

**PROPOSED ELLIOT
AGRICULTURAL
DEVELOPMENT PROJECT
NEAR KHOWA IN THE
EASTERN CAPE**

June 2022

**DRAFT ENVIRONMENTAL MANAGEMENT
PROGRAMME**



Details of Role Players

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Table of Contents

1	INTRODUCTION.....	7
2	ENVIRONMENTAL MANAGEMENT PROGRAMME	8
2.1	OBJECTIVES OF THE EMPr	8
2.2	legal requirements	9
2.3	DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER.....	10
2.4	Project background	10
2.5	STRUCTURE of the environmental management programme	16
2.5.1	Construction Phase.....	16
2.5.2	Operational and Maintenance Phase.....	16
2.5.3	Decommissioning Phase	16
3	detailed environmental management programme	17
3.1	CONSTRUCTION PHASE.....	17
3.1.1	Possible Impacts Identified	17
3.2	OPERATIONAL AND MAINTENANCE PHASE.....	35
3.2.1	Possible Impacts Identified	35
3.3	decommissioning phASE.....	35
4	IMPLEMENTATION OF THE EMPr	44
4.1	roles and responsibilities	44
5	PROPOSED MONITORING SCHEDULE.....	45

LIST OF FIGURES

Figure 1: Proposed Elliot Agri Project – Locality Map.....	12
Figure 2: Integrated Layout Map	13
Figure 3: Locality Map indicating specific sites and location of all sensitive wetland areas. ...	14
Figure 4: Wetland 4 Delineation map – Indicating that Site 3 will shift	15

LIST OF TABLES

Table 1: Farm Portions and 21SG Codes.....	11
Table 2: Construction Phase	19
Table 3: Operational and Maintenance Phase	36

GLOSSARY OF TERMS

- "Alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to property, activity, design or technology.
- "Applicant" means a person who has submitted or intends to submit an application. "Application" means an application for Environmental Authorization in terms of the EIA regulations, 2014 (as amended).
- "Associated Infrastructure," means any building or infrastructure that is necessary for the functioning of a facility or activity or that is used for an ancillary service or use from the facility.
- "Biodiversity" The variety of life occurring in an area, including the number of different species, the genetic wealth within each species, and the natural habitat where they are found.
- "Cultural significance" This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.
- "Cumulative impact" in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
- "Environmental Impact Assessment" in relation to an application to which scoping must be applied, means the process of collecting, organizing, analysing, interpreting and communicating information that is relevant to the consideration of that application.
- "Environment" The environment has been defined as "The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group". These circumstances include biophysical, social, economic, historical, cultural and political aspects.
- "Environmental Assessment Practitioner" Person or company, independent of the applicant (developer), that manages the environmental assessment process of a proposed project on behalf of the applicant.
- "Environmental Management Programme" means a programme presenting management and mitigation measures in relation to identified or specified

activities envisaged in Chapter 5 of the National Environmental Management Act and described in regulation 34.

- “Heritage resources” This means any place or object of cultural significance. It also includes archaeological resources. Scoping Report Page 8 of 45
- “Species of Conservation Concern” All those species included in the categories of endangered, vulnerable or rare, as defined by the International Union for the Conservation of Nature and Natural Resources.
- “Significant impact” means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
- “The Act” means the National Environmental Management: Waste Act, 1998 (Act No.59 of 2008).

DECLARATION OF INDEPENDENCE

The independent Practitioner

I, **Marinus Du Preez** declare that I –

- act as the independent Environmental Practitioner for the Environmental Management Programme
- this report covers the Environmental Impacts and proposed Mitigation measures only and no other scope of work was requested for this study and the information should be interpreted with caution
- do not have and will not have financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- have no and will have any vested interest in the proposed activity proceeding;
- undertake to disclose, to the competent authority any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2010;
- BioBlue accepts no responsibility for the accuracy of any third-party data used in the production of this report.



Signature of Author – Marinus du Preez SACNASP (Pri.Nat.Sci.) 134755



Signature of Reviewer and Author (EAP) – Zander Liebenberg EAPASA Registered

Date: June 2022

1 INTRODUCTION

Number Two Piggeries (Pty) Ltd has appointed BioBlue Environmental Sustainability (Pty) Ltd (hereunder referred to as BioBlue) to conduct an Environmental Impact Assessment process for the proposed expansion of their operations with the addition of a commercial piggery operation, Creamery and Feed Mill on the Farm Farm Cloeta 100 Elliot RD on Portion 0/RE, 1, 2, and 3 and farm Groente Fontein 101 Elliot RD on Portion 0/RE, 1, 3, 4 and 5 near Khowa (Elliot). Within the Sakhisizwe Local Municipality within the Chris Hani District Municipality, Eastern Cape Province.

The proposed piggery will be comprised of 3 units that includes the following:

Breeding Unit:

- i. Farrowing unit that will house 1 026 sows (4 buildings)
- ii. Early gestation unit that will house 1 080 sows (1 building)
- iii. Late gestation that will house 2 530 sows (3 buildings)
- iv. Heat detection and Training unit that will house sows and boars
- v. Gilt development unit that houses a range of weaners, growers and finishers.

In total 4 800 breeding sows will be housed within this site.

Fattening/Finishing units:

Pigs aged 11 weeks and up will be housed in these units with approximately 37 800 pigs housed in these units in a total of 28 buildings.

Weaner Unit:

This unit will house the weaner pigs until they reach grower age and approximately 2 740 pigs in total.

The fourth site will consist of the Creamery and Feed mill operations. On this site milk from the existing dairy will be converted into cream, yogurt, cheese and other dairy products. The Feed mill will use receive maize, soya and other crops from the existing operations as well as from farmers in the region to produce animal feed.

The farm plans to utilise the life cycle thinking approach within their farming operations to minimize waste, increase efficiency and in turn also benefit the natural environment.

1. The dairy operations will supply the proposed Creamery with milk to produce their various products. This will cut the transport costs and emissions that would have been released from long distance trucking.

2. Creamery operations produce two types of waste, namely whey and effluent containing fats. By constructing the proposed Creamery operations near the piggery operations, the whey component will be piped to the piggery sites as part of their feed supplement, thus re-using a by-product that would normally be a waste.
3. The piggery operations will generate a large volume of biodegradable effluent. In older operations this effluent was pumped to evaporation dams to be cleaned later and utilised as compost. The new technology implemented at the piggery operations will allow the biodegradable effluent to be utilized as a liquid biodegradable fertiliser and saleable quality compost on the pastures of the dairy farm and current crop farming operations. This will decrease the need for fertilizers dramatically and also ensure the re-use of another waste generated by the operations.

The aim of this report is to establish an Environmental Management Programme (EMPr) that would serve as a management tool that will be used to ensure that the impacts of the construction and operational phases of the project are prevented or minimized and that the positive benefit of the project is enhanced.

2 ENVIRONMENTAL MANAGEMENT PROGRAMME

2.1 OBJECTIVES OF THE EMPr

This EMPr will provide the actions for the management of identified environmental impacts resulting from the proposed development and a detailed outline of the implementation programme to minimise and/ or eliminate the anticipated negative environmental impacts. The EMPr will also provide strategies to be used to address the roles and responsibilities of environmental management personnel on site, and a framework for environmental compliance and monitoring. The aim of this document is to ensure the establishment of an environmentally sustainable project.

The EMPr is a dynamic document that can be subject to influences and changes that may arise during the project process and thus the document needs to be able to evolve with the project to ensure good environmental practice during all the project phases. The management measures contained within this document is based on the possible impacts identified during the EIA process.

The objectives of the EMPr:

- To ensure compliance with guidelines from the regulatory authority.

- To provide feedback for continual improvement in environmental performance.
- To respond to unforeseen events.
- To identify the required mitigation measures that could reduce the potential impacts to minimal levels and to manage these possible impacts associated with the development.
- To set out the specific actions that need to be taken to assist in mitigating the environmental impacts of the proposed project.
- Establish management structures to address the concerns and complaints of I&APs with regards to the project.
- Establish monitoring and auditing management practices that can be utilised during each phase of the project.
- Specify time periods for certain aspects of the project that need to be implemented.

2.2 LEGAL REQUIREMENTS

The applicant and the contractor must identify and comply with all South African National and Provincial environmental legislation, including associated regulations and all local by-laws relevant to the project.

The EMPr has been compiled in accordance with Appendix 4 of the EIA Regulations of 2014. The EMPr will comply with Section 24N of NEMA and will be undertaken as per the legislative requirements as follows:

- Provide details of the EAP who undertook the EMPr and the expertise as well as a curriculum vitae of the EAP to prepare an EMPr thereof.
- Provide a detailed description of the aspects of the proposed development that are covered by the EMPr as identified by the project description;
- Produce a map which superimpose the proposed development, its associated structures and infrastructure on the environmental sensitivities of the preferred development site, indicating areas that should be avoided including buffers;
- Provide a description of the impact management objectives including management statements identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process of this Basic Assessment Report for all the phases of the proposed development.
- Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; and

- Comply with any prescribed environmental management standards or practices.

2.3 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Zander Liebenberg completed his Hons. Degree at the North-West University in Potchefstroom in 2012 and has been working in the environmental consultancy field for 7 years. He has been involved in numerous Environmental assessment projects and Water-use License applications and is a registered member of EAPASA and SACNASP.

Marinus Du Preez completed his M.Sc. in Zoology at the North-West University in Potchefstroom in 2017 and since then he has accumulated 4 years of experience within the Environmental Sector. He has been involved in Environmental Impact Assessment processes and is involved in the compilation, coordination and management of Environmental Impact Assessments and Scoping Reports.

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2.4 PROJECT BACKGROUND

Number Two Piggeries (Pty) Ltd. proposes to expand their current agricultural operations with the establishment of additional piggery, creamery and feed mill to their agricultural operations.

The proposed project will be constructed on 4 different operations sites:

Sites 1, 2 and 3 are located on cultivated fields that are currently utilised for crop production and the total area for each site to be utilised are;

- Site 1: Piggery Breeder unit 9.68 ha
- Site 2: Piggery Weaner Unit 4.64 ha
- Site 3: Piggery Finisher Unit 18.8 ha

In total 33.12 ha of cultivated land is proposed to be converted into livestock rearing and breeding units in the form of a commercial piggery with the three sites located on various portions of the Farm Cloeta and Groente Fontein.

Proposed Site 4 is partially located on cultivated land and partially located on natural grassland. The site is 5.2 ha in size and includes modified vegetation, as well as good grassland of about 3ha. The grassland portion is small and cannot contribute to the conservation of good condition grassland. The site is located on Portion 5 of the farm Groente Fontein 101.

The proposed project site is situated approximately 5km south-west of the town of Elliot. Access can be gained via the R410 road driving from Elliot to Indwe. The proposed site is located within the Sakhisizwe Local Municipality and the Chris Hani District Municipality of the Eastern Cape Province.

Site Coordinates (Middle of the site):

Site 1: 31°20'48.06"S, 27°48'4.64"E

Site 2: 31°21'18.46"S, 27°47'29.36"E

Site 3: 31°21'26.38"S, 27°47'56.98"E

Site4: 31°21'25.85"S, 27°49'14.38 "E

Table 1: Farm Portions and 21SG Codes

Farm	21SG Code
Portion 0/RE of Groente Fontein 101 Elliot RD	C02400000000010100000
Portion 1 of Groente Fontein 101 Elliot RD	C02400000000010100001
Portion 3 of Groente Fontein 101 Elliot RD	C02400000000010100003
Portion 4 of Groente Fontein 101 Elliot RD	C02400000000010100004
Portion 8 of Groente Fontein 101 Elliot RD	C02400000000010100008
Portion 5 Groente Fontein 101 Elliot RD	C02400000000010100005
Portion 17 of Groente Fontein 101 Elliot RD	C02400000000010100017
Portion 0/RE of the Farm Cloeta 100 Elliot RD	C02400000000010000000
Portion 1 of the Farm Cloeta 100 Elliot RD	C02400000000010000001
Portion 2 of the Farm Cloeta 100 Elliot RD	C02400000000010000002

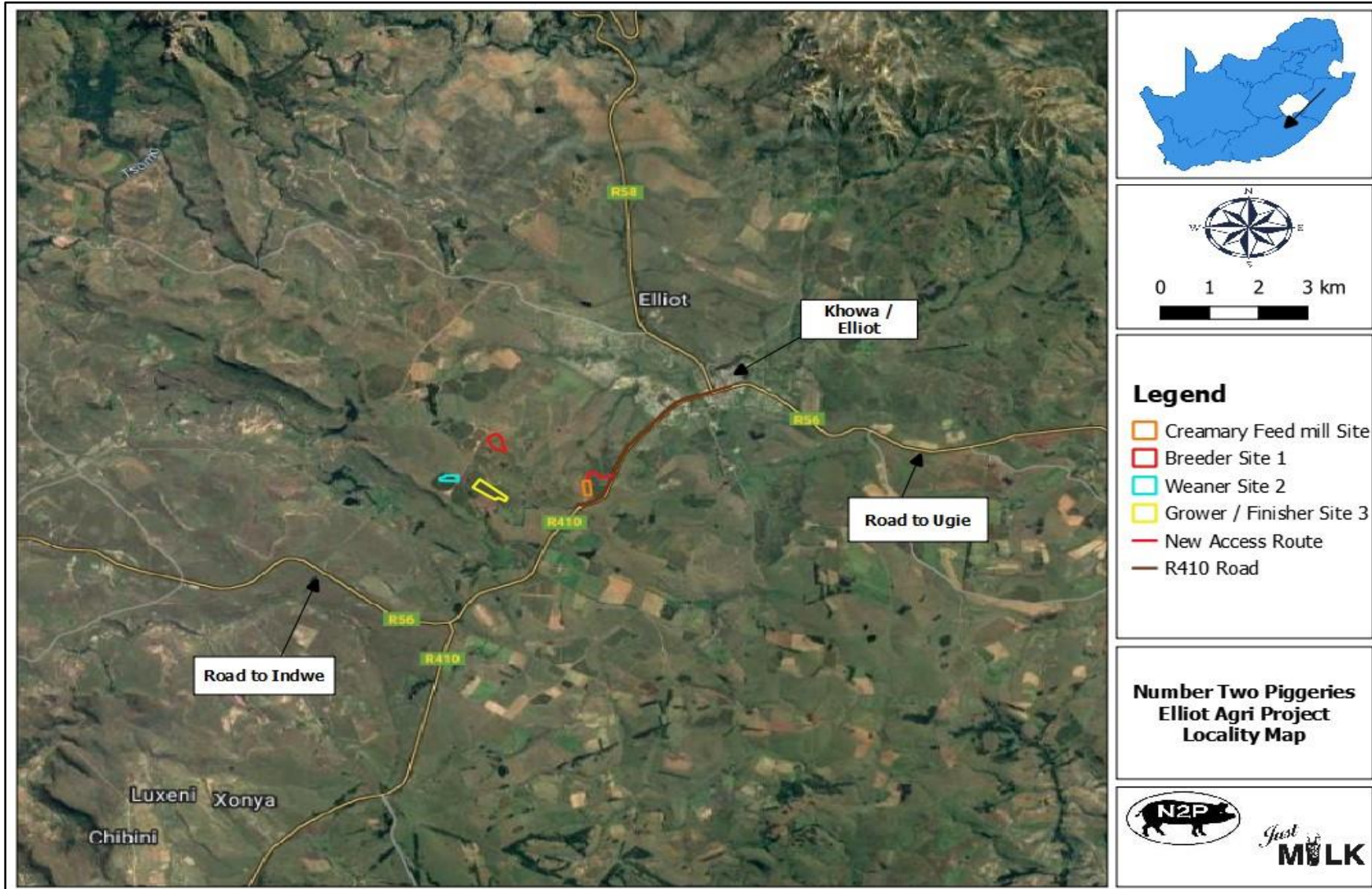


Figure 1: Proposed Elliot Agri Project – Locality Map

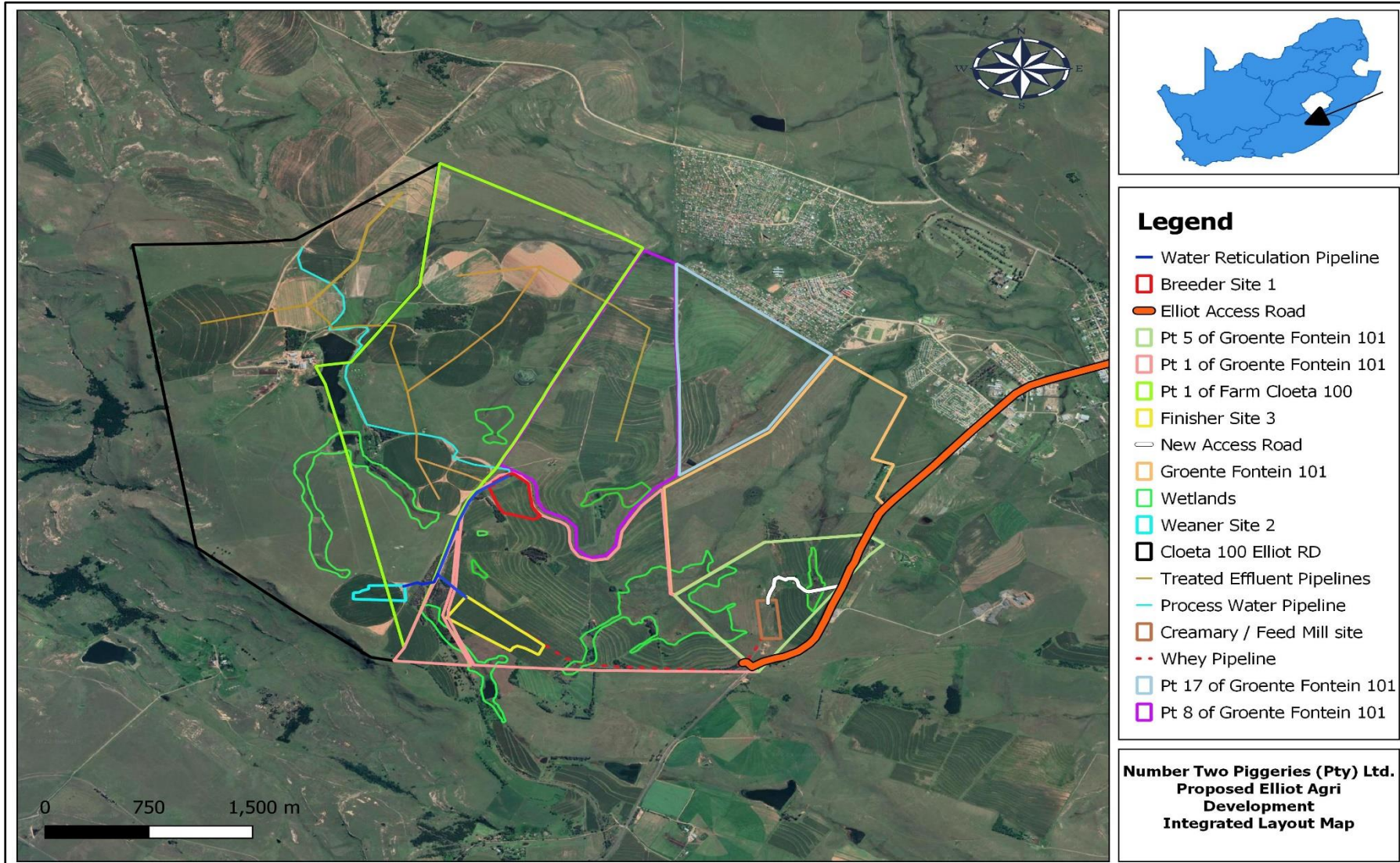


Figure 2: Integrated Layout Map

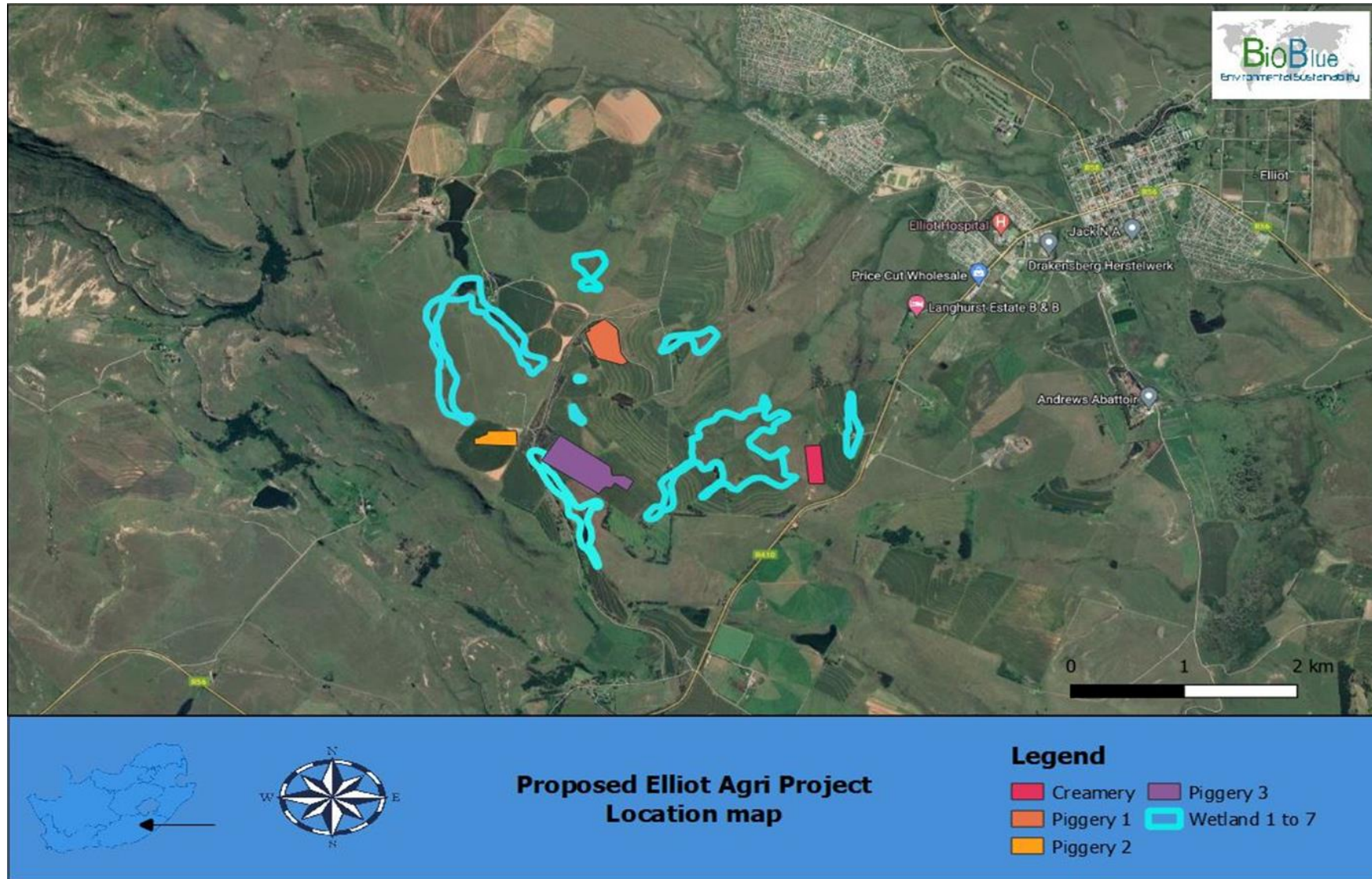


Figure 3: Locality Map indicating specific sites and location of all sensitive wetland areas.

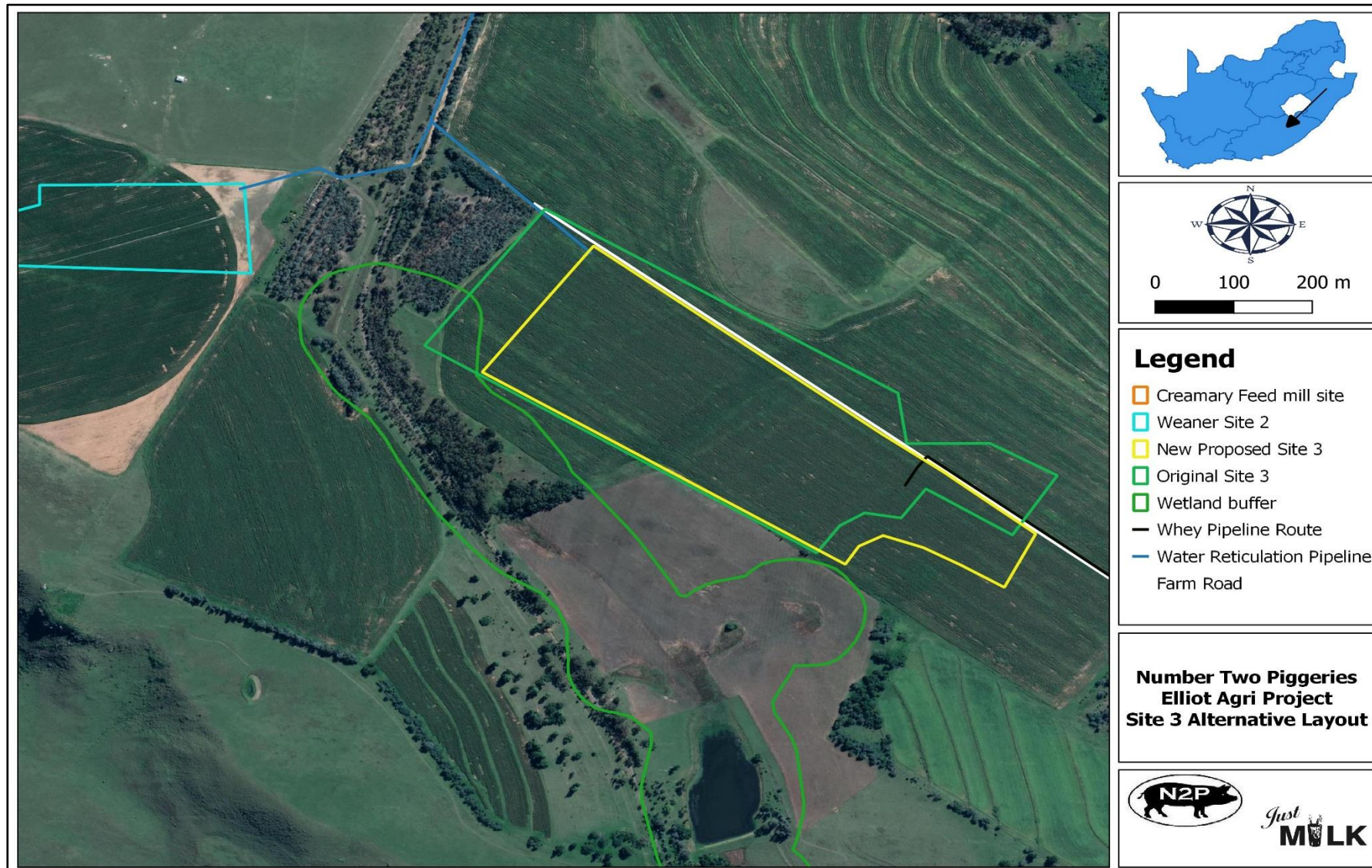


Figure 4: Wetland 4 Delineation map – Indicating that Site 3 will shift

2.5 STRUCTURE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

This document is divided into the three phases of development that needs to be monitored, namely the Construction Phase, the Operational Phase and the Decommissioning Phase.

2.5.1 Construction Phase

This section of the document provides guidelines and management measures that need to be adhered to during the construction or establishment phase. The inputs from various specialists have been included in this phase to ensure that the project could be sustainable in the long run. The specifications within this section should form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Environmental Control Officer (ECO).

2.5.2 Operational and Maintenance Phase

This section of the document provides management measures for the operational and maintenance phases of the project. These measures need to be adhered to by the applicant to ensure the sustainable continuation of the project. Environmental Awareness training for employees that will be involved with the project will also ensure that the whole structure of the company is aware of the requirements stipulated within the EMPr and management actions that need to be taken.

2.5.3 Decommissioning Phase

Currently the plan is not to decommission and keep the sites operational as long as economically viable. Seeing as the EMPr is a dynamic document that can be adapted, the actions that will be required within the decommissioning phase will be established once a decision has been made with regards to the closure of the sites. The EMPr will then be updated and submitted for approval.

3 DETAILED ENVIRONMENTAL MANAGEMENT PROGRAMME

This document stipulates the requirements to be implemented by the applicant as per the recommendations compiled within the Environmental Impact Assessment Process and the various specialist studies conducted.

The provisions of the EMPr are binding on the Applicant during the life of the project. It is essential that the requirements contained within this document be understood, implemented, and adhered to throughout the construction and operational phases.

Parties (I&APs), State Departments and other stakeholders are afforded a period of 30 days, for each draft report (Draft EMPr and Draft BAR), to comment on the content of that draft report. The comments received from I&APs, State Departments and other Stakeholders are incorporated into a CRR which forms part of each final report, the final report inclusive of the CRR will be submitted to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) for decision making.

3.1 CONSTRUCTION PHASE

The key impacts identified for construction phase of the proposed project, as mentioned above, are listed below:

3.1.1 Possible Impacts Identified

- Increased noise generation due to increased construction vehicles to site
- Pollution of the soil and water due to spillages / leakages
- Potential increase in invasive vegetation
- Degradation of surrounding grasslands due to edge effects
- Destruction of grassland vegetation at the feed mill site
- Pollution of the watercourse in proximity to Site 2 and 3.
- Fragmentation of ecological corridors
- Erosion of soil
- Water pollution
- Increase littering
- Degradation of wetlands

- Disturbance of fauna and flora
- Destruction of habitats of fauna species
- Contamination of potential downstream SCC habitats
- Potential pollution of ground water resources;
- Air quality impacts from increase in construction vehicles.

Table 2: Construction Phase

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
<p>Pollution of the soil and water due to spillages of Hazardous materials such as Petroleum, oil and concrete.</p>	<ul style="list-style-type: none"> Without mitigation measures, a considerable loss of biodiversity could occur because of contamination of groundwater and soils that could lead to fragmentation of natural habitats. Large or continuous cumulative leaks / spills and dumping will enter the environment through run-off or leachate and contaminate the environment and poison the fauna. 	<ul style="list-style-type: none"> The prevention of soil and surface water pollution. If a spill occurs the proper safety precautions are in place to minimize the impact. 	<ul style="list-style-type: none"> Construction vehicles are to be maintained in good working order, to reduce the probability of leakage of fuels and lubricants. During the construction phase a berm should be placed on the boundary of site 3 and 4 with a collection sump on the lowest point to prevent any contaminated water entering the wetland or natural areas. Soil contaminated by hazardous materials such as oil residue shall be treated with oil absorbent such as Drizit or similar and this material removed to an approved waste site. All construction materials liable to spillage are to be stored in appropriate structures with impermeable flooring and bund walls with sufficient capacity to contain a spill. No vehicles may be washed, serviced or repaired within naturally vegetated areas, except in suitably 	<p>Applicant / Contractor</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			designed and protected areas. In case of an emergency, repairs may be done by implementing adequate spill containment. <ul style="list-style-type: none"> Emergency plans must be in place in the event of an accidental spillage near the wetland system. 	
Destruction of Vegetation and Potential Increase in invasive vegetation	<ul style="list-style-type: none"> Reducing open space and ecological corridors in a largely cultivated area. The colonization of the disturbed footprint by alien invasive plant species 	<ul style="list-style-type: none"> By removing these species before clearance activities commence, the spread of seeds will be prevented into disturbed soils. Well implemented management programme will prevent weeds from spreading to adjacent natural areas and proliferating within these areas. 	<ul style="list-style-type: none"> Category 1b invasive species should be removed from the site prior to earthworks. This will limit the spread of such species downstream and into disturbed soils Any proclaimed weed or alien species that germinates during the contract period shall be cleared by hand before flowering. Imported fill material should be monitored during and after construction for the presence of any alien species. Any such species should be removed immediately Vehicles and equipment should be cleared of plant material before gaining access to the site. 	Applicant / Contractor Alien Invasive species should be removed prior to clearance. Continuous monitoring is required throughout the phase.

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<ul style="list-style-type: none"> • Continuously monitor the emergence of alien invasive plant species on the site and remove such species as soon as they become apparent. • Keep the development footprint, including site camps, as small as possible • Only use indigenous species naturally occurring on the site for rehabilitation or landscaping. • Clearance of the development footprint must be done in a phased approach. • Topsoil stockpiles must be stored separately and used in rehabilitation activities. • Limit the use of chemicals (pesticides and herbicides) and do not spray in windy conditions. Pesticides may impact on pollinators and lead to a decline in species diversity and densities 	
Degradation of remaining grasslands	<ul style="list-style-type: none"> • Degradation of remaining grassland 	<ul style="list-style-type: none"> • By establishing clear operational boundaries, the 	<ul style="list-style-type: none"> • Only clear the footprint needed for the proposed activity. 	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
	<p>vegetation on the Farm due to edge effects</p>	<p>remaining natural areas can be preserved as important habitat</p>	<ul style="list-style-type: none"> Do not infringe into natural areas beyond the proposed footprints. No random-access routes may be established to prevent the unnecessary trampling of vegetation. 	
<p>Destruction of habitats for SCC</p>	<ul style="list-style-type: none"> Any cumulative loss of natural habitat will impact overall fauna populations; however, the loss of the limited natural habitat is not considered extensive as long as the grasslands associated with the larger riverine corridors remain intact. 	<ul style="list-style-type: none"> Habitat will be undisturbed and SCC species will not be hindered. 	<ul style="list-style-type: none"> Shift Piggery Site 3 out of the wetland buffer zone and grassland area. Avoidance and minimisation of activities in grassland has already been considered in terms of the development plan Further minimise activities in grasslands (Medium SEI) as far as possible At the Site 4 consider placing structures in a manner that will maintain tracts of grassland corridors for smaller fauna (construct to maintain a western or eastern corridor of grassland, or scatter buildings between connected patches of grassland 	<p>Applicant / Contractor</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			with formalise pedestrian paths to prevent deterioration of interspersed grassy areas <ul style="list-style-type: none"> • Maintain the rocky and marshy area as part of the natural landscaping (possibly establish a picnic / lunch break area at this area • Peg out and demarcate construction areas for development and keep all activity in these designated areas only. • Plan and implement a proper engineered storm-water management plan from the onset to prevent excessive runoff and associated erosion and sedimentation of downstream habitats. 	
Loss of Wetland habitat and biodiversity	<ul style="list-style-type: none"> • Encroachment into wetlands and buffer zones could lead to degradation of wetland functionality and integrity 	<ul style="list-style-type: none"> • Buffer zones will help maintain hydrological functioning, but also to ensure a high level of habitat connectivity and 	<ul style="list-style-type: none"> • Shift Piggery Site 3 out of the wetland buffer zone and grassland area. • Demarcate buffer areas to ensure that construction activities do not encroach into these areas 	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
		biological preservation.	<ul style="list-style-type: none"> • The storage areas should be constructed as far away as practically possible outside of wetlands or wetland buffer zones. • Infilling, excavation, drainage, dumping of building material should not occur in the wetland or within the buffer zone of the wetland. • The construction camp and the proposed development footprints must be clearly pegged out and demarcated to ensure that the development footprint is only what is necessary for the project. Avoid construction activities in the wetlands and natural grasslands • Clearance of the development footprint should be done as a phased approach. 	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<ul style="list-style-type: none"> Vehicles may not be allowed to drive through wetland areas and only designated routes may be used. 	
Disturbance of Fauna on site	<ul style="list-style-type: none"> Loss of Fauna species and population integrity 	<ul style="list-style-type: none"> To prevent the unnecessary destruction of natural habitat and animal life within the project area To maintain existing fauna biodiversity and prevent the skewing of fauna communities as far as possible. 	<ul style="list-style-type: none"> Construction teams may not feed wildlife and ensure that all food and food waste, including domestic waste, is placed in sealed containers and not exposed on site. Provide adequate waste removal skips to prevent attraction of rats and other alien scavenging species to the sites. Any TOP species /SCCs will be monitored and if under threat, activity will cease until species move off-site, or species will be relocated to similar nearby habitats by experienced professionals with the appropriate permits. 	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<ul style="list-style-type: none"> No poisons are to be used on site for the control of vermin (insects, rodents, small scavenging carnivores), unless these are environmentally friendly and can be locally contained (do not use poisons that fauna will carry off-site before taking affect or poisons known to bio-accumulate in the environment). Average speed limits should be communicated to all staff. 	
<p>Sewage pollution of the soil layer and water resources, Increase bacteria load and E.coli in the water.</p>	<ul style="list-style-type: none"> Inadequate maintenance of mobile sanitary facilities could lead to pollution of the soil layer and water resources in the vicinity of the construction site 	<ul style="list-style-type: none"> Safe and proper handling of mobile toilets during construction. No pollution by sewage and proper utilisation of mobile facilities 	<ul style="list-style-type: none"> Portable Mobile sanitary facilities are to be provided and maintained for construction crews. Maintenance must include their removal without sewage spillage. Portable septic toilets are to be located outside of the 1:100-year flood line or wetland buffer zones. 	<p>Applicant / Contractor</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<ul style="list-style-type: none"> • Under no circumstances may ablutions occur outside of the provided facilities. • No uncontrolled discharges from the construction crew camps to any surface water resources shall be permitted. • Any discharge points need to be approved by the relevant authority. • In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water Affairs and Sanitation (DWS) must be informed immediately. 	
<p>Increase in hard surfaces due to compaction and concrete mixing</p>	<ul style="list-style-type: none"> • Increase in hard surfaces due to compaction by construction activities and concrete mixing could lead to increase run-off and velocity that can in turn lead to 	<ul style="list-style-type: none"> • Protection of the integrity and functionality of natural areas surrounding construction area. 	<ul style="list-style-type: none"> • Concrete is to be mixed only on an impermeable surface such as a batching tray with raised sides and not on exposed soil, where runoff could occur 	<p>Applicant / Contractor</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
	<p>erosion of natural and wetland areas.</p>		<ul style="list-style-type: none"> • Concrete and tar shall only be mixed on mixing trays and in areas which have been specially demarcated for this purpose. • All concrete and tar that is spilled outside these areas shall be promptly removed by the Contractor and taken to an approved landfill • After all the concrete/tar mixing is complete all waste concrete / tar shall be removed from the batching area and disposed of at an approved dumpsite. • Storm water shall not be allowed to flow through the batching area. • Cement sediment shall be removed from time to time and disposed of in a manner as instructed by the ECO. <p>These sites must be rehabilitated prior to commencing the operational phase</p>	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
<p>Construction of pipelines and road surfaces</p>	<ul style="list-style-type: none"> Increase in run-off velocity into natural areas that could increase the possibility of erosion that could lead to loss of valuable topsoil, formation of head cuts in the wetland areas and siltation of water resources. 	<ul style="list-style-type: none"> To prevent the loss of valuable topsoil by erosion protection of areas surrounding construction area. To continue to allow the flow of water within the wetland system. Prevent the loss of the integrity and functioning of the wetland system. To prevent the proliferation of alien and invasive vegetation on the pipeline route and road areas. 	<ul style="list-style-type: none"> The construction of the proposed infrastructure such as pipelines and the new proposed upgrade of the access road to the creamery site should preferably occur during the dry season in the months of May, June, July and August when rainfall is non-existent to minimal. The new proposed road should be constructed on the current road surface and then extended to the creamery area. Runoff from roads must be managed to avoid erosion and pollution problems. Where excessive loose sediment is created, attenuation swales and / or soils screens should be installed. Culverts must be installed at the proposed road site to ensure that the water flow to the downstream wetland area is not stopped. Vegetation and soil must be retained in position for as long as 	<p>Applicant / Contractor</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<p>possible and removed immediately before construction/earthworks commences.</p> <ul style="list-style-type: none"> • Backfill must be compacted to form a stabilised and durable blanket. • Re-vegetation of disturbed areas must be undertaken with site indigenous species and in accordance with the instructions issued by the Environmental Control Officer (ECO). Areas where soil compaction or ruts developed should be rehabilitated. • Pipelines must be installed and the soil place back as soon as possible. The soil must be shaped to mimic the natural topography and re-vegetated to minimize the potential for erosion. • The pipeline routes must be inspected on a weekly basis for 	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<p>the proliferation of any invasive species.</p> <ul style="list-style-type: none"> • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. It should also only be stored for the minimum amount of time necessary. • Contours and other management measures should be implemented to ensure that runoff from storm events is minimized Silt traps and culverts should be regularly maintained and cleared to ensure effective drainage. • Storm water management plan must be adhere to at all times and construction should strictly stick to the planned system. 	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
Increase in littering surrounding construction area	<ul style="list-style-type: none"> Litter could enter the natural areas and negatively affect the fauna and flora species. 	<ul style="list-style-type: none"> Clean and well-maintained construction area and no litter in surrounding area. 	<ul style="list-style-type: none"> Store all litter carefully so it cannot be washed or blown into any of the water resources or natural areas within the study area. Provide bins for construction workers and staff at appropriate locations, particularly where food is consumed. The construction site should be cleaned daily, and litter removed. Conduct ongoing staff awareness programs so as to reinforce the need to avoid littering Littering and contamination of water sources during construction must be mitigated by effective construction camp management 	Applicant / Contractor
Construction of Coal Storage area, treatment plant and fat traps at the Creamery operations	<ul style="list-style-type: none"> Water resources could be polluted by contaminated runoff or leachate into the soil layer 	<ul style="list-style-type: none"> By storing the coal in a concrete bunded area with correct stormwater measures implemented around the site, water resources will not be polluted 	<ul style="list-style-type: none"> The coal storage area must be constructed of a concrete floor with adequate bunding to ensure that no "clean" stormwater can enter the site. Coal storage must be managed to ensure that only the specified amount is stored within the storage area. 	Applicant / Contractor

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
		<ul style="list-style-type: none"> The proposed treatment system at the Creamery operations will dramatically reduce the water use within the Creamery and minimize the waste to 2% of the normal volume. 	<ul style="list-style-type: none"> The fat separation area must be bermed off to ensure that no water enters or exits this area. The area must be inspected on a regular basis and only assigned persons must enter this area. 	
<p>Construction Camp and Awareness to all conditions of the EMPr</p>	<ul style="list-style-type: none"> Contractors and Staff that are not aware of all requirements that need to be adhered to could conduct activities that will lead to pollution or habitat degradation. 	<ul style="list-style-type: none"> Continuous awareness by staff will lead to a well-managed construction phase and minimal impacts on the surrounding environments. 	<ul style="list-style-type: none"> The construction camp must be established outside of any sensitive areas and it must be clearly demarcated and temporarily fenced off. No open fires are permitted near the naturally vegetated areas. An Environmental awareness training programme must be established to inform the various construction teams of the requirements stipulated within the EMPr as well as other relevant authorisations received. 	<p>Applicant / Contractor and Responsible person appointed with every site crew</p> <p>Must be conducted on a monthly basis as when a new employee enters the site.</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<ul style="list-style-type: none"> The construction crews must be aware to the methods statements compiled and the precise site layouts as well as buffer zones. Employees must be trained to handle spill clean-ups and an incident report must be compiled as well as the method of handling the situation. 	
Cultural Heritage and Palaeontological aspects	<ul style="list-style-type: none"> If any sites or artifacts of cultural heritage of palaeontological significance is found and activities do not stop, then it could negatively impact on the historical nature of these sites 	<ul style="list-style-type: none"> To ensure that any sites, artifacts or palaeontological finds are protected and handled with care by implementing recommendations from the required specialists. 	<ul style="list-style-type: none"> If any sites or artifacts that are or could be of cultural historical significance, are found on site, then all activities within that area must cease immediately and the ECO and specialists contacted to guide the site management on the steps to follow. The same as above will apply for any palaeontological sites found during the construction phase. 	Applicant / Site Management

3.2 OPERATIONAL AND MAINTENANCE PHASE

3.2.1 Possible Impacts Identified

- Increased noise generation, during operational phase;
- Increase storm water runoff.
- Pollution of the soil and water due to spillages / leakages
- Potential increase in invasive vegetation
- Fragmentation of ecological corridors
- Chemical pollution
- Water pollution
- Rubble littering
- Pollution of wetlands and riparian areas
- Potential pollution of ground water resource;
- Health and Safety;
- Air quality impacts arising from increase in vehicles to the site.

3.3 DECOMMISSIONING PHASE

The EMP is a dynamic document that needs to evolve with the project, thus once appropriate decommissioning land-use has been approved, the mitigation measures for this phase will be compiled and submitted for approval.

Site specific rehabilitation measures will need to be established as part of the re-vegetation process.

Table 3: Operational and Maintenance Phase

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
Agricultural Impact and land use change		<p>The land-use potential will be enhanced and in doing so, more job opportunities will be created.</p> <p>The aim should be to operate a sustainable farming operation continuously and enhance the functionality of the natural areas surrounding the proposed sites.</p>	<p>The proposed expansion will increase the potential of the agricultural activities on the land and if the required mitigation measures are implemented the project can be positive from an economic and environmental perspective.</p> <p>The new operations must be operated sustainably and aim to incorporate new and emerging technologies into the operations to reduce aspects such as water-use and waste generation.</p>	<p>Applicant / Site Management</p> <p>The applicant must ensure that the operations remain environmentally sustainable throughout the operational phase.</p>
Operation and maintenance of biodegradable effluent generated by the piggery operations	<ul style="list-style-type: none"> Infrastructure that is not adequately maintained could result in leakage of biodegradable effluent in 	<p>By inspecting the piping infrastructure, sumps, separation area and the lined slurry dams the biodegradable waste reticulation system will</p>	<ul style="list-style-type: none"> The dams must be constructed according to approved designs. The biodegradable effluent reticulation infrastructure must be inspected on a continuous basis to ensure that all system 	<p>Applicant / Site Management</p> <p>Continuous process of good environmental practice</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
	<p>pollution of natural areas.</p>	<p>remain intact and functioning at optimum levels.</p> <p>This will ensure that water resources are not contaminated by spills directly into these systems and also protect the groundwater aquifer.</p>	<p>aspects are functioning optimally and to ensure that any leakages or faults can be rectified immediately.</p> <ul style="list-style-type: none"> • A responsible person must be appointed to oversee the maintenance of these structures and equipment and any incident reports must be submitted to site management as well as the ECO. • Groundwater and Surface water resources should be tested on a quarterly basis until a baseline is established and then it can be done bi-annually or when an incident occurs. 	
<p>Waste Management and domestic solid waste</p>			<ul style="list-style-type: none"> • General waste generated during the operations of the Agri development 	<p>Site Management</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<p>must be collected in waste bins that are emptied on a regular basis into a central waste collection facility for each site.</p> <ul style="list-style-type: none"> • General waste is to be collected on a regular basis to be emptied at the nearest municipal solid waste disposal site. Recycling is always encouraged. • Record must be kept of the waste removed to an approved waste facility. • Septic tanks must be serviced by the Municipality on a regular basis. 	
Waste management of mortality “pits” and composting facility			<ul style="list-style-type: none"> • No burial of carcasses will be allowed on site. • An enclosed composting facility 	

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<p>will be constructed on site to compost the solid manure component and the carcasses will also be disposed of within this facility.</p> <ul style="list-style-type: none"> • The concrete lined area should be inspected on a regular basis. • Stormwater should not be allowed to enter the channels must be inspected for accumulation of debris. Stormwater must be diverted to the solid/liquid separation sump. 	
<p>Loss of Fauna & Flora Habitat and protected species</p>		<ul style="list-style-type: none"> • Removal of existing alien invasives from the wetland and riparian areas will improve the health and functioning of the wetland, more 	<ul style="list-style-type: none"> • Operational activities must remain within the designated footprint areas and not encroach on the natural areas adjacent to the sites. 	<p>Applicant / Site Management Continuous process of good environmental practice</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
		<p>water will be available for hydrological functioning of the systems and downstream users.</p> <ul style="list-style-type: none"> Habitat will be reclaimed that is used by various species for foraging and breeding. 	<ul style="list-style-type: none"> An alien and invasive management programme must be established to ensure that the operational areas as well as adjacent natural areas are kept clear of invasive species and that the biodiversity of the entire farm area is enhanced. Vehicles must not drive into the wetland areas and only utilize existing roads. 	
Road and Pipeline Maintenance		Roads will remain structurally stable and not result in siltation of the wetland areas.	<ul style="list-style-type: none"> Monitor all roads around the proposed developments to ensure no erosion occurs and that the accompanying sediment loads are not 	Applicant / Site Management Continuous process of good environmental practice

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<p>washed into the wetlands.</p> <ul style="list-style-type: none"> Inspect culverts for accumulation of debris 	
<p>Potential for pollution due to treatment of effluent at the Creamery operations</p>		<ul style="list-style-type: none"> No water resources will be affected and kept in a healthy and functioning state. The proposed treatment system will dramatically lower the water demand of the Creamery operations as well as the volume of waste generated. 	<ul style="list-style-type: none"> The proposed treatment system must be inspected on a regular basis to ensure that it is functioning optimally and that the “clean” treated water is within standard parameters. Geobags utilised for storage of “solid” waste generated by treatment must be inspected on a regular basis and approved contractors must remove the waste from site. The fat separation area must be inspected on a 	<p>Applicant</p> <p>Continuous process of good environmental practice</p>

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			regular basis by a specifically appointed individual	
Soil and surface water pollution from general activities	The quality of the aquifer and available surface water resources could be reduced and impact the site as well as downstream users	The topsoil layer and water resources will be protected and kept in a functioning state to provide the required ecosystem services	<ul style="list-style-type: none"> • Farm vehicles and equipment need to be inspected on a regular basis and maintained in a good working order to reduce the probability of leakage of fuels and lubricants. • Ensure the continuation of Environmental Awareness Training and that employees are aware of the importance of water security and functioning wetlands. • Fuel storage areas must be bunded with adequate capacity to contain any accidental spillage. • Vehicles must only be washed, serviced and re-fueled within designated areas. 	Site Management

ASPECT	CUMULATIVE IMPACTS	IMPACT MANAGEMENT OUTCOMES	MITIGATION MEASURES / MANAGEMENT ACTIONS	IMPLEMENTATION RESPONSIBILITY AND TIMING
			<ul style="list-style-type: none"> • Drip trays must be available at all parking areas. 	
Storm water runoff generation	Storm water systems will be maintained, water run off will be managed.	The topsoil layer and water resources will be protected and kept in a functioning state to provide the required ecosystem services	Regular cleaning and maintenance of the following: <ul style="list-style-type: none"> • Cleaning of stormwater piped systems • Maintaining the stormwater ponds, this includes vegetation, inlet and outlets, • clearing and cleaning of outlets • Maintenance of roads and berms • Maintenance of sludge drying areas and screw press • All PCD related cleaning and maintenance • Cleaning of stormwater outlets 	

4 IMPLEMENTATION OF THE EMPR

4.1 ROLES AND RESPONSIBILITIES

a) Environmental Incident Register:

An environmental register must be compiled and kept on site at all times and be freely accessible to the whole team. This register must be utilised to record all environmental incidents that occur as a result of the operational aspects on site. The register must contain the following:

- Complaints from neighbouring farmers and businesses and any environmental incidents on site.
- Actions taken to remedy the incident.

b) Environmental Control Officer:

The ECO must be appointed prior to commencement of the construction phase of the project. The ECO will advise site management of any environmental related issues during the construction phase.

- Responsibilities of the ECO will include monitoring and compliance with the EMPr by the applicant and contractor.
- The ECO has the authority to stop operations on the site if it is deemed that the activity has or will cause significant damage and/or harm the environment.
- Should modifications to this document be required, these must be agreed to by all parties concerned.

c) The Contractor / Applicant:

- They will adhere to the conditions within this EMPr and ensure that all sub-contractors, employees and suppliers are fully aware of this EMPr, its requirements and the consequences of any breach of the requirements of this EMPr.

Monthly Toolbox talks must be held with all the employees to that must include:

- Environmental issues
- Health and Safety
- Incidents and mitigation measures

5 PROPOSED MONITORING SCHEDULE

MONITORING ASPECT	FREQUENCY			
	Daily	Weekly	Monthly	Quarterly
Weed and invasive species control			X	
Erosion Control			X	
Waste Management		X		
Safety	X			
Hazardous Substances		X		
Maintenance	X			
Water			X	

SCORE	COMPLIANCE RATING	EXPLANATION
5	Compliant	All EMPr requirements have been met
4	Substantial Compliance	Most of the requirements have been met
3	Broad Compliance	50% of the requirements have been met
2	Partial Compliance	Only partially compliant with the requirements
1	Non-Compliance	None of the requirements have been met