

Environmental Management Programme

for

MAFOKO BROTHERS LOGISTICS

Prepared by:

Bucandi Environmental Solutions



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1. DETAILS OF THE EAP

a) Contact details of EAP

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b) Expertise of the EAP

The qualifications of the EAP

P.h.D (Conservation Management)

Summary of the EAP's past experience.

10 years' experience with environmental impact assessments, 3 years in the USA, 15 years in South Africa.

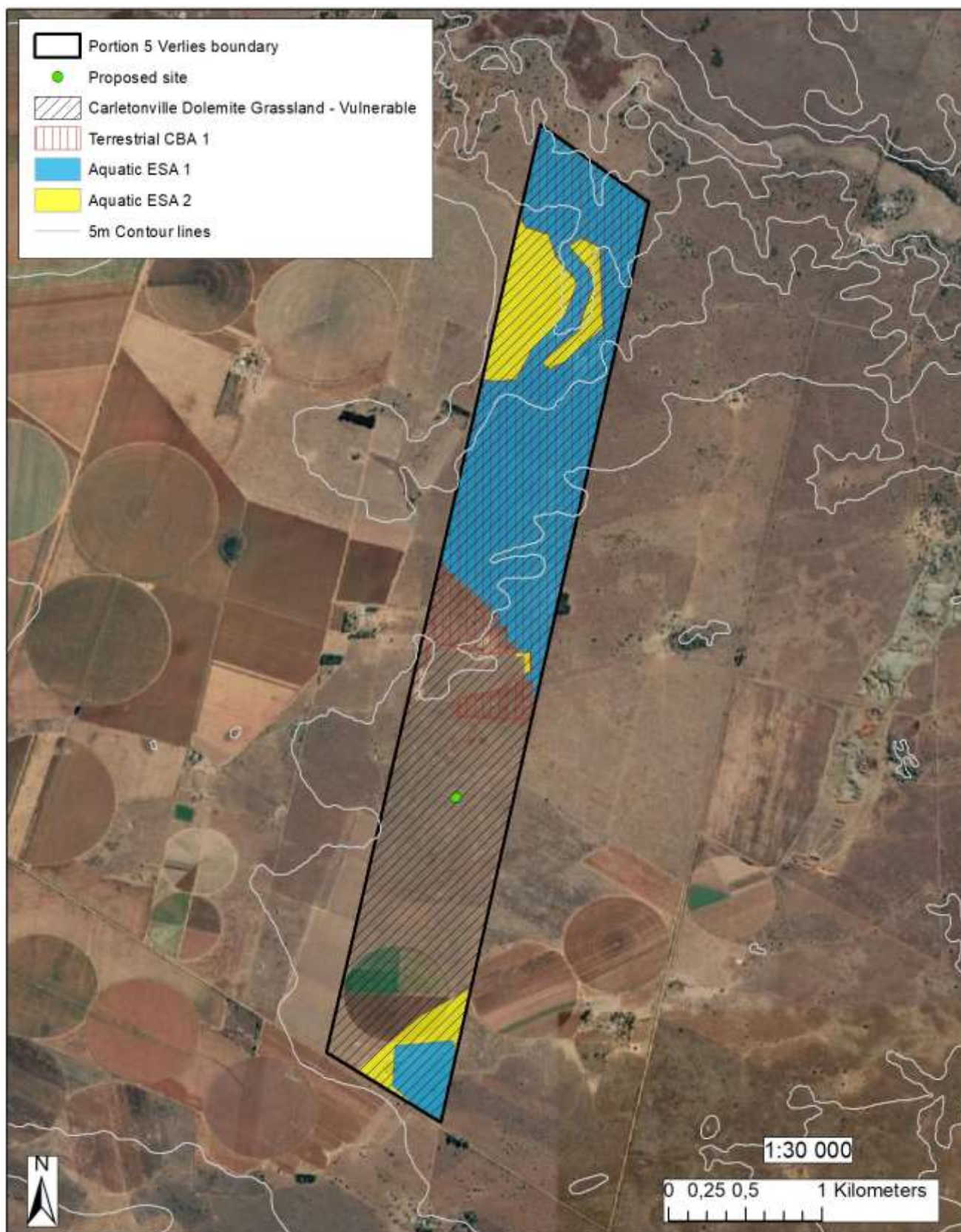
Please see CV attached as Appendix G-4 of the Basic Assessment Report.

2. DETAILED DESCRIPTION OF ASPECTS

Piggery:

Mafoko Brothers is proposing the construction of a piggery with capacity for 6 000 pigs (including weaners & sows) in total on Portion 5 of the farm Verlies 120 JO situated in Lichtenburg District within the Ditsobotla Local Municipality area. The need for a Basic Assessment is triggered by Listing 1; (ACTIVITY NO. 4) The development and related operation of facilities or infrastructure for the concentration of animals in densities that exceed (ii) 8 square meters per small stock unit and;a) more than 250 pigs per facility excluding piglets that are not yet weaned. (ACTIVITY NO. 27) The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation. Bucandi Environmental Solutions (Bucandi) was requested by Mafoko Brothers to conduct a Basic Assessment as part of the application for environmental authorisation

3. ECOLOGICAL SENSITIVITY MAP OF PREFERRED SITE



Ecological sensitivity map for the proposed development on Portion 5 of the farm Verlies 120 JO

April 2021
Created by:



4. IMPACTS AND MITIGATION MEASURES

a) Impacts identified for preferred alternative

| Activity | Impact summary | Significance | Proposed mitigation |
|--|---|--------------|---|
| Alternative A 1 (preferred alternative) | | | |
| | <i>Direct impacts:</i> | | |
| | Positive impacts | High | None |
| | Air quality and disturbance | Low | Dust control by means of watering if necessary. Vehicles to be regularly serviced and well-tuned. Operations to be undertaken during working hours only. |
| | Surface and groundwater pollution | Low | Machinery should be properly maintained at all times. Servicing of machinery should take place only in specific demarcated and protected areas. Measures should be taken for the proper disposal of oils, grease, oil filters, rags, etc. |
| | Sewage and domestic waste | Low | Proper ablution facilities should be provided i.e. chemical toilets at appropriate locations on site if necessary or existing facilities must be used. Workers should be made aware of the risk of soil water contamination. Domestic waste should be disposed of in appropriate containers, and removed to the Middelburg municipal waste-disposal site as part of existing waste management system. |
| | Soil compaction, loss of fertility and increased erosion | Low | Appropriate measures should be taken to reduce the risk of erosion from unprotected slopes i.e. Diversion berms, ponding pools, and not exceeding angles of repose of stockpiled material. All unprotected slopes should be Rehabilitated concurrent with construction. |
| | Fires | Low | Cooking and heating fires permitted only in designated areas with appropriate safety measures. Adequate firefighting equipment |

| Activity | Impact summary | Significance | Proposed mitigation |
|--------------------------|------------------------------------|--------------|---|
| | | | should be available, as prescribed by the relevant safety standards and legislation. |
| | Disturbance of fauna | Low | Only small animals occur in this area e.g. small rodents and reptiles. The area is surrounded by similar habitat and fauna is expected to move voluntarily to surrounding areas. No fauna found on the site will be killed |
| | Safety | Low | Access to the construction site to be controlled at all times. |
| | Aesthetics | Low | If needed, an additional line of trees will be planted to minimise visual impact. |
| | Indirect impacts: None | | |
| | Cumulative impacts: None | | |
| Operational Phase | | | |
| | Manure | Low | Houses are sprayed with water every day to clean manure away. Manure is collected on an on-going basis in manure pipes that run underground to a central effluent sump that will be built and plastered with concrete and closed off completely from the environment. Manure will be sucked directly from this pit once a day into a manure tanker and sold to a contractor. It will also be used as fertilizer on the same farm. |
| | Carcasses | Low | The carcasses are removed on a daily basis and collected regularly by a contractor. |
| | Indirect impacts: None | | |
| | Cumulative impacts: None | | |

| Alternative: S 1 | | |
|-------------------------|--|---|
| | Direct impacts: | |
| | Positive impacts | High None |
| | Air quality and disturbance | Low Dust control by means of watering if necessary. Vehicles to be regularly serviced and well-tuned. Operations to be undertaken during working hours only. |
| | Surface and groundwater pollution | Low Machinery should be properly maintained at all times. Servicing of machinery should take place only in specific demarcated and of oils, grease, oil filters, rags, etc. |
| | Sewage and domestic waste | Low Proper ablution facilities should be provided i.e. chemical toilets at appropriate locations on site if necessary or existing facilities must be used. Workers should be made aware of the risk of soil water contamination. Domestic waste should be disposed of in appropriate containers, and removed to the nearest municipal waste-disposal site. |
| | Soil compaction, loss of fertility and increased erosion | Low Appropriate measures should be taken to reduce the risk of erosion from unprotected slopes i.e. diversion berms, ponding pools, and not exceeding angles of repose of stockpiled material. All unprotected slopes should be rehabilitated concurrent with construction. |
| | Fires | Low Cooking and heating fires permitted only in designated areas with appropriate safety measures. Adequate firefighting equipment should be available, as prescribed by the relevant safety standards and legislation. |
| | Disturbance of fauna | Low Only small animals occur in this area e.g. small rodents and reptiles. The area is surrounded by similar habitat and fauna is expected to move voluntarily to |

| | | | |
|--|------------------------------------|-----|---|
| | | | surrounding areas. No fauna found on the site will be killed |
| | Safety | Low | Access to the construction site to be controlled at all times. |
| | Aesthetics | Low | If needed, an additional line of trees will be planted to minimise visual impact. |
| | Manure | Low | Houses are sprayed with water every day to clean manure away. Manure is collected on an on-going basis in manure pipes that run underground to a central effluent sump that will be built and plastered with concrete and closed off completely from the environment. Manure will be sucked directly from this pit once a day into a manure tanker and sold to a contractor. It will also be used as fertilizer on the same farm. |
| | Carcasses | Low | The carcasses are removed on a regular basis and will be collected by a contractor. |
| | Indirect impacts: None | | |
| | Cumulative impacts: None | | |

| No-go option | | |
|---------------------|--|-----|
| | Direct impacts: | |
| | Positive impacts | Low |
| | Air quality and disturbance | Low |
| | Surface and groundwater pollution | Low |
| | Sewage and domestic waste | Low |
| | Soil compaction, loss of fertility and increased erosion | Low |
| | Fires | Low |
| | Disturbance of fauna | Low |
| | Safety | Low |
| | Aesthetics | Low |
| | Manure | Low |
| | Carcasses | Low |
| | Indirect impacts: | |
| | None | |
| | Cumulative impacts: | |
| | None | |

b) Timeframes and management of mitigation

The table below lists the activities identified, mitigation measures proposed, the person responsible for the management actions, timing of actions and objectives to be reached.

| Activities | Environmental Objectives | Auditable Management and Mitigation Measures | √ | Person Responsible | Timing | Requirement for “sign-off” report |
|---|---|---|---|--------------------|---------|---|
| Planning and Design Phase | | | | | | |
| No environmental activity will take place during this phase. | | | | | | |
| Construction Phase | | | | | | |
| 1. Removal of vegetation and preparing site for construction. | Maintaining air quality and minimising disturbance caused by noise, dust and emissions. | Dust control by means of watering if necessary. | | Mr. Victor Mofoko | Ongoing | Confirm compliance and justify emissions |
| | | Vehicles to be regularly serviced and well tuned. | | | Ongoing | |
| | | Operations to be undertaken during working hours only. | | | Ongoing | |
| 2. Construction of infrastructure. | Protecting the quality of surface and ground water. | Machinery should be properly maintained at all times. | | Mr. Victor Mofoko | Ongoing | Initialise water monitoring to take place at least quarterly. |
| | | Servicing of machinery should take place only in specific demarcated and protected areas. | | | Ongoing | |
| | | Measures should be taken for the proper disposal of oils, grease, oil filters, rags, etc. | | | Ongoing | |
| | | Before any construction takes place the proposed area for the development should be pegged out. All construction activities should take place within these areas in order to reduce the footprint of the proposed activity and therefore the potential impact on surface water run-off. | | | Ongoing | |

| Activities | Environmental Objectives | Auditable Management and Mitigation Measures | √ | Person Responsible | Timing | Requirement for “sign-off” report |
|------------|--|--|---|--------------------|------------------------------|---|
| | Controlling sewage and domestic waste disposal by workers. | Proper ablution facilities should be provided i.e. chemical toilets at appropriate locations on site if necessary; else existing facilities must be used. | | Mr. Victor Mofoko | Before onset of construction | Confirm compliance and monitor site to ensure that domestic waste and construction rubble has been removed. |
| | | Workers should be made aware of the risk of soil water contamination. | | | Before onset of construction | |
| | | Domestic waste should be disposed of in appropriate containers, and removed to the Bronkhorstspuit municipal waste-disposal site. | | | Weekly | |
| | Preventing fires. | Cooking and heating fires permitted only in designated areas with appropriate safety measures. | | Mr. Victor Mofoko | Ongoing | Initialise and monitor a fire prevention and response plan. |
| | | Adequate firefighting equipment should be available, as prescribed by the relevant safety standards and legislation. | | | Ongoing | |
| | Minimising soil compaction, loss of fertility and erosion. | Appropriate measures should be taken to reduce the risk of erosion from unprotected slopes i.e. diversion berms, ponding pools, and not exceeding angles of repose of stockpiled material. | | Mr. Victor Mofoko | Ongoing | Confirm compliance. |
| | | All unprotected slopes should be rehabilitated concurrent with construction. | | | Ongoing | |
| | Controlling the temporary disturbance of fauna. | The area is surrounded by similar habitat and fauna is expected to move voluntarily to surrounding areas. | | Mr. Victor Mofoko | Ongoing | Confirm compliance. |
| | | No fauna found on the site will be killed. | | | Ongoing | |
| | Ensuring the safety of workers and the public. | Access to the construction site to be controlled at all times. | | Mr. Victor Mofoko | Ongoing | Erection of safety fence and controlled entry points to the site. |
| | Minimising visual and audible impacts that may occur as a result of vehicle exhausts, dust | If needed, an additional line of trees will be planted to minimise visual impact. | | Mr. Victor Mofoko | Before onset of construction | Establishment of a tree line. |

| Activities | Environmental Objectives | Auditable Management and Mitigation Measures | √ | Person Responsible | Timing | Requirement for “sign-off” report |
|--|--|---|---|--------------------|------------------|--|
| | and noise from machinery. | | | | | |
| Operational Phase | | | | | | |
| 1. Utilisation of infrastructure. | Managing the disposal of sewage, waste and litter. | Sewage from flush-toilets flows to a french drain. | | Mr. Victor Mofoko | Ongoing | Confirm compliance with good practice. |
| | | Household waste is removed to the nearest authorised municipal landfill site. | | | Weekly | |
| | | Litter is controlled by good practice. | | | Ongoing | |
| | Disposal of pig manure | Houses are sprayed with water every day to clean manure away. Manure is collected on an on-going basis in manure pipes that run underground to a central effluent sump that will be built and plastered with concrete and closed off completely from the environment. Manure will be sucked directly from this pit once a day into a manure tanker and sold to a contractor. It will also be used as fertilizer on the same farm. | | Mr. Victor Mofoko | After each cycle | Confirm compliance after each cycle. |
| Preventing wash water from contaminating surface and ground water. | | Houses are washed after each cycle only after the removal of manure and carcasses. | | Mr. Victor Mofoko | After each cycle | Water quality to be tested quarterly. |
| | | The houses are washed using a high pressure (16bar) sprayer, minimising the amount of water used. | | | After each cycle | |
| | | Equipment is not washed with water, but rather using a foam sanitizer (F29) which is applied as dry foam and allowed to evaporate. | | | After each cycle | |
| | | The storm water drainage system must be maintained (free-draining) and not contaminated by other waste sources. Storm water must be kept | | | Ongoing | |

| Activities | Environmental Objectives | Auditable Management and Mitigation Measures | √ | Person Responsible | Timing | Requirement for “sign-off” report |
|--|---------------------------|--|---|--------------------|---------|-----------------------------------|
| | | separate from the sewage or any other effluent system. | | | | |
| | | Storm water must be diverted away from bird holding areas, chemical storage areas and wastewater treatment areas. | | | Ongoing | |
| | | Erosion prevention structures or vegetation should be placed at concentration points to reduce water velocity within the drainage system. | | | Ongoing | |
| | Disposal of carcasses. | The carcasses are removed on a daily basis and collected by a contractor. | | Mr. Victor Mofoko | Daily | Confirm compliance. |
| | Minimising air pollution. | Houses are sprayed with water every day to clean manure away. Manure is collected on an on-going basis in manure pipes that run underground to a central effluent sump that will be built and plastered with concrete and closed off completely from the environment. Manure will be sucked directly from this pit once a day into a manure tanker and sold to a contractor. It will also be used as fertilizer on the same farm. Fly control should include measures for control of adults as well as larvae. | | Mr. Victor Mofoko | Ongoing | Confirm compliance. |
| Decommissioning and Closure Phase | | | | | | |
| This phase is not foreseen for this project. | | | | | | |

c) Monitoring and reporting

All activities identified and proposed mitigation measures should be monitored according to the following programme:

- Regular monitoring of all the environmental management measures and components must be carried out by the holder of the ROD in order to ensure that the provisions of this programme are adhered to.
- On-going and regular reporting of the progress of implementation of this programme will be done by the ECO.
- An ECO should be appointed to conduct external environmental audits every two month as long as construction is taking place and every six months once construction has been completed.

Roles and responsibilities for the execution of monitoring programmes

It is the responsibility of the holder of the ROD to appoint an ECO before any construction takes place. The ECO will then be responsible for environmental training of the contractors and employees, as well as the external environmental auditing according to the timeframe stipulated above.

Environmental Monitoring

Environmental Monitoring is the continuous evaluation of the status and condition of environmental elements. Its purpose is to detect change that takes place in the environment over time and involves the measuring and recording of physical, social and economic variables associated with development impacts. The purpose of the monitoring programme is not only to ensure conformance with the EMP through the contract/work instruction specifications but also to monitor environmental issues and impacts that have not been accounted for in the EMP that are, or could result in significant environmental impacts for which corrective action is required. Monitoring shall form part of the contract or work instruction.

Internal performance audits

It is recommended that the site manager undertake regular performance audits in accordance with the approved EMPr in which each environmental management specification will be rated in terms of the following criteria:

- Full Compliance (no action required)
- Satisfactory Performance (Some remedial/preventative actions required)
- Unsatisfactory performance (Remedial actions required)

The performance monitoring report must incorporate all compliance issues as well as corrective actions taken, permits, licenses and all contract documentation's conditions. These reports must be made available to the appointed Environmental Control Officer (ECO).

External Compliance Audits

An independent qualified ECO must be appointed to monitor the site and operations for compliance in accordance with the approved EMPr. The external compliance audits must be conducted on a two monthly basis during construction and a six monthly basis during operation.

The ultimate aim is that each environmental management specification be checked by means of a system in which a score may be allocated for:

- Full compliance
- Satisfactory performance
- Unsatisfactory performance
- No action

d) Environmental Awareness Plan

Environmental awareness training

Environmental awareness should be done as part of the induction training completed by all personnel working on the site. To ensure the training is always updated, placards containing information about environmental aspects will regularly be updated and distributed. If the ECO in his own discretion or the discretion of the site manager decide to update any environmental awareness training, he/ she will be able to do so at their own discretion.

It is recommended that the environmental awareness training be presented at least every 6 months to ensure the update of environmental goals in relation to current activities is communicated to the personnel.

The ability of the team to contain any environmental incidents is dependent on the management efficiency of the manager on site, and his ability to train and ensure his employees are knowledgeable about environmental impacts.

The contractors and applicant must 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:

- Explanation of the importance of complying with the EMP;
- The construction must take place in ecological sound manner, taking due cognisance of the sensitive ecological areas in close vicinity of the site (i.e. drainage channel/streams).
- The need to protect and preserve the historical and archaeological heritage of the site.
- The importance of conformance with all environmental policies and procedures;
- The significant environmental impacts, actual or potential, as a result of their activities;
- The environmental benefits of improved personal performance;

Dealing with risks and accidents

The solution to the risks involved with prospecting operations is to have all the appropriate information and planning in place before the incident occurs. This is important to ensure the correct procedures and reporting structures are followed, and the appropriate remediation steps are followed. The approved EMP shall be available on site. This EMP contains all the management plans necessary to prevent or mitigate pollution or degradation of the environment. An Incident Register and a Complaints Register should be kept on site and completed in the case of any environmentally detrimental incident happening or complaints are received. These registers should be kept and included in the internal and external reports.