APPENDIX G

Environmental Management Programme (EMPr)

ENVIRONMENTAL MANAGEMENT PROGRAMME

The proposed construction of a truck stop on part of portion 5 of the Farm Avenham 2187, Bloemfontein

Proponent: Andrè Smith
MDA Ref No: 40716
Date: November 2017

Town & Regional Planners,
Environmental & Development
Consultants

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1. INTRODUCTION

1.1 Project and associated construction activities

The proposed project entails the construction of a truck stop and associated infrastructures on a portion of Portion 5 of the farm Avenham 2187, Bloemfontein.

Please refer to the map in Appendix A of the Basic Assessment Report for an indication on the locality of the proposed activities.

1.2 Objectives of the EMPr

The EMPr aims to fulfil the requirements in terms of the National Environmental Management Act (Act 107 of 1998), with the following objectives:

- To identify, predict and evaluate actual and potential impacts on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits and promoting compliance with the principles of environmental management;
- To identify and employ the modes of environmental management best suited to ensuring that the activity is pursued in accordance with best environmental management practices;
- To be able to respond to unforeseen events; and
- To provide feedback on compliance.

1.3 Implementation of the EMPr

The proponent, namely Andrè Smith is responsible for the implementation of the EMPr. All contractors should be supplied with a copy of the EMPr and should ensure that construction staff adheres to the mitigation measures.

2. PREPARATION OF THE EMPR

2.1 Person(s) who prepared the EMPr

i) Mr Neil Devenish
ii) Me Hanlie Stander

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P.O. Box 100982
Brandhof
Bloemfontein
9324
Tel: 051 447 1583
Fax: 051 448 9839

2.2 Expertise of the person(s) who prepared the EMPr

i) Mr Neil Devenish

Key qualifications:

- Key competencies and experience include development control applications (applications and appeals pertaining to rezoning, consolidations, subdivisions etc.) township establishment applications, environmental management and control applications.

Education:

- B. A. (Sociology, Geography) University of the Free State, SA, 1994
- Master of Town and Regional Planning, University of the Free State, SA, 1996
- Managing the Environmental Impact Assessment Process, Environmental Management Unit, PU for CHE, 2000
- Environmental Management Consulting, South African Institute of Ecologists & Environmental Scientists, 2001
- Water Law of South Africa, The South African Institution of Civil Engineers (SAICE), 2006

ii) Me Hanlie Stander

Key qualifications:

- Key competencies and experience include environmental management and research in zoology and environmental management.

Education:

- B.Sc. (Zoology), University of the Free State, South Africa, 2005
- B.Sc. Honours (Zoology), University of the Free State, South Africa, 2006
- M.Sc. (Zoology), University of the Free State, South Africa, 2012

3. RECOMMENDED MANAGEMENT AND MITIGATION MEASURES

3.1 Planning phase and Construction phase

i) Permits need to be obtained for the removal / transplantation of protected species (if any) located within the proposed development area. Care must be taken to prevent unnecessary damage to vegetation near to construction activities.

ii) The necessary Water Use Authorisations should be obtained before any delineated surface water boundaries (if any) are disturbed.

iii) The necessary precautions with regard to road safety should be implemented by construction vehicles.

iv) Proper sanitation, water and waste facilities should be in place for construction workers.

v) Washing and chemical toilet facilities must be provided on site during the construction phase. Chemical toilets should be cleaned regularly.

vi) Clean water should be made available to workers on a daily basis.

vii) Fire-fighting equipment should be available on site, where applicable.

viii) If artefacts or graves are uncovered during construction activities, work in the immediate vicinity is to be stopped until the project Archaeologist has been consulted.

ix) A blasting permit will be obtained should blasting activities be undertaken.

x) Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting events.

xi) Construction batching and residence sites (or other infrastructure) must be located in consultation with the landowner / occupants on site. Infrastructure used during construction, and not to be used during operational phase should be rehabilitated. The ECO and contractor have to agree on the position of these sites for batching storage.

3.2 Water resources

i) The site will have to be properly sloped to falls in order to allow the storm water to drain towards the south-west area of the site

ii) Caution must be taken to ensure that construction materials are not dumped or stored within the storm water flow structures.

iii) Emergency plans must be in place in case of spillages into the water resource(s).

iv) Erosion control must be implemented so as to reduce erosion and sedimentation.

v) The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways.

vi) The design of drainage systems must ensure there is no contamination, eutrophication or increased.

vii) All no-go areas must be demarcated under guidance of the Environmental Control Officer (ECO).

3.3 Handling and storage of materials

i) All chemicals used during the development and operational phase, including fuel, should be stored in a proper storeroom or protected area to prevent pollution.

ii) Above ground fuel tanks to be utilised during the operational phase should be covered by a bund wall that is able to hold 110% of the total volume of fuel.

iii) Vehicles should be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere.

iv) Where applicable, the contractors must ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where required.

v) Cement and concrete mixing, if applicable, should only take place within the construction site. No concrete may be mixed directly on the ground.

vi) All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. should be reported to the ECO.

3.4 Waste management

i) Waste refers to all construction debris and domestic waste generated due to construction activities.

ii) The contractor will be responsible for the removal of construction waste.

iii) Suitable containers should be placed on site to collect all solid waste. These should be emptied regularly.

iv) No littering is permitted. During the construction period the site shall be maintained in a neat and tidy condition.

v) All solid waste produced should be disposed of at an authorized landfill site.

vi) No dumping, burning or burying of waste may take place on site. Employees are responsible for the collection of waste on

site. This also includes windblown waste. All waste collected should be disposed of according to best practices.

vii) All hazardous waste (if any) should be disposed of at an authorized hazardous landfill site. Re-usable hazardous material should be re-used or sold to recycling contractors, where possible.

3.5 Soil, erosion and vegetation management

i) Construction activities should be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles should also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily.

ii) All human movement activities must be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat.

iii) Erosion management is important. Rehabilitation of disturbed areas is important to help the recovery of the vegetation.

iv) Removed topsoil is to be stockpiled in an area where it will not be disturbed. For example, one layer of bricks or stones can be placed around the stockpiled topsoil to protect topsoil from washing away during rainstorms.

v) Topsoil is to be placed on the disturbed areas once construction is completed. Re-spreading is preferably to be done to its natural level.

vi) An alien control and monitoring programme must be developed, starting during the construction phase and to be carried over into the operational phase.

vii) Any proclaimed weed or alien species that germinates during the contract period must be cleared by hand / approved chemicals before flowering thereof.

viii) Imported fill material should be monitored during and after construction for the presence of any alien species. Any such species should be removed immediately.

ix) No open fires allowed. Provision should be made that no accidental fires are started.

x) No firewood shall be collected on site or in surrounding areas, without written approval from the landowner.

xi) Firefighting equipment must be available on site.

xii) Species, especially grasses, trees and shrubs occurring in the region must be used to rehabilitate disturbed areas.

3.6 Noise control

i) The noise levels will be kept to an acceptable level and comply with the standards as per legislation.

ii) Construction activities should be limited to normal daytime hours, where possible.

iii) Noise levels should be kept as low as possible during the construction phase in order not to disturb adjacent landowners.

3.7 Air pollution

i) Dust will be controlled during the construction phase, when necessary.

ii) Construction activities should be limited to normal daytime hours, where possible.

iii) The operation of construction vehicles will be limited to 35km/hour to limit the formation of dust.

3.8 Safety and security

i) The contractors must comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site.

ii) Construction contracts must include safety and security measures for staff.

iii) Precautions to ensure that construction staff and sites are visible should be implemented.

iv) Proper PPE should be provided to the employees and used correctly by employees.

v) Fire extinguishers must be available on site and in the construction camp (if any).

vi) The proposed development area should be fenced of (during construction as well as operational phase).

3.9 Heritage management

i) Known heritage resources (if any) must be avoided as far as possible.

ii) Employees should be encouraged and informed of the need to be on the look-out for potential fossils / buried archaeological material.

iii) In the case of the discovery of any stone tools or other archaeological or palaentological material, the work in the immediate vicinity should temporarily cease and reported to the archaeologist and SAHRA. Should any human remains be exposed, the archaeologist as well as the local SAPS should be notified.

iv) If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately. A

professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.

v) Appropriate measures should be undertaken by the ECO until the archaeologist / SAPS visits the site. This should include the following:
- Site should be fenced with 'danger tape'
- Position of finding should be recorded
- Depth of finding should be recorded
- Digital image of the finding should be taken

vi) Note that no information on the findings may be made public without the consent of the archaeologist / SAPS.

vii) Construction activities in the area may only continue after approval from the archaeologist and SAHRA.

3.10 Site clean-up and rehabilitation

i) Temporary structures and office sites (if any) shall be dismantled and removed after completion of the construction phase of the project.

ii) All waste, equipment, materials, etc. used during construction must be cleared from the site. The contractors must ensure that the site is cleared and rehabilitated to the satisfaction of the ECO.

iii) An alien plant control and monitoring programme should be implemented.

iv) Re-vegetation of disturbed areas must be undertaken with site indigenous species.

4. OPERATIONAL PHASE

i) Soil erosion occurrences should be attended to immediately.

ii) An action plan should be available and implemented immediately, in case of any fuel spillages on site.

iii) The noise levels will be kept to an acceptable level and comply with the standards as per legislation.

iv) Proper mitigation measures should be implemented to limit the occurrence of fire outbreaks / spreading for veld fires to adjacent properties.

5. DECOMMISSIONING /CLOSURE

It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan.

i) Activities associated with the decommissioning phase of the proposed project, will be limited to the rehabilitation of areas disturbed during the construction phase. All disturbed areas will be rehabilitated according to best practices.

ii) All temporary infrastructure related to the construction phase will be removed from site.

iii) Temporary concrete surfaces (if any) will be removed and compacted areas ripped.

iv) The establishment of natural occurring vegetation will be encouraged, where applicable.

v) No waste will be dumped on site and any waste occurring on site will be removed and disposed of according to best practices.

vi) Establishment of extensive alien vegetation species will be monitored.

vii) A rehabilitation plan will be developed, if it is decided to decommission the Truck Stop, before the cessation of the operation aspects of the proposed project.

viii) The rehabilitation plan will include management and mitigation measures to be implemented during the decommissioning of the project.

6. COMPLIANCE AND MONITORING

i) The proponent should ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction.

ii) An Environmental Control Officer (ECO) can be appointed separately or can be part of the contractor's team to monitor the construction phase.

iii) Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended.

iv) Inspections should be documented and any shortcomings addressed immediately.

v) An independent ECO should be appointed to undertake a monitoring audit at least every 3 months during construction, unless otherwise stated in the EA.

vi) A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages from the fuel tanks / wash-bay during the operational phase.

vii) Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.

viii) Water quality monitoring must be done on a quarterly basis unless specified otherwise in the Water Use Licence. Groundwater monitoring must take place in the vicinity of the wash bay as well as the fuel storage tanks, to monitor possible leachate that may be entering the groundwater from such areas. Frequent samples should represent the water quality over a long period; therefore frequent samples should be taken. All information must be recorded and the site assessment and response form must be completed.

7. ENVIRONMENTAL AWARENESS PLAN

i) The contractors should ensure that all employees and any third party are adequately trained with regard to the implementation of the EMPr, before any of the contractor's obligations are carried out by the above mentioned parties. This includes training regarding any environmental legal requirements as well as any other obligations. The appointed ECO (or external specialists) should conduct the required training.

ii) The management (including the executive as well as middle) as well as general labour levels should be targeted during the training sessions.

iii) Environmental Awareness Training Programmes should include, but not limited to, the following:

- Names, positions and responsibilities of personnel to be trained in various training sessions
- Schedules indication dates for various training sessions
- Framework for various training sessions
- Summarised content of training sessions
- Importance of conformance with environmental regulations and policies
- Impacts that various work activities may have on various environmental aspects
- Roles and responsibilities of employees to ensure conformance with the EMPr, best practices as well as other environmental policies
- The potential consequences should the specified operating procedures not be adhered to
- Implementation of various mitigation measures
- Information on the protected / species of concern that may be observed on / near the construction site
- Information on the possible occurrence of archaeological and/or historical findings on site
- Importance of:

- not littering
- using supplied toilet facilities
- using water sparingly

- minimising the occurrence of pollution (air, soil, surface water or groundwater resources)
- re-use of material where possible (limit the generation of waste)

iv) All records of all training sessions should be available on site. An induction presentation on environmental awareness as well as the EMPr shall be given to all employees, in a language that is understood by the employees.

v) The on-site ECO as well as the contractor should monitor the performance of employees to ensure that the above is adhered to.

SUMMARY OF RECOMMENDED MANAGEMENT AND MITIGATION MEASURES

ECO - Environmental Control Officer / IECO - Independent Environmental Control Officer / SO - Safety Officer

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
General measures to consider	1.1.	Any construction is disruptive and the environment must be given consideration with every activity undertaken	Applicant / Contractor	Contractor / ECO	On-going	At all phases
	1.2.	All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.)	Applicant / Contractor	Contractor / ECO	On-going	At all phases
	1.3.	According to Section 28 of the NEMA Act 107, every person who cause, 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 and if it can't be avoided or stopped, to minimize and rectify such pollution or degradation of	Applicant / Contractor	Contractor / ECO	On-going	At all phases

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
		the environment.				
	1.4.	The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times.	Applicant / Contractor	Contractor / ECO	On-going	At all phases
Planning phase	2.1.	Permits will be obtained for the removal / transplantation of protected species (if any) that are located within the construction area where no alternatives are possible. Care will be taken to prevent unnecessary damage to vegetation near to construction activities.	Contractor	Applicant / ECO	Once off	Before site preparation / construction activities are undertaken
	2.2.	A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages from the fuel tanks / wash-bay during the operational phase.	Contractor	Applicant / ECO	Once off	Before site preparation / construction activities are undertaken
	2.3.	The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations (Regulations	Applicant	Contractor / ECO	Once off	Before site preparation / construction

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
		982, 983, 984 and / or 985 of 2014) are undertaken. In addition, the necessary DWS registrations will be obtained, before any construction activities are undertaken.				activities are undertaken
	2.4.	The necessary precautions with regard to road safety will be implemented for construction work to be undertaken within road crossings (if any).	Contractor	SO / ECO	Continual	Before site preparation / construction activities are undertaken
	2.5.	Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken.	Contractor	SO / ECO	Continual	Before site preparation / construction activities are undertaken
	2.6.	A blasting permit will be obtained before blasting activities is undertaken (if any).	Applicant	Contractor / ECO / SO	Once off	Before site preparation / construction activities are

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
						undertaken
Construction phase - general	3.1.	Care will be taken to prevent unnecessary damage to vegetation near to construction activities.	Contractor	ECO	On-going	Throughout construction phase
	3.2.	The necessary Water Use Authorisations will be available on site.	Contractor	ECO	On-going	Throughout construction phase
	3.3.	The necessary precautions with regard to road safety will be implemented for construction work within road crossings (if any).	Contractor	ECO / SO	On-going	Throughout construction phase
	3.4	Proper sanitation, water and waste facilities will be in place for construction workers throughout the construction phase.	Contractor	ECO	On-going	Throughout construction phase
	3.5	Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site.	Contractor	ECO	On-going	Throughout construction phase
	3.6.	Potable water will be made available daily to workers on site.	Contractor	ECO / SO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	3.7.	Fire-fighting equipment will be available on site, where applicable.	Contractor	ECO / SO	On-going	Throughout construction phase
	3.8.	If artefacts or graves are uncovered during construction activities, work in the immediate vicinity will be stopped until the project Archaeologist and SAHRA has been consulted.	Contractor	ECO	On-going	Throughout construction phase
	3.9.	Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities.	Contractor	ECO / SO	On-going	Throughout construction phase
Water resources	4.1.	No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline, without the necessary authorisations (for example from DESTEA and DWS).	Contractor	ECO	On-going	Throughout construction phase
	4.2.	Caution will be taken to ensure that construction materials are not dumped or stored within storm water management systems.	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	4.3.	Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution).	Contractor	ECO	On-going	Throughout construction phase
	4.4.	A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages from the fuel tanks / wash-bay during the operational phase. The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected.	Contractor	ECO	On-going	Throughout construction phase
	4.5.	Weather forecasts from the South African Weather Bureau of up to three days in advance will be monitored on a daily basis to avoid exposing soil or construction works or materials during a storm event and appropriate action will be taken in advance to protect construction works should a	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
		storm event be forecasted.				
	4.6.	Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training. The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways.	Contractor	ECO	On-going	Throughout construction phase
	4.7.	All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO).	ECO	IECO	On-going	Throughout construction phase
	4.8.	Infilling, excavation, drainage and hardening of surfaces will not occur unnecessarily in storm water infrastructure.	Contractor	ECO	On-going	Throughout construction phase
	4.9.	The design of drainage systems will ensure there is no contamination, eutrophication or increased. Drainage systems will be maintained regularly in order to minimize the runoff of	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
		harmful chemical substances into the waterway(s).				
	4.10.	It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure.	Contractor	ECO	On-going	Throughout construction phase
Handling and Storage of materials	5.1.	All chemicals used during the development, including fuel, will be stored in a proper storeroom or protected area to prevent pollution.	Contractor	ECO	On-going	Throughout construction phase
	5.2.	Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere.	Contractor	ECO	On-going	Throughout construction phase
	5.3.	Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary.	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	5.4.	Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground.	Contractor	ECO	On-going	Throughout construction phase
	5.5.	All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment.	Contractor / ECO	IECO	On-going	Throughout construction phase
	5.6.	Spill response equipment must be available during the handling and loading of hazardous waste (if any)	Contractor / ECO	IECO	On-going	Throughout construction phase
	5.7.	Hazardous substances (including the above ground fuel tanks) to be stored in bunded area. Bund walls will have a capacity of at least 110% of the total capacity of the stored volume.	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	5.8.	No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost.	Contractor	ECO	On-going	Throughout construction phase
	5.9.	Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles.	Contractor	ECO	On-going	Throughout construction phase
	5.10.	All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment.	Contractor	ECO	On-going	Throughout construction phase
	5.11.	A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages from the fuel tanks / wash-bay during the operational phase. The necessary mitigation	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
		measures should be implemented immediately, should any leakages / spills be detected.				
Waste Management (Note that waste refers to all construction debris and domestic waste generated due to construction activities.)	6.1.	The contractor is responsible for the removal of construction waste.	Contractor	ECO	On-going	Throughout construction phase
	6.2.	Suitable containers will be placed on site to collect all solid waste. These will be emptied regularly.	Contractor	ECO	On-going	Throughout construction phase
	6.3.	No littering is permitted. During the construction period the site will be maintained in a neat and tidy condition.	Contractor	ECO	On-going	Throughout construction phase
	6.4.	All solid waste produced will be disposed of at an authorized landfill site. Recyclable waste may also be sold to recycling contractors.	Contractor	ECO	On-going	Throughout construction phase
	6.5.	No dumping, burning or burying of waste will be undertaken on site.	Contractor	ECO	On-going	Throughout construction phase
	6.6.	All hazardous waste will be disposed of at an authorized	Contractor	ECO	On-going	Throughout construction

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
		hazardous landfill site. Recyclable hazardous waste may also be re-used or sold to recycling contractors.				phase
	6.7.	Recyclable waste will be sold / re-used, where possible.	Contractor	ECO	On-going	Throughout construction phase
	6.8.	A waste management plan will be compiled and designed to ensure adequate waste management activities.	Contractor	ECO	On-going	Throughout construction phase
	6.9.	Areas used for waste storage and loading of materials should be lined and bund walls have to be erected to contain any spills that might occur.	Contractor	ECO	On-going	Throughout construction phase
Soil, erosion and vegetation management	7.1.	Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily.	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	7.2.	Access roads or temporary crossings must be non-erosive, structurally stable and not induce flooding / safety hazard.	Contractor	ECO	On-going	Throughout construction phase
	7.3.	If any access road or temporary crossing is impaired, it will be repaired immediately to prevent any future / further damage.	Contractor	ECO	On-going	Throughout construction phase
	7.4.	All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat.	Contractor	ECO	On-going	Throughout construction phase
	7.5.	Erosion management is important. Rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation.	Contractor	ECO	On-going	Throughout construction phase
	7.6.	Stockpiled material will be stockpiled in an area where it will not be disturbed by vehicles.	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	7.7.	Stockpiled material will be protected from washing away during rainstorms. For example, one layer of bricks or stones can be placed around the stockpiled topsoil.	Contractor	ECO	On-going	Throughout construction phase
	7.8.	Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil is preferably to be done to a maximum of 10 cm.	Contractor	ECO	On-going	Throughout construction phase
	7.9.	An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase.	Contractor	ECO	On-going	Throughout construction phase and operational phase
	7.10.	Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof.	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	7.11.	Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately.	Contractor	ECO	On-going	Throughout construction phase and during operational phase
	7.12.	No open fires allowed. Provision will be made that no accidental fires are started.	Contractor	ECO	On-going	Throughout construction phase
	7.13.	No firewood will be collected on site or in surrounding areas, without written approval from the landowner.	Contractor	ECO	On-going	Throughout construction phase
	7.14.	Fire fighting equipment will be available on site.	Contractor	ECO / SO	On-going	Throughout construction phase
	7.15.	Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas.	Contractor	ECO	On-going	Throughout construction phase
	7.16.	No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced.	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	7.17.	Animals found at the construction site will be removed and relocated to a suitable area.	Contractor	ECO	On-going	Throughout construction phase
	7.18.	Compacted soils (such as dirt tracks not to be utilised during the operational phase) must be ripped to ensure the establishment of natural occurring vegetation.	Contractor	ECO	On-going	Throughout construction phase
Noise and dust control	8.1.	Construction activities will be limited to normal daytime hours.	Contractor	ECO	On-going	Throughout construction phase
	8.2.	Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners.	Contractor	ECO / SO	On-going	Throughout construction phase
	8.3.	Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required).	Contractor	ECO / SO	On-going	Throughout construction phase
	8.4.	Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required).	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	8.5.	The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration of roads being used.	Contractor	ECO	On-going	Throughout construction phase
Safety and Security	9.1.	The contractors will comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site. Construction contracts will include safety and security measures for staff.	Contractor	ECO / SO	On-going	Throughout construction phase
	9.2.	Precautions to ensure that construction staff and sites are visible and proper PPE will be provided to all employees.	Contractor	ECO / SO	On-going	Throughout construction phase
	9.3.	Construction work within road reserves will accommodate road users as far as possible. This includes the following:				

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	9.3.1.	Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible.	Contractor	ECO / SO	On-going	Throughout construction phase
	9.3.2.	Construction along and across existing roads will be executed in such a manner that both pedestrian and vehicular traffic is accommodated at all times.	Contractor	ECO / SO	On-going	Throughout construction phase
	9.3.3.	The contractor will be required to maintain adequate access to all public and private property at all times.	Contractor	ECO / SO	On-going	Throughout construction phase
	9.3.4.	Contractor will supply, erect and maintain road signs for all work areas conforming to the prescribed layout and requirement of the South African Road Traffic Signs Manual and other relevant notices.	Contractor	ECO / SO	On-going	Throughout construction phase
	9.4.	Fire extinguishers will be available on site and in the construction camp (if any).	Contractor	ECO / SO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	9.5.	The contractor will be required to maintain adequate access to all public and private property at all times.	Contractor	ECO / SO	On-going	Throughout construction phase
Heritage Management	10.1.	In the case of the discovery of any heritage, archaeological or palaeontological significance, the work in the area will be stopped and reported to the archaeologist and SAHRA. Any construction activities in the nearby vicinity may only commence after approval is obtained from SAHRA as well as the ECO.	Contractor	ECO	On-going	Throughout construction phase
Site Clean-up and Rehabilitation	11.1.	Temporary structures and office sites (if any) will be dismantled and removed after completion of the construction phase of the project.	Contractor	ECO	On-going	Throughout construction phase
	11.2.	All waste, equipment, materials, etc. used during construction will be cleared from the site. The contractors will ensure that the site is cleared and rehabilitated to	Contractor	ECO	On-going	Throughout construction phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
		the satisfaction of the ECO.				
	11.3.	An alien plant control and monitoring programme will be implemented.	Contractor	ECO	On-going	Throughout construction phase
	11.4.	Re-vegetation of disturbed areas will be undertaken with site indigenous species. Hydro-seeding will be implemented if the establishment of natural occurring vegetation does not occur within reasonable time.	Contractor	ECO	On-going	Throughout construction phase
	11.5.	After completion of the construction phase, a waterway monitoring program will be initiated that ensure that all are adequately rehabilitated.	Contractor	ECO	On-going	Throughout construction phase
Operational Phase	12.1.	Regular inspections of the construction area, as well as the fuel tanks will be done to identify leakages. These will be attended to immediately in order to limit the occurrence of soil / groundwater pollution.	Applicant	DESTEA / DWS	Maintenance inspections should be undertaken every six months.	During operation

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	12.2.	Soil erosion occurrences will be attended to immediately.	Applicant	DESTEA / DWS	Maintenance inspections should be undertaken every six months.	During operation
	12.3.	A monitoring system should be implemented to determine the occurrence of any fuel / oil spillages from the fuel tanks / wash-bay during the operational phase in order to ensure that no soil / groundwater pollution occur. The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected.	Applicant	DESTEA / DWS	Maintenance inspections should be undertaken every six months.	During operation
	12.4.	Measures will be implemented to minimise the loss of water at any section (including activities associated with the wash-bays)	Applicant	DESTEA / DWS	Maintenance inspections should be undertaken every six months.	During operation

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	12.5.	Regular monitoring will be undertaken to ensure that no soil / groundwater pollution occur due to the activities associated with the operational phase.	Applicant	DWS	Maintenance inspections should be undertaken every six months.	During operation
	12.6.	An action plan will be available and implemented immediately, in case pollution of soil / groundwater occurs to ensure that it is rectified as soon as possible.	Applicant	DWS	Maintenance inspections should be undertaken every six months.	During operation
Decommissioning / Closure	13.1.	It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan.	Applicant	DESTEA	Six months before the proposed decommissioning is undertaken	During operation

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
Compliance and Monitoring	14.1.	The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction.	Applicant	ECO	On-going	During site preparation as well as construction phase
	14.2.	An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team.	Contractor	Applicant	Before construction activities are undertaken	The ECO will be employed until rehabilitation of the site is completed.
	14.3.	Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended.	ECO / Contractor	IECO	At least every two weeks	During site preparation as well as construction phase
	14.4.	Inspections should be documented and any shortcomings addressed immediately.	ECO / Contractor	IECO	Shortcomings should be addressed immediately	During site preparation, construction phase as well as operational phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	14.5.	An independent ECO will be appointed to monitor the construction phase. A report will be provided to the contractor upon completion thereof. The findings thereof should be made available to DESTEA, should it be requested.	Independent ECO	DESTEA	3 monthly, or as indicated in the Environmental Authorisation	During site preparation and construction phase
	14.6.	Any emergency or unforeseen impact will be reported to the relevant environmental department within 24 hours after identification for telephonic approval and will be confirmed in writing.	Contractor / ECO	ECO / IECO	On-going	At all times
	14.7.	During the operational phase the fuel tanks and associated infrastructure must be routinely audited and maintenance schedule adjusted accordingly in order to prevent leaking.	Applicant	DESTEA / DWS	On-going	During the operational phase

Objective	Nr	Mitigation measure	Executing party	Monitoring party	Timeframe	Project Stage
	14.8	Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.	Contractor / ECO	ECO / IECO	On-going	At all times