



Environmental
Management
Plan

EMPr FOR:
PROPOSED CATTLE
FEEDLOT
DEVELOPMENT ON
FARM DOORKOP A
NO. 148, PARYS, FREE
STATE PROVINCE.

LW Boerdery Trust

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Definitions:

Alien Vegetation: Alien vegetation is defined as undesirable plant growth, which shall include, but not be limited to, all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy, in number, any area within the defined construction area and which are declared to be undesirable.

Aspect: Element of an organisation's activities, products or services that can interact with the environment.

Auditing: A systematic, documented, periodic, and objective evaluation of how well the environmental management plan is being implemented and performing with the aim of helping to safeguard the environment by facilitating management control, including meeting regulatory requirements. The results of the audit help the organisation to improve its environmental policies and management systems.

Built environment: Physical surroundings created by human activity, e.g. buildings, houses, roads, bridges, and harbours.

Contamination: Polluting or making something impure.

Corrective (or remedial) action: Response required addressing an environmental problem that conflicts with the requirements of the EMP. Monitoring, audits or management review may determine the need for corrective action.

Degradation: The lowering of the quality of the environment through human activities, e.g. river degradation and soil degradation.

Ecology: The scientific study of the relationship between living things (animals, plants, and humans) and their environment.

Ecosystem: The relationship and interaction between plants, animals, and the non-living environment.

Environment: Environment means the surroundings within which humans exist, and that could be made up of –

- the land, water and atmosphere of the earth.
- micro-organisms, plant and animal life
- any part or combination of the two points mentioned above and the interrelationships among and between them; and

- the physical, chemical, aesthetic, and cultural properties and conditions of the foregoing that influence human health and well-being.













Environmental aspect:	An environmental aspect is any component of a contractor's construction activity that is likely to interact with the environment.
Environmental authorisation:	An environmental authorisation is a written statement from the National Department of Forestry, Fisheries and the Environment (DFFE) that records its planned development approval.
Environmental impact:	An impact or environmental impact is the change to the environment, whether desirable or undesirable, resulting from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.
Hazardous waste:	Waste, even in small amounts, can damage plants, animals, their habitats, and human well-being. Examples include waste from factories, detergents, pesticides, and hydrocarbons.
Land use:	The use of land for human activities, e.g. residential, commercial, industrial use.
Mitigation:	Measures designed to avoid, reduce, or remedy adverse impacts

1. Introduction and background:

1.1. Scope:

Environmental Management Group (EMG) (Pty) Ltd, as independent environmental managers and impact assessors has been appointed by **LW Boerdery Trust** to compile and submit an Environmental Management Programme (EMPr) under the National Environmental Management Act No 107 of 1998, for the **proposed cattle feedlot development** in Parys, Free State Province as part of the Environmental Authorisation Process.

This document is compiled in accordance with the Integrated Environmental Management (IEM) philosophy, which aims to achieve a desirable balance between conservation and development (DEAT, 1992). IEM is a key instrument of the National Environmental Management Act [NEMA] (Act No. 107 of 1998). NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an EMP. The IEM guidelines encourage a proactive approach to sourcing, collating, and presenting information in a manner that can be interpreted at all levels. The basic principles underpinning IEM are that there be:

-  Informed decision-making.
-  Accountability for information on which decisions are taken.
-  Accountability for decisions taken.
-  A broad meaning given to the term environment (i.e. One that includes physical, biological, social, economic, cultural, historical and political components);
-  An open, participatory approach in the planning of proposals.
-  Consultation with interested and affected parties.
-  Due consideration of alternative options.
-  An attempt to mitigate negative impacts and enhance positive aspects of proposals.
-  An attempt to ensure that the 'social costs' of development proposals (those borne by society rather than the developers) are outweighed by the 'social benefits' (benefits to society because of the actions of the developers).
-  Democratic regard for individual rights and obligations.
-  Compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. From 'cradle to grave').
-  And the opportunity for public and specialist input in the decision-making process.






The Environmental Impact Assessment Regulations, which took effect in December 2014, regulate the procedures and criteria for submitting, processing, considering, and deciding on applications for environmental authorisation of listed activities.

The general principles in this document apply to all activities related to the proposed development during the **planning, construction, and operational phases**.

1.2. Project Description:

Environmental Management Group (Pty) Ltd has been appointed as an independent environmental Assessment Practitioner (EAP) to conduct the Basic Assessment (BA) process with regard to the proposed new development of a cattle feedlot on Farm Doornkop No. 148, Parys, Free State. The BA process is being carried out in compliance with the EIA Regulations 2014 (amended), which have been promulgated in accordance with the National Environmental Management Act (NEMA: Act No. 107 of 1998).

The proposed project aims to build a cattle feedlot facility that can accommodate up to 7,500 large stock units (LSU) of cattle. The development will consist of the following:

-  A holding camps.
-  A silage storage area.
-  Three sedimentation ponds.
-  A holding pond.
-  Area for composting and managing dry manure.

The facility will focus on sustainable development practices and reducing environmental impact. Incorporating sedimentation and holding ponds will aid in managing waste and runoff, ensuring the facility operates in an environmentally responsible manner. Additionally, the designated area for composting and managing dry manure will enable the facility to manage waste effectively, contributing to the overall sustainability of the operation. The feedlot facility will provide a way to manage livestock responsibly while at the same time offering financial opportunities for the local community.

Proposed Feedlot Development

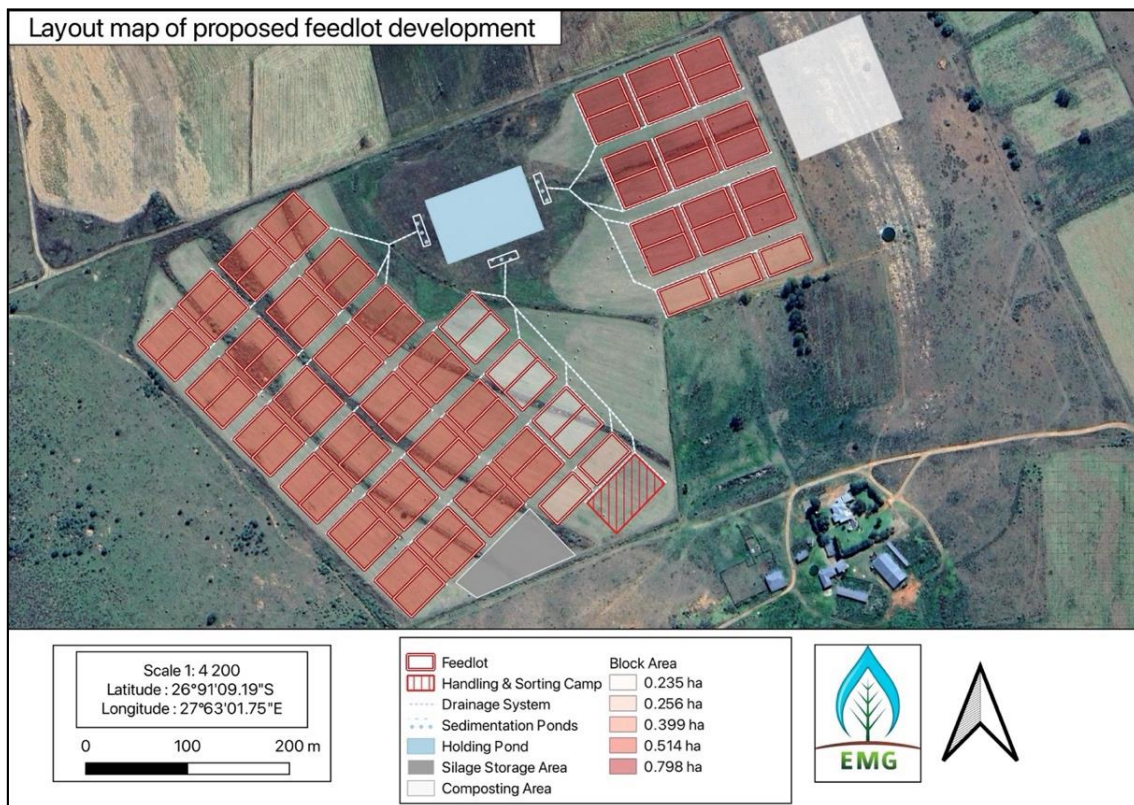


Figure 1 Proposed design of feedlot camps, silage area, composting area, handling camps, sedimentation & holding ponds.

The infrastructure will entail 77 camps that can each house 98 cattle. The camps will be organised into alphabetically arranged blocks consisting of 6, 4, 3, and 2 pens, respectively, where the specific dimensions of each block are illustrated in Table 1 below. A schematic of the feedlot layout is presented in Figure 1. The development includes a silage storage area and a handling/sorting camp to ensure efficient and effective cattle management. To ensure optimal nutrition, the feedlot will be equipped with a feed management system that will enable the execution of a well-structured feeding schedule.

Table 1 Proposed feedlot camps per block allocation, with designated physical area size per block.


Feedlot Block No.	Camps per Block	per LSU Camp	per LSU per Block in total	Area of Block (ha)
A	4	98	392	0.514
B	4	98	392	
C	4	98	392	
D	4	98	392	
E	4	98	392	
F	4	98	392	
G	4	98	392	
H	4	98	392	
I	2	98	196	
J	4	98	392	0.514
K	4	98	392	
L	2	98	196	0.235
M	4	98	392	0.514
N	4	98	392	
O	2	98	196	0.253
P	2	98	196	0.256
Q	3	98	294	0.399


R	6	98	588	0.798
S	6	98	588	
T	6	98	588	
20	77		7546	9.937


Waste and Stormwater Management:

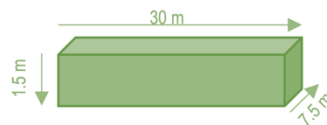
Cattle produce an estimated amount of waste equivalent to 5-6% of their body weight daily. To account for the different sizes of cattle, we can estimate their weight at the introduction to be 250 kg, at the growing stage to be 375 kg, and at the exit to be 500 kg. After analysing the data presented in Table 2, we have found that the total manure production of all three weight categories of cattle is 5453.70 tons per month. The manure will be deposited in a composting and drying area, reaching 1 meter in height and 125 meters in length and width, respectively. The compost area (1.5625 ha) will have a capacity of 15,625 cubic meters, which will be sufficient to accommodate all the manure produced by the cattle. The farmer intends to utilise the dehydrated manure, which is essentially compost, to fertilise his crop production. Should rainfall occur, any manure that may enter the stormwater channel will be intercepted by one of three sedimentation ponds. The water free of effluent will be transferred to the holding pond. In addition, the sedimentation ponds will be de-sludge during dry conditions, and the manure collected will be deposited in the composting area.

The proposed cattle feedlot pens have been designed to use the landscape's natural slope to direct runoff into a lined stormwater channel that will run parallel and horizontally with the feedlots. A stormwater layout plan has been compiled and will conform to industry best practice design (Appendix J). The runoff from the stormwater channel will be guided to the waste management system, which consists of three sedimentation ponds, each respectively 0.22 ha, designed to handle the entire catchment area. The ponds were constructed with the following dimensions:




 Width: 7.4 meters

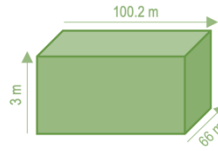
 Length: 30 meters

 Depth: 1.5 meters



To accommodate the entire catchment area and the influx of effluent from 77 additional feedlots, a strategic plan has been devised to implement sedimentation ponds in three cardinal directions encompassing the primary holding pond. The design of the holding pond meticulously considered an extreme weather event at an estimated daily rainfall of 100 mm, supplemented by an additional 20% allowance to accommodate water utilisation and cattle waste. Consequently, the holding pond must possess a volumetric capacity of 19,822 cubic meters to effectively manage the anticipated water influx from an extreme precipitation event.

-  Width: 66 meters
-  Length: 100.2 meters
-  Depth: 3 meters



Strategic placement dictates the construction of the holding pond at the epicentre of the feedlots, aligning with the geographical elevation shift towards the development's central axis. This positioning maximises efficiency and accessibility, rendering it the most viable location for construction. The construction methodology will follow established engineering principles, using strong materials and techniques to ensure the structure's durability and longevity. Detailed engineering specifications will guide excavation, lining, and reinforcement procedures, ensuring compliance with environmental regulations and sustainable water management practices. Comprehensive monitoring and maintenance protocols will be in place to ensure operational efficiency and mitigate risks associated with water containment and discharge. The water accumulated in the holding pond of 0.660 ha will be discharged by the farmer, who will use the water to sustain his crops.

Table 2 Estimated manure production of proposed feedlot development.

Total Estimated Manure Production

Camp	LSU per Camp	Weight class (Kg)	Manure/day/LSU (Kg)	Manure (Kg)/month/LSU	Total Manure/month (Kg)	Total Manure/month (Ton)
A	392	250	12.5	375.00	147000.00	147
B	392			375.00	147000.00	147
C	392			375.00	147000.00	147
D	392			375.00	147000.00	147
E	392			375.00	147000.00	147
F	392			375.00	147000.00	147
G	392	375	22.5	675.00	264600.00	264.6
H	392			675.00	264600.00	264.6
I	196			675.00	132300.00	132.3
J	392			675.00	264600.00	264.6
K	392			675.00	264600.00	264.6

L	196			675.00	132300.00	132.3
M	392			675.00	264600.00	264.6
N	392	500	35	1050.00	411600.00	411.6
O	196			1050.00	205800.00	205.8
P	196			1050.00	205800.00	205.8
Q	294			1050.00	308700.00	308.7
R	588			1050.00	617400.00	617.4
S	588			1050.00	617400.00	617.4
T	588			1050.00	617400.00	617.4
20	7546				5453700.00	5453.70

Feedlot Water Management

In the context of feedlot water management, it is imperative to accurately estimate and provide the requisite water volume to ensure livestock's well-being and productivity. According to recommended guidelines, the daily water requirement for cattle can be estimated based on their live weight, with a standard ratio of 5 litres per 50 kilograms of LSU. Table 3 presents a breakdown of the estimated water requirements per LSU on a daily basis.

Table 1 Quantity of water needed per LSU per day for each weight class.




Water needed per day (litres)	
LSU 250kg	25
LSU 375kg	37.5
LSU 500kg	50
Average	37.5

The cumulative water demand for the entire cattle population can be calculated by extrapolating these daily requirements to an annual scale, as demonstrated below:

$$37.5 \text{ L (per LSU per day)} \times 7\,500 \text{ (LSU)} \times 365 \text{ (Days)} = \underline{\underline{102\,656 \text{ m}^3/\text{per year}}}$$

It is paramount that the water supplied to the cattle meets stringent quality standards and is clean, cool, and of high purity. Adequate water provision is indispensable for sustaining high-density cattle production and ensuring optimal health and performance outcomes. Three

existing boreholes on the property premises will be sufficient to satisfy the significant water demand. The precise geographical coordinates of these boreholes are as follows:

-  BH01 (Lat/Long): -26.912000° 27.635647°
-  BH02 (Lat/Long): -26.911081° 27.635036°
-  BH03 (Lat/Long): -26.910053° 27.634611°

Practical measures, such as supplying drinking water via elevated troughs, are advocated to minimise contamination from livestock excretions, thereby maintaining water integrity and hygiene standards. The operational activities for the proposed feedlot facility will require authorisation in terms of Section 21 of the National Water Act. The proponent is in the process of submitting a water use license application to the Department of Water and Sanitation (DWS).

2. Role players and responsibility matrix:

For the EMP to be successfully implemented, all the project's role players must co-operate. For this to happen, role players must clearly understand their roles and responsibilities in the project, be professional, form respectful and transparent relationships, and maintain open lines of communication.

Table 4: Functions and Responsibilities of Project Team

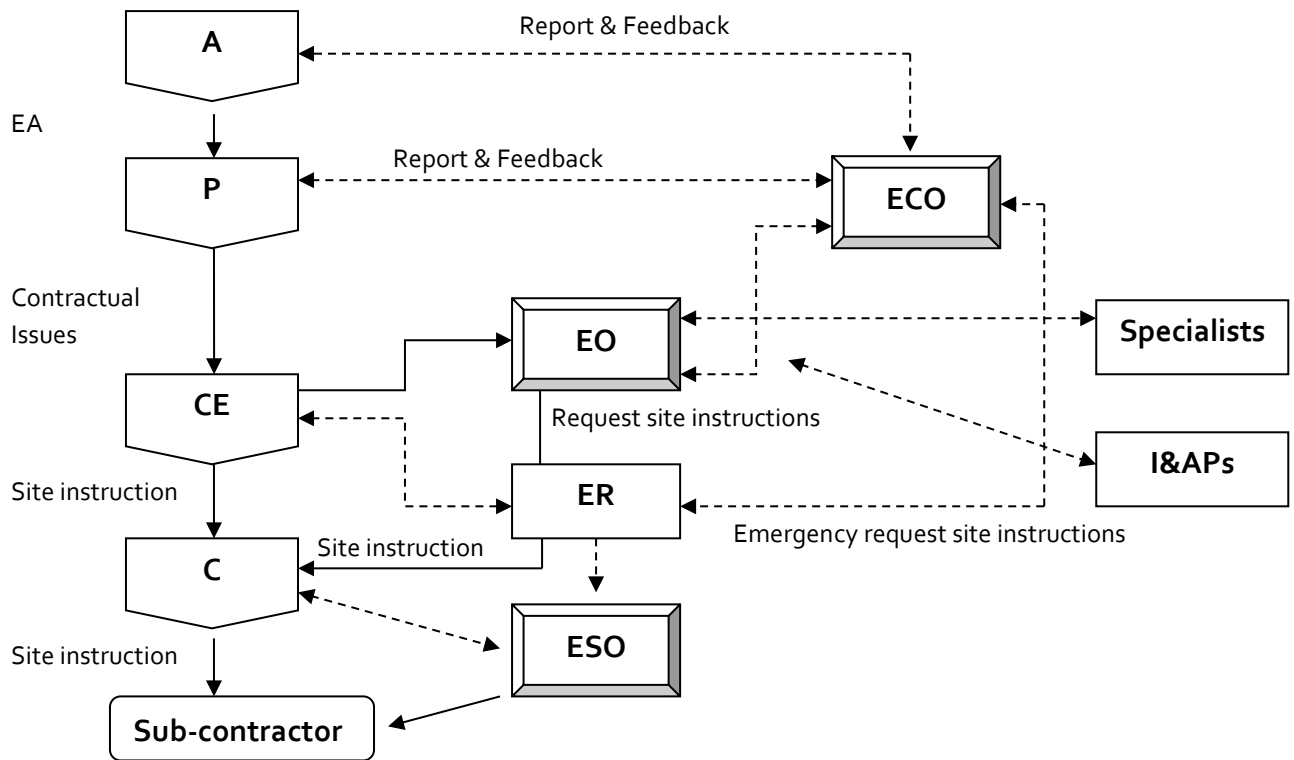
Key	Function	Responsibility
P	Proponent	The proponent is ultimately accountable for ensuring compliance with the EMP. The ECO must be contracted by the Proponent (full-time or part-time, depending on the size of the project) as an independent appointment to objectively monitor the implementation of relevant environmental legislation and conditions of the EMP for the project. The Proponent is further responsible for providing and giving the ECO a mandate to enable it to perform its responsibilities. The developer must ensure that the ECO is integrated into the project team.
CE	Consulting Engineer	Contracted by the developer to design and specify the project engineering aspects. Generally, the engineer runs the works contract. The CE may also fulfil the role of Project Manager on the proponent's behalf (See PM).
PM	Project Manager	The Project Manager is responsible for managing the project, contractors, and consultants and ensuring that the environmental management requirements are met. The CE may also act as the PM. The PM must approve all decisions regarding environmental procedures. The PM has the authority to stop any decommissioning activity in contravention of the EMP in accordance with an agreed-upon warning procedure.
ER	Engineers Representative	The consulting engineer's representative on site. Has the power/mandate to issue site instructions and in some

		instances, variation orders to the contractor, following request by the EO or ECO. The ER oversees site works, liaison with Contractor and ECO.
EO/EM	Environmental Officer / Environmental Manager	<p>Appointed by the Consulting Engineers as their environmental representative on site. The EO is not independent but must rather act on behalf of the consulting engineers with the mandate to enforce compliance under the project contract, which must include the EMP.</p> <p>The EO has the directive to issue non-conformance and hazard certificates. Further, in terms of accepted industry practice the EO could issue the equivalent of a “cease works” instruction only in exceptional circumstances where serious environmental harm has been or is about to be caused i.e. in cases of extreme urgency and then only when the ER is absent.</p> <p>The EO must form part of the project team and be involved in all aspects of project planning that can influence environmental conditions on the site. On certain types of projects, such as linear developments (fences, pipelines, etc), the EO must also be the liaison between the contractor and landowners.</p> <p>The EO must attend relevant project meetings, conduct daily inspections to monitor compliance with the EMP, and be responsible for providing reports and feedback on potential environmental problems associated with the development to the project team and ECO.</p> <p>The EO must convey the contents of this EMP to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors and their workforce.</p> <p>The EO must be suitably experienced with the relevant qualifications and preferably competent in construction related methods and practices.</p>
ECO	Environmental Control Officer	<p>An independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EA’s), and the EMP for the project. The ECO must be on site prior to any site establishment and must endeavour to form an integral part of the project team.</p> <p>The ECO must be proactive and have access to specialist expertise as and when required, these include botanists, ecologists, etc. Further, the ECO must also have access to expertise such as game capture, snake catching, etc.</p> <p>The ECO must conduct audits on compliance to relevant environmental legislation, conditions of EA, and the EMP for the project. The size and sensitivity of the development, based</p>

		<p>on the EIA, will determine the frequency at which the ECO will be required to conduct audits. (A minimum of a monthly site inspection must be undertaken).</p> <p>The ECO must be the liaison between the relevant authorities and the project team. The ECO must communicate and inform the developer and consulting engineers of any changes to environmental conditions as required by relevant authoritative bodies. The ECO must ensure that the registration and updating of all relevant EMP documentation is carried out.</p> <p>The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices.</p> <p>The ECO must handle information received from whistle blowers as confidential and must address and report these incidences to the relevant Authority as soon as possible.</p> <p>On small projects, where no EO is appointed, the ECO must convey the contents of this EMP to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors and their workforce.</p>
C	Contractor	<p>The principal contractor, hereafter known as the ‘Contractor’, is responsible for implementation and compliance with the requirements of the EMP and conditions of the EA’s, contract and relevant environmental legislation. The Contractor must ensure that all sub-contractors have a copy of and are fully aware of the content and requirements of this EMP.</p> <p>The contractor is required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMP will be implemented.</p>
ESO	Environmental Site Officer	<p>The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMP by the contractor. This is not an independent appointment; rather the ESO must be a respected member of the contractor’s management team.</p> <p>Dependent on the size of the development the ESO must be on site one week prior to the commencement of construction. The ESO must ensure that he/she is involved at all phases of the construction (from site clearance to rehabilitation).</p>
A	Lead Authority	<p>The authorities are the relevant environmental department that has issued the Environmental Authorisation. The authorities are responsible for ensuring that the monitoring of the EMP and other authorisation documentation is carried out, this will be achieved by reviewing audit reports submitted by the ECO and conducting regular site visits.</p>
OA	Other Authorities	<p>Other authorities are those that may be involved in the approval process of an EMP. Their involvement may include</p>





		<p>reviewing EMP's to ensure the accuracy of the information relevant to their specific mandate.</p> <p>Other authorities may be involved in the development, review or implementation of an EMP.</p> <p>For example, if a specific development requires a water use licence for the relevant national authority, then that authority should review and comment on the content of the particular section pertaining to that mandate.</p>
EAP	Environmental Assessment Practitioner	<p>The definition of an environmental assessment practitioner in Section 1 of NEMA is “<i>the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments introduced through regulations</i>”.</p>

2.1. Recommended formal environmental communication channels:



3. Objectives of the EMP:¹

The specific objectives of this EMP are to:

-  To provide explicit operational guidelines and environmental monitoring requirements during the construction phases so that activities are done in an environmentally responsible and sustainable manner.
-  To benefit the host communities, minimise the impacts on the environment, and ensure the health and safety of the community by creating a development that eliminates unacceptable health hazards and ensures public and animal safety.
-  To enable the proponent and its contractors to use resources efficiently and effectively during the project lifecycle to reduce wastage and associated negative environmental impacts. In addition, the aim is also to handle waste streams responsibly and apply the 'reduce, re-use and recycle' principle, wherever possible
-  To leave areas disturbed by construction in a rehabilitated, stable, non-polluting and tidy condition.






4. Activities covered by the EMP:

4.1. Planning Stage:

The project planning stage consists of layout design surveying and ensuring that all plans and required contracts, permits/ licenses and agreements are set in place.


4.2. Construction Phase:

The construction phase will start after the relevant authorisations are granted. The construction phase involves earthwork, structure development, service provision and finishing. The construction phase will start after the relevant authorisations are granted. This phase includes:









-  Establishment of construction camp and equipment yards.
-  Transportation of construction material and other resource input.
-  Use of construction equipment on site.
-  Storage of input materials and disposal of waste generated.
-  Rehabilitation of the disturbed areas through:
 - Demolition/removal of any unwanted construction fences and infrastructure.
 - Topsoiling and re-vegetation of areas disturbed by construction.

4.3. Operational Phase

The operational phase will start after the facilities to host the cattle and the sedimentation ponds and holding ponds have been constructed. The operational phase involves numerous key stages in managing and caring for cattle from their arrival at the feedlot until they are ready to be sold to the market. These stages include:






-  Arrival of cattle from various sources, unloading and sorting cattle by weight and gender in the appropriate pens.

¹ The implementation of the EMP is not an additional or "add on" requirement. The EMP is legally binding through NEMA.

-  Health and nutrition of cattle through feeding carefully formulated feed, being vaccinated, dewormed, and following other health protocols to prevent disease.
-  Closely monitor feed intake to ensure proper growth and avoid overfeeding.
-  Environmental management regarding the implementation of waste management and environmental control measures to minimise environmental impact.
-  Monitoring health, weight gain and overall condition of cattle and keeping record thereof.
-  Selling cattle that reached the desired weight and transportation to auctions, markets or abattoirs.
-  Regular cleaning of pens, feeding equipment, and other facilities.
-  Employees are trained in animal care, procedures, and environmental compliance.
-  Regulatory compliance in terms of Environmental Authorisation.






5. Identification of Environmental Aspects and Impacts:

The contractor shall identify likely aspects before commencing any construction activity. Examples of environmental aspects include:

-  Waste generation.
-  Stormwater discharge
-  Water use operations
-  Use of natural resources
-  Noise generation

Thereafter, the contractor shall programme his work so that each cause and effect of construction activity is also identified, and the activity planned to prevent any impacts. If prevention is not practicable, or in the event of mishap or misapplication, the contractor shall provide plans and measures for the engineer's approval, which will limit and contain the magnitude, duration and intensity of the impact. The contractor shall demonstrate that he can repair and reinstate the damaged environment. During the operational phase, the applicant or manager of the feedlot should adhere to the above-mentioned measures.

Listed below are some environmental impacts that could adversely alter an aspect of the environment through usual construction and operational activities:

-  Pollution of the atmosphere, soil or water.
-  Destruction or removal of fauna and flora and its effect on biological diversity.
-  Deformation of the landscape.
-  Soil erosion.
-  Effect on the built environment.

6. Legal Requirements:

6.1. General:

Construction and operational activities will be according to the best industry practices identified in the project documents. This EMP, which forms an integral part of the contract documents, informs the contractor and applicant/manager as to his duties in the fulfilment of the project objectives, with reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The contractor and applicant/manager should note that obligations imposed by the EMP are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of the contract that pertain to this project. If any rights and obligations contained in this document contradict those specified in the standard or project specifications, then the latter shall prevail.

6.2. Statutory and other Applicable Legislation:

The contractor and applicant/manager are deemed to have made themselves conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.




6.3. Administration of Environmental Obligations





6.3.1. Appointment of an Environmental Site Officer (ESO)

For the purposes of implementing the conditions contained herein, the contractor shall submit to the engineer for approval the appointment of a nominated representative of the contractor as the ESO for the contract. In writing, the request shall be given at least fourteen days before the start of any work, clearly setting out reasons for the nomination and with sufficient detail to enable the engineer to decide. The engineer will approve, reject, or call for more information on the nomination within seven days of receiving the request. Once a nominated representative of the contractor has been approved, he/she shall be the ESO and shall be the responsible person for ensuring that the provisions of the EMP are complied with during the life of the contract. The engineer will be responsible for issuing instructions to the contractor where environmental considerations call for action to be taken. The ESO shall submit regular written reports to the engineer, but not less frequently than once a month. The engineer shall have the authority to instruct the contractor to replace the ESO if, in the engineer's opinion, the appointed officer is not fulfilling his/her duties in terms of the requirements of the EMP or this specification. Such instructions will be in writing and clearly state why a replacement is required.

6.3.2. ESO Administration

Before the contractor begins each construction activity, the ESO shall give the engineer a written statement setting out the following:

-  The type of construction activity.
-  Locality where the activity will take place.
-  Identification of the environmental aspects and impacts that might result from the activity.

-  Methodology for impact prevention for each activity or aspect.
-  Methodology for impact containment for each activity or aspect.
-  Emergency/disaster incident and reaction procedures.
-  Treatment and continued maintenance of the impacted environment.

The contractor may provide such information in advance of any or all construction activities, provided that the engineer is given new submissions whenever there is a change or variation to the original.

The engineer may provide comment on the methodology and procedures proposed by the ESO, but he shall not be responsible for the contractor's chosen measures of impact mitigation and emergency/disaster management systems. However, the contractor shall demonstrate at inception and at least once during the contract that the approved measures and procedures function properly.

6.4. Communication Procedures on Site

Each of the books/documents described below must be available in duplicate, with copies for the Engineers Representative (ER), Environmental Site Officer (ESO) and Environmental Controlling Officer (ECO), or alternatively, an agreement could be reached to use a single system. These books should be available to the authorities for inspection or on request. The contractor's meeting minutes must reflect environmental queries, agreed actions and dates of eventual compliance. These minutes form part of the official environmental record.

6.4.1. Site Instruction Entries




The Site Instruction Book entries will be used for the recording of general site instructions as they relate to the works on site. It will also be used to issue stop-work orders to immediately halt any contractor activities in lieu of the environmental risk they may pose.




6.4.2. ESA Diary Entries

The purpose of these entries will be to record the comments of the ESA as they relate to activities on the site.

6.4.3. Training

The designated environmental site officer (ESO) must be conversant with all legislation pertaining to the environment applicable to this contract, be appropriately trained in environmental management, and possess the skills necessary to impart environmental management skills to all personnel involved in the contract. The contractor shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

-  The importance of conformance with all environmental policies.
-  The environmental impacts, actual or potential, of their work activities.
-  The environmental benefits of improved personal performance.

-  Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Agency's environmental management systems, including emergency preparedness and response requirements.
-  The potential consequences of departure from specified operating procedures.
-  The mitigation measures required to be implemented when carrying out their work activities.

In the case of permanent staff, the contractor/applicant shall provide evidence that such induction courses have been presented. In the case of new staff (including contract labour), the contractor shall inform the engineer when and how he intends to conclude his environmental training obligations.

7. Record Keeping:

All records related to the implementation of this management plan (e.g., site instruction book, and method statements) must be kept together in an office where they are safe and can be retrieved easily. These records should be kept for a minimum of two years during the construction phase and, inevitably, during the operational phase and should be available at any time for scrutiny by any relevant authorities.

It is recommended that photographs are taken of the site **prior to, during and immediately after construction** as a visual reference. These photographs should be stored with other records related to this EMP.

7.1. Compliance & Penalties:

The contractor shall act immediately when a notice of non-compliance is received, correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register, and the response noted with the date and action taken. Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define how the environment is managed; therefore, any avoidable non-compliance, dependant on severity, shall be considered sufficient grounds for contact to be made with relevant provincial or national authorities. The responsible provincial or national authorities shall ensure compliance and impose penalties relevant to the transgression as allowed for within its statutory powers.

7.2. Report Availability:














Copies of this EMP shall be kept at the construction site office and will be accessible to all senior contract personnel. All personnel working on the project shall be required to familiarise themselves with the contents of this document.






8. Environmental mitigation specifications for impacts:

8.1. Social Environmental Issues:

It is important to minimise any negative perception, by taking proactive measures to prevent any social conflicts or social gaps and to develop a positive attitude within the community of the project. The following management strategies are to be implemented:















Constructional and operational phases, respectfully:

-  Ensure that all site personnel have a basic level of environmental awareness training prior to construction.
-  Training should be undertaken by a party such as the ECO with sufficient expertise and environmental knowledge.
-  Transparent, fair recruitment and procurement practices. The contractor chosen should maximise the involvement of local communities in construction and support activities, to the extent possible, based on available skill levels. Training programmes that will benefit both construction stage skills requirements and long-term employment demand should be developed whenever possible.
-  The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
-  Priority should be given to the local suppliers of goods and services which meet the requirements of project procurement as far as possible. To optimize the opportunities for local businesses to supply goods and services to the project, the contractor will do a survey of the capabilities of the goods and services that are locally available that are of an acceptable standard and quality and a survey of the capabilities of local construction companies and identify opportunities for local suppliers.
-  A public complaint register, and system should be in place to ensure that community complaints are clearly investigated, and adequate remedial measures should be instituted.
-  Adequate notification should be given to people close to where construction activities are taking place, especially if they are affected by them. In addition, there should be a system of compensation for any damages to infrastructure that may occur.
-  It is the contractor's responsibility to provide the site foreman with environmental training and ensure that the foreman has sufficient understanding to pass this information on to the construction staff.
-  Environmental awareness posters should be erected on site.
-  The need for a "clean site" policy also needs to be explained to the temporary and permanent employees.
-  Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitised to any potential hazards associated with their tasks.
-  Unsocial activities such as consumption or illegal selling of alcohol, drug utilisation or selling and prostitution on site shall be prohibited. Any persons found to be engaged in such activities should receive disciplinary or criminal action taken against them.
-  It is the proponent's responsibility to secure the site to reduce the opportunity for criminal activity in the locality of the construction site.

-  It is the proponent's responsibility to secure the site to reduce the opportunity for criminal activity in the locality of the feedlot site.
-  Security personnel and skeleton staff must be supplied with adequate protective clothing, ablution facilities, water and refuse collection facilities, and facilities for cooking and heating so that open fires are not necessary.
-  It is the contractor and proponent's responsibility to ensure that the site and staff are managed strictly per the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the National Building Regulations.
-  The contractor or foreman must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures must include (but not be limited to) fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc.
-  Each worker should be required to abide by a Code of Conduct, which will limit unsavoury activities in local towns and communities and restrict certain behaviours in the work sites and accommodation.












8.2. Fencing:

Constructional and operational phases:

-  Fencing of the campsite, construction area, and operational area shall be suitably secured to prohibit access and promote the safety of persons.
-  No unauthorised pedestrian or vehicular access shall be allowed into fenced off-limits areas.
-  Fencing shall be always kept neat. The contractor/foreman shall be responsible for the maintenance of all fences.
-  If temporary fencing is removed temporarily for the execution of work, the contractor shall reinstate it as soon as practicable.
-  Breaches in the fencing must be repaired immediately.
-  The purpose of the fenced areas is to control construction, operational and personnel activity within the designated areas and limit unauthorised access.
-  No fences or gates that provide access to the site/construction campsite may be cut, lowered, removed, or damaged in any way.
-  Leave private gates as they are found (open or closed). Gates to adjacent properties or onto public roads must always be closed.
-  Open gates, pens and holding facilities should be guarded to prevent animals from straying onto adjacent camps, roads, or properties.
-  All unattended trenches/ excavations should be demarcated or fenced off.
-  Ensure feedlot pens are of sufficient height and strength to safely contain cattle.
-  Install sturdy gates at key access points for cattle handling, ensuring they are properly latched to prevent accidental escape.
-  Space posts and rails properly to prevent cattle from getting their heads or bodies stuck between them.
-  Regular inspection and maintenance of fencing should be implemented.









8.3. Clearing and Grubbing:









Constructional phase:

-  Contractor shall always carefully consider what machinery is appropriate to the task while minimising the extent of environmental damage.
-  The topsoil is regarded as the top 300 mm of the soil profile, irrespective of the fertility appearance.
-  Topsoil is to be stripped when it is as dry as possible to prevent compaction.
-  The topsoil, including the existing grass cover, is to be shallowly ripped (only to the depth of the topsoil) before removal. This ensures that organic plant material and the natural seed base are included in the stripping process.
-  No stockpiling of vegetation for more than 1 week. Constant clearing of alien vegetation.
-  Soil stockpiles shall not be higher than 2.5 m or stored for a period longer than one year. The slopes of soil stockpiles shall not be steeper than 1m vertical to 2.5m horizontal.
-  No vehicles shall be allowed access to the stockpiles after placing them.
-  Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, waste, or any other material, which may inhibit the later growth of vegetation.
-  The contractor shall apply soil conservation measures to the stockpiles to prevent erosion. This can include the use of erosion control fabric or grass seeding.
-  The works shall be cleared of alien vegetation as identified by the Ecological Specialist. An effort must be made to remove the entire root system. Afterwards, the plant shall be left to dry out on a hard surface that will not facilitate seed germination.
-  Burning of any material is not permitted under any circumstances.

8.4. Establishing Office / Campsites:








Constructional phase:

-  It is the contractor's responsibility to ensure that all construction activities are restricted to the authorised areas and that no disturbance shall occur outside of them.
-  Vehicles will be maintained to an extent so as not to produce excessive noise and keep within the manufacturer's noise limitations.
-  Normal working hours for construction will be kept to 07:30 – 17:00.
-  In cases where facilities are linked to existing sewerage structures, all necessary regulatory requirements concerning construction and maintenance should be adhered to. The facilities must comply with the National Water Act requirements.
-  Adequate signage must be provided, and the area must be appropriately secured.
-  All formal documentation should be kept at the site office and be made available during monthly audits.
-  The choice of site for the Contractor's camp requires the Project Manager's permission and must consider the location of local residents.
-  The size of the construction camp should be minimised.




-  The contractor must attend to the drainage of the campsite to avoid standing water and / or sheet erosion.
-  Suitable control measures must be implemented over the contractor's yard, plants, and material storage to mitigate any visual impact of the construction activity.
-  The contractor is responsible for providing all sanitary arrangements for himself and his subcontractor team. A minimum of one chemical toilet must be provided per 15 persons.
-  Sanitary arrangements must be to the satisfaction of the ECO. Toilets must be of the chemical type. The contractor must keep the toilets clean, neat, and hygienic. Toilet paper dispensers must be provided in all toilets. It is the Contractor's responsibility to ensure all toilets have been supplied with and always have an available supply of toilet paper.
-  To ensure their utilisation, the toilets provided by the contractor must be easily accessible and a maximum of 50 m from the works area. All toilets will be located within the contractor's camp. Should toilets be needed elsewhere, the ECO must first approve their location.
-  The contractor must ensure that toilets are moved with the labour force.
-  The contractor must be responsible for the cleaning, maintenance, and servicing of the toilets. The contractor must ensure that all toilets are cleaned and emptied before the builder's or other public holidays.
-  Toilets out on site must be secured to the ground and have a sufficient, operational locking mechanism at all times.

8.5. Waste Management








Constructional phase:

-  The contractors must provide and maintain a method statement for "solid waste management". The method statement must provide information on the proposed licensed facility to be utilised and details must be kept of record keeping for auditing purposes.
-  Waste must be separated into recyclable and non-recyclable waste, and must be separated as follows:
 - Hazardous waste: including (but not limited to) old oil, paint, etc.,
 - General waste: including (but not limited to) construction rubble.
-  Any illegal dumping of waste shouldn't be tolerated, this action will result in a fine and if required further legal action will be taken. This aspect must be closely monitored and reported on; proof of legal dumping must be able to be produced on request.
-  Bins must be clearly marked for ease of management.
-  All refuse bins must have a lid secured so that animals or humans cannot gain access.
-  Sufficient closed containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, and builder's waste generated on the site.
-  Subcontractor(s) contracts must contain a clause to the effect that the disposal of all construction-generated refuse / waste to an officially approved dumping site is the responsibility of the subcontractor in question and that the subcontractors are bound

to the management activities stipulated in this EMPr. Proof of this undertaking must be issued to the ECO.

-  All solid and chemical wastes that are generated must be removed and disposed of at a licensed waste disposal site. The contractor is to provide proof of such to the ECO.
-  Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site.
-  A skip, with a cover, must be used to contain refuse from campsite bins, rubble, and other construction material.






Operational phase:



















-  Construct properly designed manure storage facilities to contain and manage manure efficiency.
-  Schedule routine cleaning of pens to remove excess manure and waste materials (every 120 days).
-  Develop nutrient management plans to apply manure to crops at appropriate rates, reducing nutrient runoff.
-  Maintain records of manure handling, nutrient applications, and waste management to ensure compliance with regulations and track environmental performance.
-  Implement odour control technologies, such as biofilters, windbreaks, and hedges or a tree line around manure storage facilities, to minimize odours.
-  Implement the stormwater management plan to separate solid and liquid waste streams to manage them more effectively and reduce contamination.
-  Conduct regular environmental monitoring to assess the impact of waste management practices.

8.6. Air Quality, Noise and Vibrations:

The main sources of impact on air quality are mobilization of equipment, land clearing and earthworks during the construction phase. During the operational phase sources may arise from the bellowing of cattle, offloading and uploading of cattle and during vaccination procedures or other health related process which includes the use of handling facilities. To ensure air quality characteristics of the project area are maintained near the baseline conditions, the following measures shall be done:



Constructional and operational phases:



-  Only well-maintained vehicles and equipment should be operated on-site, and all machinery should be serviced regularly during the construction stage.
-  Avoiding unnecessary simultaneous noisy activities.
-  No amplified music shall be allowed at the site.
-  Selecting 'quiet' construction equipment and working method and avoiding unnecessary revving and hooting.
-  The contractor/proponent should provide ear protection for activities that are likely to create noise to protect worker's health and safety.

-  In terms of noise impact for various increases over the ambient, the National Noise Regulations define an increase of 7dB as "disturbing". Noise levels during construction must therefore be kept within 7dB of the baseline data.
-  All construction vehicles must be in a good working order to reduce possible noise pollution.
-  The contractor is responsible for the regular inspection and scheduled maintenance of all equipment to ensure that construction vehicles are in good condition, are utilising fuel efficiently and do not smoke.
-  Periodically watering the bare surfaces and excavations during construction to keep the dust level down.
-  Periodically watering the bare surfaces and feedlot pens during operation to keep the dust level down.
-  Slowing down the vehicles, by enforcing speed limit of 20 km/h, carrying the construction materials to reduce dust generation.
-  Normal working hours for operation will be kept to 07:30 – 17:00.
-  Properly wrapping the material truck containers with cover to avoid dust spreads on windy days and prohibiting transport of over loaded trucks.
-  Providing and using the safety equipment such as dust mask for employees who work near the dusty location such as the heavy equipment operators.
-  Optimization of working schedule and work to help to minimize several material vehicle mobilization trips.
-  Implement biofilters or vegetative buffers around the feedlot to help capture and absorb odorous compounds. Planting trees, shrubs, and other vegetation can help filter and neutralize odours.
-  Promptly remove and properly manage manure to minimize the contact with air. This can be achieved through frequent manure removal which reduces the production of odorous gases.
-  Applying manure to cultivated fields, the proponent should avoid spreading manure during periods of high wind.
-  Keep the feedlot clean by regularly removing manure and waste materials. Cleaning pens assists in the prevention of the buildup of odour-causing compounds.
-  Use vegetative barriers for manure storage facilities to minimize odours and noise.
-  Implement dust control measures, such as watering feedlot surfaces, and using dust suppressants.
-  Implement biosecurity measures to prevent the introduction and spread of diseases that may lead to increased emissions.
-  Schedule feeding and handling of cattle activities between 07:30 and 17:00.

8.7. Fire Control

Constructional phase:







-  The contractors must provide and maintain a **method statement** for "fires", clearly indicating where and for what, fires will be utilised plus details on the fuel to be utilised.
-  Fires will only be allowed in facilities especially constructed for this purpose within fenced Contractor's camps. Wood, charcoal, or anthracite are the only fuels permitted to be used for fires. The contractor must provide sufficient wood (fuel) for this purpose.

- Fires within the designated areas must be small in scale to prevent excessive smoke being released into the air.
-  The contractor must designate a smoking area for the labour force to prevent unanticipated incidents of veldt fires.
-  No wood is to be collected, chopped, or felled for fires from private or public property as well as from no-go or sensitive areas within the site and any surrounding natural vegetation.





8.8. Erosion Control:

Constructional phase:

Construction activities will require the removal of vegetation cover, potentially resulting in soil erosion and subsequent impacts on surface water quality due to uncontrolled rainwater runoff or mechanical/wind action. The following measures are necessary to minimise impacts:

-  Clearance of vegetation should be restricted to authorised development area.
-  Appropriate drainage facilities must be constructed to make sure water runs smoothly downstream.
-  Areas where construction has been finished should immediately be rehabilitated up to relevant standards.
-  Topsoil layer will be kept for rehabilitating of disturbed areas and will be adequately stored to protect it from erosion.
-  Surface water or storm water must not be allowed to concentrate, or to flow down cut or fill sloped routes without erosion protection measures being in place.
-  To reduce the loss of material by erosion, the contractor must ensure that disturbance on site is kept to a minimum. The contractor is responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed.





















Operational phase:















-  It is the proponent's responsibility to ensure that the comprehensive stormwater management be implemented to avoid risks of erosion due to runoff.
-  Any obstruction within the stormwater management plan needs to be removed.
-  All structures of the stormwater management plan need to be inspected on a regular basis.
-  Ensure that storm water channels do not discharge straight down the contours. These must be aligned at such an angle to the contours that they have the least possible gradient.

8.9. Contamination of Land:

Land contamination may occur because of fuel and oil leaks or spills and/or poor fuel, chemical and waste storage. The following measures are necessary to mitigate/ avoid the adverse effects of land contamination:

Constructional and operational phases:













-  The storage areas shall be securely fenced and appropriately marked to indicate the goods in the storage. Material Safety Data Sheets should be kept for all hazardous materials on site.
-  All hazardous substances and stocks such as diesel, oils, detergents, etc., shall be stored in areas with impervious flooring such as concrete and properly bunded.
-  The contractor should ensure that drip pans, and other impervious surfaces, shall be installed in such storage areas with a view to prevent soil and water pollution.
-  No vehicles may be serviced on site.
-  Dedicated impervious areas should be designated for concrete mixing and the spillage from concrete mixed should be cleaned immediately.
-  The waste management strategy on the construction site should be hinged on the waste hierarchy model of '*reduce, reuse and recycle*' waste to reduce the ultimate impact on the environment.
-  All used oils, grease or hydraulic fluids shall be placed in appropriate impervious containers and these receptacles will be removed from the site on a regular basis for disposal at a licensed disposal facility or sent for recycling/reuse with a registered facility.
-  Residues from machinery maintenance and other sources contaminated with hazardous waste should be stored in proper containers that avoid seepage to ground.
-  Spills should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing of them at a recognised facility.
-  Adequate waste receptacles shall be made available, and all waste shall be adequately stored so that it does not pose a pollution risk.
-  General waste is to be disposed of through the municipal service. Any other waste will be disposed of through only licensed waste disposal facilities.
-  Volatile waste items such as plastic bags, cement bags, etc. should be temporarily stored in a suitable manner as to prevent it from being dispersed via wind.
-  All waste management strategies employed by the contractor should comply with environmental / waste management legislation.
-  Waste should be regularly removed from the site to a registered landfill.
-  The contractor should develop and comply to an on-site specific waste management plan.
-  No waste may be buried in an on-site waste pit.
-  Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter. Labourers should be informed during toolbox talks.
-  Chemical toilet facilities or other approved toilet facilities should be sited in such a way that they do not cause water or other pollution. The use of existing facilities must take place in consultation with the landowner/tenant.
-  Seepage into lower soil strata should be prevented by lining the stormwater network, waste lagoon, sedimentation pond and the temporary drying / storage area with an impermeable layer such as:
- Synthetic plastic sheets
 - Concrete
 - Clay
-  The contractor must provide **method statements** for the "handling & storage of oils and chemicals" and "emergency spills procedures".

-  These substances must be confined to specific and secured areas within the contractor's camp, and in a way that does not pose a danger of pollution, even during times of high rainfall. These areas must be imperviously banded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks.
-  The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing.
-  The depth of the drip tray must be determined considering the total amount / volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle.
-  Spill kits must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spill kits must be made up of material/product that is in line with environmental best practice.
-  All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils and drenched spill kit material).
-  The contractors must provide and maintain a **method statement** for "cement and concrete batching". The method statement must provide information on proposed storage, washing & disposal of cement, packaging, tools and plants.
-  The mixing of concrete must only be done at specifically selected sites on mortar boards or similar structures to contain run-off into soils, rocky outcrops, streams and natural vegetation.
-  Cleaning of cement mixing and handling equipment must be done using proper cleaning trays.
-  All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility.
-  The visible remains either of concrete, solid, or from washings, must be physically removed immediately or disposed of as waste to a registered landfill site.
-  Materials such as fuel and oil must be sealed and stored in demarcated areas or under lock and key, as appropriate, in well-ventilated areas.
-  In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water and Sanitation (DWS) must be informed immediately.
-  Storage areas must display the required safety signs depicting "no smoking", "No Naked lights" and "Danger". Containers must be clearly marked to indicate contents as well as safety requirements.
-  Establish buffer zones between manure application areas and assess the impact of manure application.

8.10. Surface and Ground Water Quality:






Poor chemical storage and poor waste management practices may lead to the contamination of water sources. Sewage, sanitary effluent, and manure runoff have the potential to adversely affect the quality of receiving water bodies unless properly managed. To eliminate the risk of contamination, the following measures must be instituted:


Constructional and operational phases:

-  Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and treated prior to discharge or removed from the site for appropriate disposal at a recognised facility.
-  A comprehensive stormwater management plan should be implemented that ensures all runoff from the feedlots are channelled into the waste pond system.
-  The stormwater network should prevent the mixing of clean runoff with runoff from the feedlots via culverts, bunds or drains.
-  A baseline groundwater test should be conducted, and biannual tests thereafter should be implemented to assess the possibility of groundwater pollution.
-  The contractors must provide and maintain a **method statement** for "dust control". The method statement must provide information on the proposed source of water to be utilised and the details of the licenses acquired for such usage.
-  Potable water must, wherever possible, not be used as a means of dust suppression, and alternative measures must be sourced. The use of 'grey' water must be investigated as an alternative. The contractor/foreman will be responsible to source this water and obtain the required approvals to utilise this water for the purpose of dust suppression.
-  Excessive dust conditions must be reported to the ECO.
-  All forms of dust pollution must be managed in terms of the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965).
-  In the event of pollution caused because of construction activities, the contractor, according to section 20 of the National Water Act, 1998 (Act No. 36 of 1998) is responsible for all costs incurred by organisations called to assist in pollution control and/or to clean up polluted areas.
-  Feedlot area should be disced after a rain event and then compacted with commercial vibratory or pneumatic rollers.
-  No wastewater may run freely into any naturally vegetated areas. Run-off containing high sediment loads must not be released into drainage channels.
-  Water in the holding pond should be utilised before overflow can occur.




8.11. Water Usage:

Constructional phase

-  Any water that is used which does not emanate from Municipality supplies must be registered and authorised by the Department of Water Affairs prior to usage commencement.
-  The contractor shall promote responsible water use by all personnel.
-  The wash water (grey water) collected from the cleaning of equipment on-site should not be left standing for long periods of time as this promotes parasite and bacterial proliferation.
-  Grey water should be recycled:
 - Used for dust suppression;
 - Used (reused) to clean equipment.
-  Grey water that is not recycled should be removed on a regular basis.

-  Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment, this should be done in an area properly suited and prepared to receive and contain polluted waters.









Operational phase:

-  The supply of cool, clean, good-quality water is essential for high-density cattle production. The proponent is responsible for adhering to water abstraction amounts from the borehole as stipulated on the water use license (WUL) approved by the Department of Water and Sanitation (DWS).
-  Provide training to feedlot staff on water conservation practices, pollution prevention measures, and the proper operation and maintenance of water-related equipment to promote a culture of sustainability and responsibility.
-  Biannual water level monitoring is also recommended at the recommended monitoring borehole to evaluate water level trends. This will give an indication if over abstraction is taking place.

8.12. Fauna and Flora:

Constructional phase:










Fauna and flora are negatively impacted by the clearance of vegetation, noise from construction activities (disturbance) and gathering/ hunting of flora and fauna by workers. The following measures are necessary to mitigate impacts.

-  Clearance of vegetation should be restricted to the absolute minimum required to facilitate access and undertaken construction activities.
-  All removed plant material needs to be disposed of appropriately.
-  Ensure that all cables and connections from construction vehicles / machinery are insulated to reduce the likelihood of accidental personnel electrification.
-  Hunting/gathering/trapping of wild fauna by construction workers must not be permitted.
-  Localized habitat features such as nests, dens or burrow sites should be avoided as much as possible. In addition, care should be taken in working in areas of active nesting, spawning, and feeding areas.
-  All activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act No. 71 of 1962).
-  All construction workers must be informed that the intentional killing of any animal is not permitted as faunal species are a benefit to society. Poaching is illegal and it must be a condition of employment that any employee caught poaching will be dismissed. Employees must be trained on how to deal with fauna species as intentional killing will not be tolerated. In the case of a problem animal e.g. a large snake, a specialist must be called in to safely relocate the animal if the ECO is not able to.
-  Environmental induction training and awareness must include aspects dealing in safety with wild animals into and on site. Focus on animals such as snakes and other reptiles that often generate fear by telling workers how to move safely away and to whom to

report the sighting. Workers should also be informed where snakes most often hide so that they can be vigilant when lifting stones, etc.




8.13. Safety:






Constructional and operational phases:

-  The Contractor shall be responsible for the protection of the public and public property from any dangers associated with the construction and operation of the road activities.
-  All work should be handled in accordance with the Occupational Health and Safety Act, 1993 and adequate safety precautions taken, and suitable sanitation facilities provided in line with the requirements of the Occupational Health and Safety Act. It is the duty of the contractor to ensure that all protective measures against accidents are done.
-  Any works/activities which may pose a hazard to humans and/or domestic animals are to be protected or cordoned off and, if appropriate, warning signage erected.
-  Appropriate security is to be provided at the site to protect equipment and provide for a safe construction site and work areas.
-  Any damage caused because of the construction activities shall be repaired to the satisfaction of the project manager and owner.
-  The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the National Building Regulations.
 - The contractor must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures must include (but not be limited to) fire, first aid, chemical spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc.
-  The contractor must ensure that lists of all emergency telephone numbers / contact persons are kept up to date and that all numbers and names are posted at relevant locations throughout the construction site.
-  Consider additional security measures, such as cameras or alarms, to deter unauthorized access of vandalism.
-  The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. The contact details of this emergency centre, as well as the police and ambulance services must be available at prominent locations around the construction site and the construction crew camps.


8.14. Historical archaeological and heritage impacts:

Constructional phase:

-  SAHRA and a qualified archaeologist be consulted immediately in the event of accidental archaeological exposure.
-  In the unlikely event of accidental archaeological exposure, all excavations should stop immediately.
-  No loose chance finds such as stone age artefacts (arrow heads, stone flake blades etc.) may be collected.







-  The on-site environmental representative should consult the appointed ECO regarding any such discoveries.
-  No unauthorised excavations, post construction may be allowed.
In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local heritage agency within 48 hours should they come across any signs of heritage resources.
-  Should any archaeological artefacts be exposed during site activities, work on the area where the artefacts were found must cease immediately and the ECO must be notified within 48 hours.
-  Under no circumstances must archaeological artefacts be removed, destroyed or interfered with.
-  The 25 m buffer around the graves as identified by the Paleontological specialist should be adhered to and no disturbances may occur within this buffer area.

Operational phase:

-  The 25 m buffer area surrounding the graves should be respected and not be disturbed.





8.15. Rehabilitation:



Operational phase:

-  On completion of operations, all buildings, structures, or objects on the camp/office site shall be demolished and removed.
-  On completion of operations, the areas shall be cleared of any contaminated soil, which must be dumped as per the waste management plan.
-  All infrastructure, equipment, plant, temporary housing and roads and other items used during the construction period will be removed from the site and rehabilitated if necessary.
-  Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the area and disposed of at a registered waste disposal facility. It will not be permitted to be buried or burned on the site.
-  Disturbed areas should be left in a safe and stable manner. Preventative measures may be necessary to construct adequate drainage structures including ditches and other structures to facilitate the movement of surface water.
-  Photographs of the camp and office sites, before and during the construction and after rehabilitation, shall be taken at selected fixed points and kept on record.

8.16. Mortality management







Operational phase:

-  Conduct routine health checks to identify sick or stressed cattle early.
-  Isolate new animals to prevent the introduction of diseases into the feedlot.
-  Follow a proper vaccination schedule to protect against common diseases.
-  Have a veterinarian on-call to address health concerns promptly.

-  Regularly assess and cull animals that have chronic health issues or genetic defects to prevent the spread of problems within the herd.
-  Mortalities should be removed immediately from the pens and used in the composting area, buried, or donated to the nearest wildlife farm.

8.17. Handling of Emergencies:

Constructional and operational phases:

-  The contractor should identify all situations that can lead to emergency situations and provide response strategies. The situations should include fire, first aid and major chemical spill.
-  Contact details of all departments/ service providers to be contacted in case of an emergency shall be made available to employees.
-  Equipment for dealing with emergencies such as spill kits, firefighting equipment, first aid boxes etc. shall be made available and personnel properly trained in its use.
-  All staff on site should be informed and trained on how to handle emergency situations and emergency drills/ rehearsals should be conducted periodically to ensure that staff prepared.
-  Establish procedures for dealing with emergencies related to fence damage, breaches, or other safety incidents.
-  All emergencies/ incidents should be reported and distributed to the relevant parties.

9. Method Statements:

The Contractor shall submit written **Method Statements** to for all environmentally sensitive aspects of the work. It should be noted that Method Statements must contain sufficient information and detail to mitigate the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him / her to undertake the works. Work shall not commence until Method Statements have been put in place.