6 months of completion of the construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.
- All ECO Reports and Inspection Reports must be submitted to the Holder and Competent Authority.

- Frequency of ECO visits

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

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

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

- Authority of the ECO

The ECO has the authority to recommend to the decision-making authorities that they suspend all works (or part thereof) occurring on site, should any action being undertaken on site not comply with the environmental requirements, and where such actions pose a serious threat to any element of the surrounding environment.

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

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

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

Duties and Responsibilities of the Environmental Auditor

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

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

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

- At 50% completion of the project timeline.
- At practical completion of the construction period.
- 3 months after practical completion of the construction period.
- 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 E – WASTE MANAGEMENT PLAN

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ADDRESS: Tableview, Cape Town, 7441
PO BOX: 443, Milnerton, 7435

WASTE MANAGEMENT PLAN

FOR THE

PROPOSED TRUCK STOP AND ASSOCIATED INFRASTRUCTURE ON ERF 56 AND 57, MOSSDUSTRIA, MOSSEL BAY LOCAL MUNICIPALITY, WESTERN CAPE.

APPLICANT:	CONFUEL (PTY) LTD
ENVIRONMENTAL CONSULTANT:	SHARPLES ENVIRONMENTAL SERVICES CC AUTHOR: MS MADELEINE KNOETZE REVIEWER: MS BETSY DITCHAM (EAPASA: 1480)
DEA & DP PROJECT REFERENCE:	TBC
SES REFERENCE NUMBER:	CT13/WMP/01/23
DATE:	January 2023

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APPENDICES

Appendix A: Proposed Facility Layout

1) Introduction

Sharples Environmental Services CC (hereafter referred to as SES) has been appointed by Confuel (Pty) Ltd to oversee all process related aspects of environmental management for the proposed development of a truck stop and related infrastructure on Erf 56 and 57, Mossdustria. The proposed development area is located within an industrial area of the Mossel Bay Local Municipality which forms part of the Garden Route District Municipality, Western Cape.

The proposed development area has been zoned as Industrial Zone I. According to the Mossel Bay Local Municipality's Land Use Scheme, the affected properties may be used as a truck stop should consent use be obtained. The layout map of the proposed facility has been included as Appendix A of this Waste Management Plan (WMP).

In response to the requirements of the Land Use Consent, Confuel (Pty) Ltd was requested that a WMP for the purpose of the proposed facilities be compiled. This management plan is to consider all municipal by-laws pertaining to waste management activities. This WMP aims to incorporate the local and district municipality's waste management by-laws and Integrated Waste Management Plans (IWMP). For this WMP to be implemented effectively the following aspects to be taken into consideration would include:

- Education and Awareness
- Identification of the Waste Generation Sources
- Waste Type and Classification
- Identification of Waste Recovery and Recycling Opportunities
- Effective Storage Waste
- Waste Removal
- Monitoring and Record Keeping activities

2) Legislation and Policies

a. National Environmental Management: Waste Act (Act 59 of 2008)

The National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA) aims to inform the laws on regulating waste management in order to protect the public and environmental health by providing reasonable measures toward the prevention of pollution and ecological degradation and for securing environmentally sustainable development.

This act makes provision towards improving waste management practices, including:

(1) Minimizing the consumption of natural resources;
(2) The prevention and minimizing the generation of waste
(3) Reducing, re-using, recycling and recovering of waste
(4) Treating and safely disposing of waste as a last resort
(5) Preventing pollution and ecological degradation
(6) Promoting and ensuring the effective delivery of waste services
(7) Rehabilitating land where contamination presents, or may present, a significant risk
(8) Achieving integrated waste management reporting and planning.

This WMP and the subsequent planning that ensues from this report aims to align with the NEM:WA and all planning documents (including the Mossel Bay Municipality's Integrated Waste Management Plan).

b. Applicable by-laws

The following waste related by-laws have been taken into consideration for the purpose of this document:

i. Mossel Bay Municipality: By-law Relating to Refuse Removal
ii. Eden District Municipality: Waste Management By-Law

c. Applicable Policies and Supporting documents

The following waste related plans and strategies have been taken into consideration for the purpose of this document:

i. Mossel Bay Local Municipality Integrated Waste Management Plan (MBLM, 2020)
ii. National Waste Management Strategy (DEA, 2011)
iii. Hazardous Substances Act (Act 5 of 1973)

3) Education and Awareness

The appointed contractor (during the construction phase) and the facility manager (during the operational phase) must be made aware of the waste management standards and objectives of this management plan, the local and district by-laws and the local municipality's Integrated WMP. As part of the effective management, educating the workers on site must be undertaken during both the construction and operational phases of the development. Where possible, waste wise pamphlets must be available to the workers on site and posters must be erected on site to inform workers of the appropriate ways to handle waste on site and to recognize waste streams within the site boundaries.

The facilities are to be constructed in line with the required and accepted SANS and SABS industry standards. This must be adhered to in terms of facility design in particular to the placement, engineering and monitoring of diesel storage tanks and the incorporation of an effective waste management system.

The onus rests on the appointed contractor (in the construction and decommissioning phase) and the facility manager (during the operational phase) to develop their own in-house objectives using the benchmarks provided to educate, raise awareness amongst personnel and implement the correct work procedures. The awareness raising and training must be incorporated into the standard toolbox talks and training curriculum of all personnel on site (regardless of their contract length). In order to effectively manage waste and mitigate environmental impacts, all respective contractors and service providers need to understand the balance between Principle of source, source, pathway and receptors.

4) Waste Generation Sources

The waste management hierarchy looks at the various options toward the sustainable waste management strategies in terms of sustainably managing generated waste on a site (WRC, 2006). These include prevention of use of materials that produce waste, minimizing the amount of waste being generated, re-use, recycle and energy recovery of waste materials, waste treatment and waste disposal. The first would be the preferred option and the latter would be the least favoured option towards waste management (Figure 1).

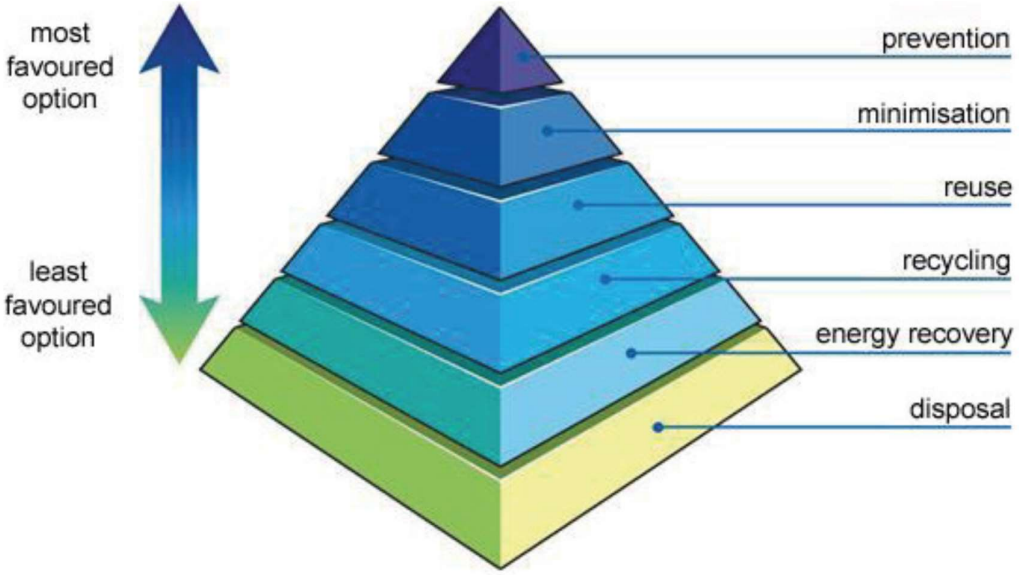


Figure 1. Waste management Hierarchy (DWS, 2006)

a. Construction Phase

According to the Guidance for the classification, rating and disposal of common hazardous waste streams (WRC, 2006), 20 waste streams were identified and classified.

During the construction phase of the proposed development, the waste materials to be generated will include:

i. Excavated soils;
ii. Plant material including alien vegetation, natural veld and wood;
iii. Packaging waste – plastic, paper waste (including that which contains hazardous materials used for the purpose of fulfilling the requirements of the construction phase – such as cement);
iv. Scrap metal;
v. Glass; and
vi. Contaminated soil (in the event of oil leaks).

- **Recyclable materials**

  All general waste materials must be managed through separation system. Through this system all plastics, glass, paper, metals and organic waste is to be separated and stored in different containers. Clear signage must be provided in order to allow clear differentiation between the various recyclable materials. The recyclable waste must be collected by an appropriately registered company specifically commissioned for dealing with recyclable wastes.

  Where initiatives exists that allows the cleaning, purification and management of oil (such as that provided by OSS Mossel Bay), the waste must be appropriately stored until such materials can be safely collected and removed by these service providers for further treatment. The OSS has been awarded the contract for the collection of used oil containers from garage forecourts by the ROSE foundation.

- **Excavated Soils**
  Excavated soils not used during the construction activities must be kept on site for the purpose of use during the landscaping activities to be implemented following the conclusion of the construction activities.

- **Plant Material (Fynbos)**
  Although, at the time of the compilation of this report, clearance of the proposed development footprint has already taken place, should vegetation regrowth take place prior to the commencement of the construction activities, the vegetation is to be stored on site until such a time that landscaping of the site commences (after the completion of the construction activities).

- **Contaminated and Spoil materials**
  During all phases of the project, non-recyclable and contaminated waste materials must be contained and stored in a manner upon which it can be ensured that no further contamination of the surrounding areas will be inflicted. This must be followed by the removal of the materials by an appropriately registered removal company and the disposal thereof at a licensed waste management facility as recognized by the Municipality's IWMP (2020).

b. Operational Phase

The proposed development will be comprised of numerous components and will entail the following:

Table 1. Waste Generation Sources of the Operational Phase.

Component	Waste Types to be generated	Waste Stream (As per WRC, 2006)	Class (As per SABS/SANS)
Bulk office	General Waste	General Waste	General Waste
Convenience store, dining area and ablution facilities	General Waste	Edible / Vegetable Oil	Class 3
Main Office	General Waste	General Waste	General Waste
Guard Room	General Waste	General Waste	General Waste
Wash Bay	General Waste, Hazardous Waste	Hydrocarbon Contaminated Waste; Solvents	Class 3
Fueling Station including tank farm	General and Hazardous Waste	Used oil and other petroleum products; Spent antifreeze	Class 3
Parking lot areas	General and Hazardous Waste	Hydrocarbon Contaminated Waste	Class 3

Due to the proposal that the proposed development tie into the municipal sewer system for the purpose of management (disposal and domestic wastewater), this is not addressed as part of this WMP.

c. Decommissioning Phase

During the decommissioning phase of the proposed development, the following aspects will be required:

Table 2. Waste Generation Sources of the Decommissioning Phase.

Aspect	Waste Stream (As per WRC, 2006)	Class (As per SABS/SANS)
Demolition rubble	Construction Rubble, Hydrocarbon Contaminated Waste, Used oil and other petroleum products	Class 3
Vegetation (alien plants)	Garden refuge	General Waste

5) Waste Recovery, Storage and Recycling Opportunities

The 7 principles of waste management revolve around the Waste management hierarchy which looks toward the following: Recycle, Refuse, Reduce, Reuse, Repair, Re-gift and Recover.

The following approach needs to be followed in terms of the handling of general wastes generated on site:

- The sorting and storing of general waste in separate receptacles within the site boundaries in strategic areas. The general wastes are to be sorted into glass, paper, plastics and organic waste.
- General waste is to be collected on a weekly basis by a registered waste removal company. The principal contractor and facility manager, respectively, must obtain a guarantee from the waste removal company that the waste collected will be disposed of at a Licensed waste management landfill site as recognized in the Mossel Bay Integrated WMP (2020).

Hazardous wastes must be handled in the following manner:

- Hazardous wastes (oils, greases, fuels and chemicals) must be contained in a properly bunded area. The bunded area must follow the specifications of the DWAF (2006)'s classification document for Type D wastes.
- Hazardous waste must be disposed of in dedicated storage receptacles and removed to a hazardous waste disposal site (as specifically recognized in the Mossel Bay Integrated WMP (2020)). Currently the hazardous waste management facilities include PetroSA hazardous waste storage facility (Managed by PetroSA), Oil Separation Solutions (OSS) and Greenscrap Recycling Remade (Managed by Greenscrap Recycling [Interwaste]). The waste generated at these facilities see their final destination in Cape Town.

6) Waste management measures

Pollution control measures to be implemented on this site will align with the requirements of all approvals. The measures to be implemented on site will include:

- Proper signage aimed toward informing the workers/public of proper disposal measures of the various types of waste must be incorporated on site. Where applicable on site.
- Absorbent spill kits and disposal containers to handle spillages must be provided in strategic locations on site. Allocated waste spill containers must be located in the bunded area specifically designed for the containment of hazardous substances.
- All employees of the proposed development must be trained on the correct handling measures to apply in the event of spillages and precautionary measures that would

need to be applied on site to minimize potential contamination of the proposed development site.

- Access to all waste storage areas on site must be restricted to authorised employees only.
- Ensure proper stormwater management infrastructure (including pollutant traps) are installed around bunding areas. This stormwater management infrastructure must be outfitted with oil separators/grease traps.
- The bunded areas must be inspected on a regular basis to ensure that no hazardous wastes being stored on site is allowed to contaminate the site.
- Storm water management structures should be designed into the project to trap any potentially contaminated storm water and return it to the relevant process or allow it to be stored and properly disposed of.
- All waste (general and hazardous) must be removed by an appropriately registered waste management company. The principal contractor and facility manager, respectively, must obtain a guarantee from the before mentioned company indicating that the waste removed will be disposed of at a licensed waste management facility recognized within the Mossel Bay Integrated WMP (2020).
- Chemicals that have been used for cleaning must be stored on site in the appropriate manner. Furthermore, these chemicals must be disposed of correctly. Material Safety Data Sheets (MSDS) must be available on site at all time.
- A specialized waste disposal company is to be contracted to ensure the safe handling, storage and transportation of the chemical waste.
- Any contaminated soil must be removed and disposed of immediately by a hazardous Waste Disposal Contractor to prevent potential pollution of groundwater.

Please note that this document is to be considered a flexible document and should be reviewed as more relevant site-specific management measures arise during the operational phase.

7) Waste Removal

All waste streams removed from site irrespective of whether the waste will be disposed of at a landfill site or transferred to an alternative Waste Management Facility must be undertaken by an accredited waste service provider. Furthermore, waste disposal slips must be obtained from the waste removal service providers to ensure that such waste is disposed of at a registered landfill facility.

In Mossel Bay (which houses the nearest hazardous waste management facilities), three hazardous waste management facilities exist where hazardous waste can be dropped of at. These include PetroSA hazardous waste storage facility, Oil Separation Solutions (OSS) and Greenscrap Recycling Remade. The waste generated at these facilities see their final destination in Cape Town (Mossel bay IWMP, 2020).

Please refer to Section 4 for further detail pertaining to the management of waste in line with the Waste Hierarchy as presented by WRC (2006).

8) Monitoring and Record Keeping

a. Waste Types and Volumes

At the time of the compilation of this report, the volumes of waste to be generated throughout the project is not known. However, regardless of the type and volume of the waste to be generated, records of the waste recovery and recycling systems adopted for all waste types must be kept on site by the facility manager.

b. Contaminated Stormwater and Oil & Grease Traps

The site oil separation system must be inspected at regular intervals (i.e. a weekly basis) to ensure proper functioning and must also be emptied, as required, by the facility manager. The product removed from the separator along with any other hazardous waste type materials should be disposed of at a suitable hazardous waste management facility. Proof of the safe and responsible disposal of the waste materials must be kept on site at all times.

Stormwater management activities (as implemented by the facility manager) must include the monitoring of the infrastructure to ensure that no materials that are not environmentally friendly be discharged into 1) the receiving environment and 2) the municipal stormwater system.

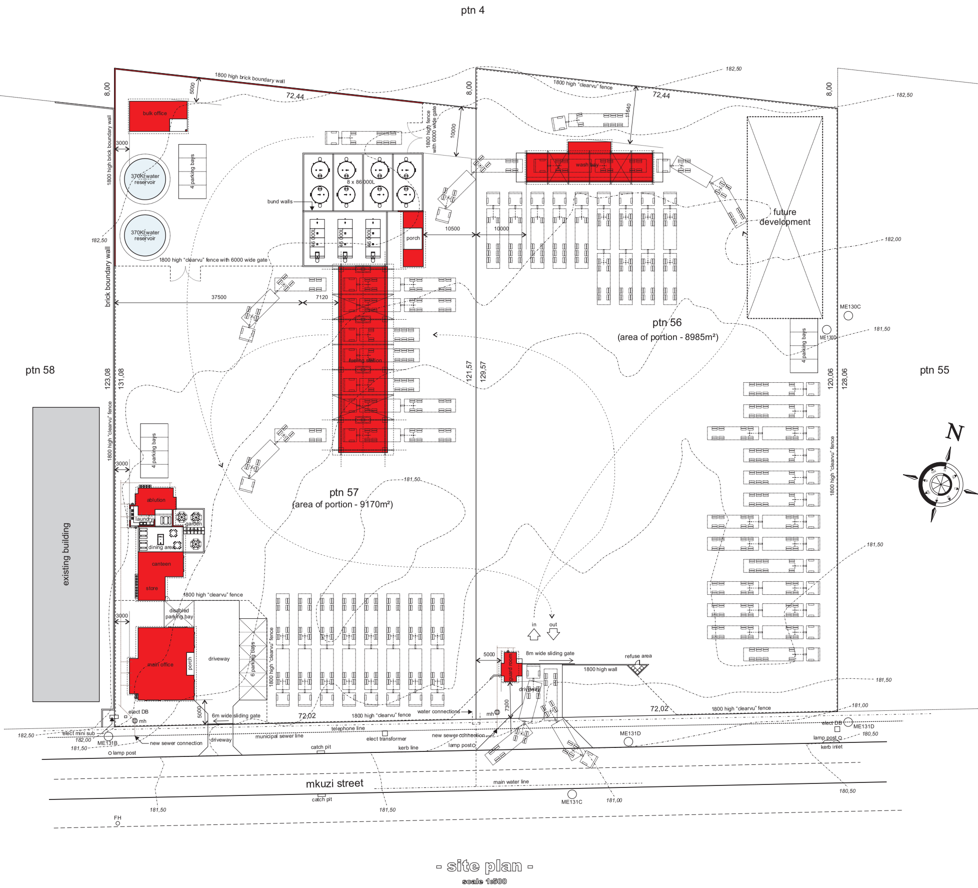
Monitoring and compliance with regard to the tank farm does not fall within the ambience of this waste management plan. However, all standards in terms of the SANS/SABS must be complied with. In the event of a leak, waste and remediation actions will be required to be managed in terms of this management plan.

c. Waste Manifests – Safe disposal certificates

Waste disposal certificates must be kept on site by the Site Manager (the principal contractor during the construction and decommissioning phases and the facility manager) at all times as proof that safe disposal measures or transfer of waste to a licensed waste management facility for recycling or beneficiation have been implemented.

APPENDIX A:

PROPOSED FACILITY LAYOUT



Electrical Legend

- Ceiling Lights - 53
- Internal Wall Lights - 14
- External Spot Lights - 7
- High Bay Lights - 12
- Recessed Down Lights - 0
- Braai Lights - 0
- Light Switches - As per electrician
- Ceiling Fans - 0
- Air Conditioners - 6
- 15Amp Wall Plugs - 46
- Tv Points - 1
- Distribution Boards - 1 x Main and 6 x Sub
- Gas Geysers - 3

ESTIMATED ENERGY CONSUMPTION

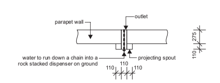
Legend	Description	Watts	Quantity	Total Watts
	Ceiling Lights	11W	53	583
	Wall Lights	11W	14	154
	External Spot Lights	200W	7	1400
	High Bays Lights	85W	12	1020
			Total	3157
			Floor Area	1011,98m²
			Watt/m²	3,12Watt/m²
			Permitted 17Watt/m²	

MAXIMUM ANNUAL ENERGY DEMAND AS PER SANS 10142 = 97945,93Kw

(Watt x Hours per day x 365 days) / 1000 = Estimated Annual Energy Consumption

(3157 x 5 x 365) / 1000 = 5761,53
ESTIMATED ANNUAL ENERGY CONSUMPTION: **5762kW**

The design complies with the minimum requirements of SANS 10400-XA:2011 for Energy Consumption.



SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Single Clear Glass

MAIN OFFICE

Nett Floor Area (m²) 151,57m²
Total Glazed Area (m²) 34,71m²
% Glazed Areas to Floor 22,90%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 194,38$
$A_T \times C_U = 212,20$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 18,0494$
$A_T \times C_{SHGC} = 19,7041$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Single Clear Glass

BULK OFFICE

Nett Floor Area (m²) 52,74m²
Total Glazed Area (m²) 13,05m²
% Glazed Areas to Floor 24,74%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 73,08$
$A_T \times C_U = 73,84$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 6,7856$
$A_T \times C_{SHGC} = 6,8562$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Double Clear Glass

GUARD ROOM

Nett Floor Area (m²) 14,47m²
Total Glazed Area (m²) 7,20m²
% Glazed Areas to Floor 49,76%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 17,35$
$A_T \times C_U = 20,26$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 1,6109$
$A_T \times C_{SHGC} = 1,8811$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

SANS 204 & SANS 10400-XA Requirements

FENESTRATION

Design Calculations for compliance with SANS 204 & SANS 10400-XA

GLAZING ELEMENT
Aluminium Thermal Break Frames with Single Clear Low E Glass

IT ROOM / LOCKER ROOM

Nett Floor Area (m²) 10,95m²
Total Glazed Area (m²) 2,88m²
% Glazed Areas to Floor 26,30%

Fenestration is greater than 15% of nett floor area. Therefore fenestration calculations are required as per SANS 204.

Climatic Zone 2 - Temperate Interior
Conductance 1,4
SHGC(C_{SHGC}) 0,13

CONDUCTANCE

For conductance to be compliant with SANS 204.
$(A_1 \times U_1) + (A_2 \times U_2)... < A_T \times C_U$
$(A_1 \times U_1) + (A_2 \times U_2)... = 11,69$
$A_T \times C_U = 15,33$

Therefore the proposed fenestration design complies with SANS 204 for conductance.

SOLAR HEAT GAIN

For solar heat gain to be compliant with SANS 204.
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... < A_T \times C_{SHGC}$
$(A_1 \times S_1 \times E_1) + (A_2 \times S_2 \times E_2)... = 1,0855$
$A_T \times C_{SHGC} = 1,4235$

Therefore the proposed fenestration design complies with SANS 204 for solar heat gain.

Schedule of Rights

Use Zone	Industry Zone 2		Permissible	Actual
Site Area	18155m²			
Coverage (%)			75,00%	8,13%
Coverage (Actual)			13616,25m²	1477,28m²
F.A.R.			1,5 (27232,50m²)	* 0,0814 (1477,28m²)
Height			Max 12,00m	Tank Height 10,83m
Building Lines	Side Boundaries - 0m			Max Bldg Height 6,98m
	Rear Boundary - 0m			
	Street Boundary - 0m	* Special F.A.R. Note:		
Total Area	1477,28m²	Total Floor Area - 2079,53m² Double Volume Area - 0,00m² **F.A.R. Floor Area - 2079,53m²**		

Parking Requirements	Gross Lettable Office Area	Bays Required	Bays Provided
4,0 Parking Bays/100m² of Gross Lettable Office Space	344,74m²	**13,79** Bays	**18** Bays
Parking for Trucks	n/a	**30** Bays	**30** Bays
Disabled Parking	n/a	**1** Bays	**1** Bays

GENERAL NOTES
All work to be in accordance with the National Building Regulations and the Local By-laws.
Any errors, discrepancies or omissions are to be reported immediately.
All levels, dimensions and steps are to be checked and verified on site before commencement of any work.
Work to figured dimension only - drawings are not to be scaled.
Foundations to boundary walls are not to encroach any boundaries.
All electrical and plumbing work are to be carried out by registered tradesmen.
Brick re-inforcing to be installed every 5th course in brickwork.
Two courses of brick re-inforcing at window head height.
Provide dpc to walls at floor slab level, under all window sills and to all changes in floor level.
Vertical dpc where required.
Windows to be a minimum of 10% of floor area with opening sections as prescribed.
All re-inforced concrete work and floor slabs to engineer's detail.

DRAINAGE NOTES
Minimum depth of sewer to be 500mm.
All plumbing and drainage work and installation of sanitary fittings to comply to the relevant Local Authority by-laws, regulations and requirements.
Provide IE's to all bends, junctions, change of direction and gradients with suitable markers at ground level.
Fall of all drain pipes to be between 1:60 and 1:40.
Provide approved reseal traps to all waste fittings.
Provide AE at foot of all soil stacks.
IEs to waste pipes to be fully accessible at all times.
All drain pipes passing under building or footings to be encased in concrete of minimum 100mm thickness around pipe.
Pipe sizes: Soil pipes, vents & wc 110mm
Asvp 50mm
Bath, shower and wash troughs 38mm
Basins and bidets 32mm

GLAZING NOTES
Under 0,75m² - 3mm glass
0,75 - 1,50m² - 4mm glass
1,50m² and above - 6mm glass
All fenestration to be in comply with the requirements of SANS 204 and SANS 10400-XA

ROOF NOTES
Sheeted Roofs

0,5 mm thick S-rib Chromadek Dolphin Grey roof sheeting on 76 x 52 purlins.
Trusses of 114 x 38 Grade 4 timber and 228 x 38 rafters (bolted) at 1200 centres or to manufacturer's specification.
76 x 38 wall plates.
Roof pitch to be as shown on section.
Roof overhang to be as show on section.
All ceilings to owners specification.
Flashing if and where required.
Aluminium powder coated gutters & down pipes - To match wall colour (where applicable).
200 x 80 SM barge boards - same as roof colour.
900 wide paved strip around perimeter of dwelling.

FLAT CONCRETE ROOFS (Where applicable)
Concrete roofs to be in accordance with engineer's design.

STAIR NOTES (Where applicable)
All risers to be 170mm.
All treads to be 300mm.
1000mm high balustrades.
1000mm high handrails.
Minimum Stair Headroom to be 2100mm.
All work to be in accordance with the National Building Regulations and the Local By-laws.

CHIMNEYS
All chimneys to comply with Part V of the National Building Regulations where applicable.

POOLS
Pool to be finished only in a Charcoal or Portland Grey colour.
Pool safety to comply with National Building Regulations and SABS 1390 where applicable.

UTILITY NOTES
External wall colour - Earthy colours.
All external windows and doors to be charcoal aluminium.
Internal electrical installation to comply with SABS 0142.
TV aerials, satellite dishes and air-conditioners to be positioned to have minimum visual impact (to be screened or painted to match exterior colour).
No Solar Geysers or Solar Panels to be visible from any street.
900mm wide grey cement paving around buildings to prevent erosion from rain water.
Staining and/or sealing to external timber doors - Natural wood colour.
Colour/finish of any exposed timber - Treated with Carbolinium.
All Buildings to be built in accordance with the approved building plans.
Solar panels to be placed in inconspicuous position where applicable.

SPECIAL ROOF NOTES
9,5mm rhino ceiling boards - R-Value 0,045
Approved underlay - R-Value 0,75
135mm thick non-combustable (in accordance with SANS 10177-5) fibre blanket - R-Value 3,38

All floor slopes including bunds to be 1:100 to sumps and bund drainage points.
All bund outlets to have lockable steel gate valves.

PROPOSED NEW TRUCK STOP
on
Stands 56 and 57 Mossdustria Township
MOSSELBAY
for
Confuel (Pty) Ltd

signature owner: ....

signature architect: ....

drawing
Site Plan
Calculations
Window Schedule

J Keyser in association with WF Botha
PrSArchT

SACAP Registration Number: **ST1277**

PO Box 9483
Cinda Park
1463

Cellular Numbers: J Keyser +27 62 177 8198
WF Botha +27 83 289 4836

drawn	scales	drawn
J Keyser	As Shown	August 2022

area

Main Office	-	165,84m²		
Entrance Porch	-	6,80m²	-	172,64m²
Ablution			-	36,69m²
Laundry			-	14,29m²
Dining Area			-	58,77m²
Cafeteria			-	44,46m²
Store			-	25,49m²
Bulk Office	-	60,25m²		
Porch	-	8,75m²	-	69,00m²
Guard Room	-	18,68m²		
Entrance Porch	-	1,01m²	-	19,69m²
Filling Station			-	360,75m²
Wash Bay			-	164,84m²
Diesel Depot Office	-	13,76m²		
Diesel Locker Room	-	13,76m²		
Diesel Depot Cov Patio	-	17,84m²	-	45,36m²
Diesel Depot			-	465,30m²
		Total Area	-	**1477,28m²**

Rev 1	Fire Plan added	Date	22 August 2022
Rev 2	Locker Room/IT Room added	Date	12 August 2022
Rev 3	Tank Sizes reduced/Wall thicknes reduced using Maxi Bricks	Date	January 2023

File Name:
56 and 57 Mossdustria - Johan Pretorius - New Truck Stop (FINAL04).cdr

Sheet 1 of 9 Sheets

window schedule

Top-Hung Charcoal Aluminium Windows & Doors

Block	Type	Size	Quantity
main office	6T12	(600 x 1200)	3 off
main office	12DT21	(1200 x 2100)	2 off LH, 1 off RH
main office	24DDT21	(2400 x 2100)	3 off
main office	30DDT21	(3000 x 2100)	1 off
main office	double hinged door	(1700 x 2100)	1 off
main office	hinged door	(900 x 2100)	3 off
main office		813 Timber Frames	3 off internal
bulk office	15DT12	(1500 x 1200)	1 off RH, 1 off LH
bulk office	21DDT12	(2100 x 1200)	3 off
bulk office	hinged door	(900 x 2100)	1 off
bulk office		813 Timber Frames	1 off internal
canteen / store / ablution block	12T6	(1200 x 600)	2 off LH, 2 off RH
canteen / store / ablution block	15T9	(1500 x 900)	1 off RH
canteen / store / ablution block	6T12	(600 x 1200)	7 off
canteen / store / ablution block	12DT12	(1200 x 1200)	1 off RH, 1 off LH
canteen / store / ablution block	12DT21	(1200 x 2100)	1 off LH, 1 off RH
canteen / store / ablution block	15DT12	(1500 x 1200)	1 off RH, 1 off LH
canteen / store / ablution block	double hinged door	(1700 x 2100)	1 off
canteen / store / ablution block		813 Timber Frames	7 off internal, 1 off external
guard room	6T12	(600 x 1200)	1 off
guard room	9T12	(900 x 1200)	2 off
guard room	912	(900 x 1200)	4 off
guard room		813 Timber Frames	1 off internal, 1 off external
locker room / IT room	12DT12	(1200 x 1200)	2 off RH, 2 off LH
locker room / IT room		813 Timber Frames	2 off external

APPENDIX F - EMPR REVIEW AND AMENDMENT REGISTER

EMPR REVIEW AND AMENDMENT REGISTER

Review Date	Description of Review and/or Amendment	Signature

APPENDIX G - 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:.

Alien and Invasive Species with a potential to populate the site and immediately adjacent areas

Species	Common name	Family	Growth form	NEMBA category	CARA category
Atriplex semibaccata	Berry saltbush	Amaranthaceae	Perennial		
Centella asiatica	Gotu cola	Apiaceae	Herbaceous perennial		
Foeniculum vulgare	Fennel	Apiaceae	Herbaceous perennial		
Cirsium vulgare	Bull thistle	Asteraceae	Perennial	1b	1
Tagetes minuta	Wild marigold	Asteraceae	Herbaceous perennial		
Echium plantagineum	Purple viper's-bugloss	Boraginaceae	Herbaceous Annual/Biennial	1b	1
Raphinistrum rugosum	Wild radish /Annual bastard cabbage	Brassicaceae	Annual		
Acacia cyclops	Rooikrans	Fabaceae	Tall shrub	1b	2
Acacia saligna	Golden wreath wattle	Fabaceae	Tall shrub	1b	2
Trifolium angustifolium	Narrow-leaved clover	Fabaceae	Herbacoeus perennial		
Oxalis corniculata	Creeping woodsorrel	Oxalidaceae	Herbaceous		
Plantago lanceolata	Ribwort plantain	Plantaginaceae	Perennial		
Cenchrus clandestinus	Kikuyu grass	Poaceae	Graminoid	1b	
Paspalum dilatatum	Dallis grass	Poaceae	Graminoid		
Datura stramonium	Jimsonweed	Solanaceae	Shrub	1b	1
Verbena bonariensis	Purpletop vervain	Verbenaceae	Perennial	1b	

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 H - 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 **FAX:** +27 (0) 86 575 2869
EMAIL: betsy@sescc.net **WEBSITE:** www.sescc.net
ADDRESS: Tableview, Cape Town, 7441
PO BOX: 443, Milnerton, 7435

ENVIRONMENTAL AWARENESS TRAINING BOOKLET

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.

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.

- 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.

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:

Toilet Facilities:
Toilet Fasiliteite:
Izindlu Zangasese:

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.

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 I OYILE, UKUGALELA, UKUPHATHA, UKULUNGISA OKANYE UKUHLAMBA KUFUNEKA KWENZIWE KUMMANDLA OTYUNJIWEYO KWINKAMPI YOLWAKHIWO 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.

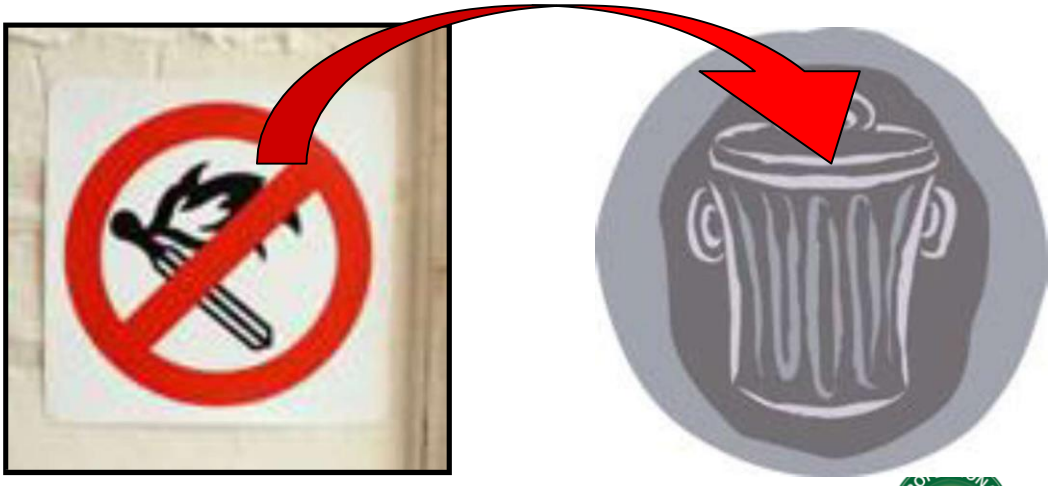
DO NOT:
ALLOW WASTE, LITTER, OILS OR FOREIGN MATERIALS INTO THE STREAM
MOENIE:
TOELAAT DAT AFVALPRODUKTE, GEMORS, OLIES OF VREEMDE MATERIALE IN STROME BELAND NIE.
OMAWUNGAKWENZI: MUSA UKUVUMELA INCITHO, ULAHLO, IOYILE OKANYE EZINYE IZINTO EMILANJENI.

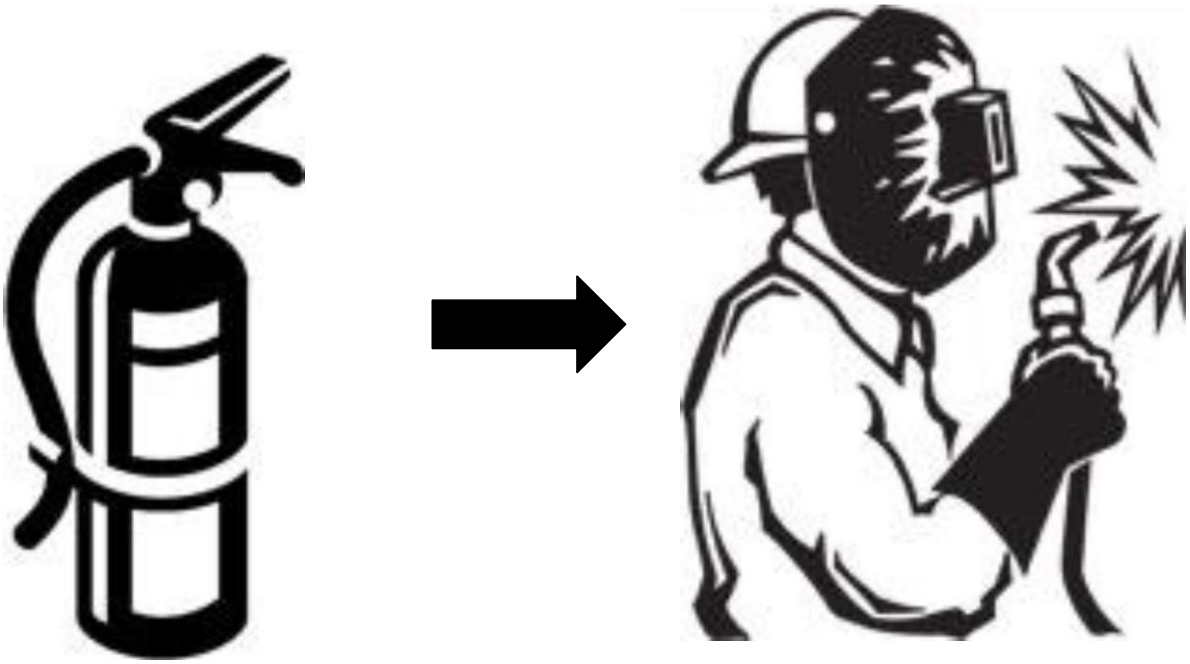
Fire Control:
Vuur Beheer:
Ulawulo Lemililo:

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, njl.

DO NOT:
MAKE ANY FIRES
MOENIE:
ENIGE VURE MAAK OF ENIGEIETS VERBRAND NIE
OMAWUNGAKWENZI: UKWENZA IMILILO OKANYE UTSHISE NOKUBA YINTONI.





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** "

NO-GO AREA

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.


SLOW


PPC

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.

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 BLOWAROUND.
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.


GLASS
CARDBOARD
PAPER