PROPOSED EXTENSION AND CONSTRUCTION OF A NEW FEEDLOT, ON PORTION 3 OF THE FARM WANGANELLA NO. 994, ALIWAL NORTH, FREE STATE PROVINCE

Environmental Impact Assessment

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Prepared for:

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ABBREVIATIONS:

AIS	-	Alien and Invasive Species
BA	-	Basic Assessment
ECO	-	Environmental Compliance Officer
EIA	-	Environmental Impact Assessment
ESA	-	Environmental Site Agent
EMP'r	-	Environmental Management Programme Report
GPS	-	Global Positioning System
IA	-	Impact Assessment
VIA	-	Visual Impact Assessment

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON GEOGRAPHICAL AND PHYSICAL ASPECTS :					
Nature of impact: Negative impact of haphazard placement of infrastructure on the environment.	**Activity:** The establishment of a main site office and storage site during the construction period will ensure that the poor placement of materials and infrastructure will be avoided. This could also result in the damage or pollution to surrounding areas caused by construction activities.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	1	1	1	1	-
Extent:	1	1	1	1	-
Irreplaceable:	3	3	3	3	-
Reversibility:	3	3	3	3	-
Probability:	3	2	3	2	-
Total SP:	36	20	36	20	-
Significance rating:	L	L	L	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Draw up and submit for approval a Site Layout Master Plan. This plan must show the final positions and extent of all permanent and temporary site structures and infrastructure; • The planning for layout must be done in consultation on-site with the Environmental Control Officer (ECO); • The Contractor may not deface, paint, damage or mark any natural features situated in or around the site for survey or other purposes; • The Contractor must ensure that all construction personnel, labourers and equipment remain within the demarcated construction sites at all times; • No servicing of vehicles may be permitted on site, unless for emergency purposes; • Stockpiles may not be situated in such a manner that they obstruct pathways; • Location of storage area must take into account prevailing winds, distance to water bodies and general on-site topography; • Place infrastructure as far as possible on sites that have already been transformed; • Facilities may not be used as staff accommodation; • The Contractors camp layout must take into account availability of access for deliveries and services and any future works; • The Contractors camp must be of sufficient size to accommodate the needs of all sub-contractors that may work on the project; and, • The Contractor must implement the following as required:				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	➢ Suitable sanitation facilities, adequate for the number of staff on site (1 for every 15 personnel and 1 for each gender); and, ➢ Facilities for solid waste collection.				
Nature of impact: Topsoil Removal and Soil Erosion	**Activity:** The clearing of topsoil and excavation for the establishment of building foundations may result in the destruction of fertile topsoil.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	4	4	4	4	-
Extent:	1	1	1	1	-
Irreplaceable:	3	2	3	2	-
Reversibility:	3	3	3	3	-
Probability:	5	3	5	3	-
Total SP:	75	36	75	36	-
Significance rating:	MH	L	MH	L	-
Cumulative impact:	L	L	L	L	-
Proposed Mitigation:	• Remove topsoil approximately 300mm deep from establishment area and stockpile areas; • Topsoil stockpiles to be kept free from weeds; • Stormwater management should prevent excessive sediment to be carried into the existing dams; • Construction should take place during the low flow months (winter) in order to minimise the risk to the hydrology of the system and to prevent excessive sediment and debris being washed downstream; • Correct site reinstatement and landscaping following any disturbances will abate channel and gulley formation; • Disturbed areas, that will not form part of the operational footprint but which were disturbed as part of the construction activities, should be rehabilitated and re-vegetated using site-appropriate indigenous vegetation and/or seed mixes; • Sheet runoff from cleared areas, paved surfaces and access roads needs to be curtailed; • Topsoil stockpiles to be placed on a levelled area and measures to be implemented to safeguard the piles from being washed away in the event of heavy rain/storm water; • Topsoil need to be stored on designated areas only. This need to be planned and indicated in the site-layout plan; • Ensure that topsoil is not mixed with subsoil and/or any other excavated material; • Provide containment and settlement facilities for effluents from concrete mixing and washing facilities; • Temporarily stored topsoil must be re-applied within 6 months, topsoil stored for longer need to be managed according to a detailed topsoil management plan;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Provide spill containment facilities for hazardous materials like fuel and oil; and, • Topsoil must be used in all rehabilitation activities, and may not be compacted to ensure that its plant support capacity remain of high quality.				
Nature of impact: Surface and groundwater contamination due to construction activities such as the use of hazardous materials on site e.g. fuel and oil.	**Activity:** Spills could possibly occur on site and lead to the contamination of soil and groundwater.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	6	2	6	2	-
Duration:	3	3	3	3	-
Extent:	1	1	1	1	-
Irreplaceable:	2	1	2	1	-
Reversibility:	2	2	2	2	-
Probability:	4	3	4	3	-
Total SP:	56	27	56	27	-
Significance rating:	M	L	M	L	-
Cumulative impact:	L	-	L	-	-
Proposed Mitigation:	• Concrete must be mixed on mixing trays only and not on exposed soil. Concrete must be mixed only in areas which have been specially demarcated for this purpose (preferable where no natural vegetation occur); • Concrete mixing to be carried out away from sensitive areas and on impermeable surfaces; • Material Safety Data Sheets (MSDSs) must be available on site for all chemicals and hazardous substances to be used on-site, including information on their ecological impacts and how to minimise the impacts in case of leakage; • All spillage must be cleaned up immediately after they have occurred; • Spillage of petrochemical products must be avoided. In the case of accidental spillage, contaminated soil must be removed for bio-remediation or disposed of at a facility for the substance concerned. Disturbed land must be rehabilitated and seeded with vegetation seed naturally occurring on site; • Do not locate any ablution facilities, sanitary convenience, septic tank or French drain within the 1:100 year flood line, or within a horizontal distance of 100m (whichever is greater) of a watercourse or drainage line; • Vehicles and machinery must be regularly serviced to avoid leakages; • At the work site the Contractor must maintain strict surveillance to ensure that no spills occur;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• No water courses may be used to clean equipment, or for bathing. All cleaning operations must take place off site at a location where waste water can be disposed of correctly; • The discharge of any pollutants such as cement, concrete, lime, chemicals, etc. into the natural environment and the storm water system must strictly be prohibited; • Fuel and chemical storage must be done within a designated area only, which is properly bund and able to contain 110% of the capacity of fuel or chemicals stored within; • Construction vehicles must be inspected every morning before work commence to ensure that no leakages do occur; • All personnel must receive induction on how to report spillages, contain them and treat them accordingly; • Spill kits must be available at each working station; • Drip trays must be placed beneath all construction equipment that are stationary on site or within the site camp; and, • Hazardous waste must be stored in bins with a lid in a demarcated waste area, and must be disposed of at a hazardous treatment facility with records on file.				
Nature of impact: Handling of general waste materials on the development site.	**Activity:** The presence of personnel and construction operations on site will increase the likelihood of littering and the dumping of solid waste.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	6	2	6	2	-
Duration:	2	2	2	2	-
Extent:	2	0	2	0	-
Irreplaceable:	2	0	2	0	-
Reversibility:	1	0	1	0	-
Probability:	4	3	4	3	-
Total SP:	52	12	52	12	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• An adequate number of scavenger proof litter bins are to be placed throughout the site. Two waste bins at least must be present, one (1) for hazardous waste and one (1) for non-hazardous waste at each working site. Dumping of waste on site is prohibited; • Waste sorting and separation must form part of the environmental induction and awareness programme, to encourage personnel to collect waste paper, glass and metal waste separately; • Keep all work sites including storage areas, offices and workshops neat and tidy; • Dedicate a demarcated and signposted storage area on site for the collection of construction waste;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• All domestic waste is to be removed from site and disposed of at a registered solid waste landfill site as mentioned in the Basic Assessment Report; • Care must be taken to ensure that no waste fall off disposal vehicles on-route to the landfill. If needed, a tarpaulin can be utilised; • The burning or burying of solid waste on site is prohibited. Do not burn PVC pipes or other plastic materials, as this is regarded as hazardous waste; • Littering by construction workers shall not be permitted; • General refuse/rubbish shall be removed from site on a weekly basis to an approved registered landfill site or as soon as the waste bins are reaching full capacity; • Minimise waste by sorting wastes into recyclable and non-recyclable waste; • Ablution facilities must be serviced by a registered service provider, cleaned at least once a week, and safe disposal slips must be on file at the site office; • A bi-weekly (twice a week) litter patrol of the entire site shall be conducted by the designated Environmental Site Agent (ESA); • Hazardous waste must be sorted from non-hazardous waste and disposed of at a hazardous treatment facility, records and proof of disposal must be kept; and, • A register must be kept of the quantities of waste disposed and proof of disposal must be available at the site office.				
Nature of impact: Increased risk of veld fires.	**Activity:** Due to the presence of construction personnel in natural areas, fires can occur if not managed to the correct standard.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	10	6	10	6	-
Duration:	2	2	2	2	-
Extent:	2	2	2	2	-
Irreplaceable:	4	4	4	4	-
Reversibility:	4	4	4	4	-
Probability:	4	2	4	2	-
Total SP:	88	36	88	36	-
Significance rating:	MH	L	MH	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• The Contractor shall take all reasonable and precautionary steps to ensure that fires are not started as a consequence of the activities on site;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Ensure the work site and the contractor's camp is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veldt areas, and at least one fire extinguisher of the appropriate type irrespective of the site; • Workers must be adequately trained in the handling of firefighting equipment, and can include but not limited to: ➢ Regular fire prevention talks and drills; and, ➢ Posting of regular reminders to staff; • No open fires are permitted anywhere on site; • Do not store any fuel or chemicals under trees; • Do not store gas and liquid fuel in the same storage area (Hazardous substances to be stored in accordance with SANS); • Any fires that occur on site shall be reported to the ECO immediately and then to the relevant Authorities; • In the event of a fire, the Contractor shall immediately employ such plant and personnel as is at his disposal and take all necessary action to prevent the spread of the fire and bring it under control; • Do not permit any smoking within 3m of any fuel or chemical storage area, or refuelling area. A designated smoking area must be established on site; and, • All construction vehicles must be fitted with at least one fire extinguisher.				
Nature of impact: Traffic impacts associated with the movement of construction vehicles on site.	**Activity:** The movement of vehicles on site may result in the destruction of biodiversity, compaction of valuable topsoil and mortalities of fauna on site.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	6	2	6	2	-
Duration:	2	2	2	2	-
Extent:	1	1	1	1	-
Irreplaceable:	3	1	3	1	-
Reversibility:	3	3	3	3	-
Probability:	3	2	3	2	-
Total SP:	45	18	45	18	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• During construction create designated turning areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside designated areas; • Monitor the establishment of (Alien) Invasive Species and remove as soon as detected, before regenerative material can be formed;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Abnormal loads and machinery should avoid movement over gravel roads during and immediately after rainfall events, so as to limit destruction of road surfaces and sedimentation of downhill rivers/streams; • All vehicles must be road-worthy, be maintained to prevent fuel or oil leaks and drivers are to the licensed appropriately for the driving of their assigned vehicle. Drivers responsible for the transportation of personnel must be specifically licensed to do so; • Construction vehicles may not leave the designated roads and tracks, whilst U-Turns are prohibited on all roads; • Signage is to be placed on vehicles at all times; • All construction vehicles must adhere to construction sites and avoid off road to minimise impact on vegetation and soil; • After decommissioning, if access roads or portions thereof will not be of further use to the landowner, remove all foreign material and rip area to facilitate the establishment of vegetation, followed by a suitable revegetation program, and • Construction-related vehicles and machinery may not operate on site without reflective safety signage, car-top lights and reflective personnel gear.				
Nature of impact: Traffic impacts associated with the movement of construction vehicle.	Activity: The movement of vehicles in the vicinity of the construction site may cause damage to road surfaces as well as increase in the traffic volume of National Route Six (N6).				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	2	2	2	2	-
Extent:	3	3	3	3	-
Irreplaceable:	2	0	2	0	-
Reversibility:	4	4	4	4	-
Probability:	4	3	4	3	-
Total SP:	60	33	60	33	-
Significance rating:	M	L	M	L	-
Cumulative impact:	M	L	M	L	-
Proposed Mitigation:	• Abnormal loads must be timed to avoid times of year when traffic volumes are likely to be higher, as would be expected over national holidays, weekends and school holiday periods; • Vehicles used for transport of materials and sand must be fitted with tarpaulins to prevent the release of such material or items onto road surfaces; • Any damage to public roads is to be reported to the management Authority and repaired to its original condition; • Transport of materials should be limited to the least amount of trips possible; and, • Abnormal loads may not be transported after dark.				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS:					
Nature of impact: Direct impact on vegetation during construction and loss of species.	**Activity:** The construction of several permanent structures on site will result in the loss of vegetation due to foundation excavation.				No impact will occur as the development activities will not take place. Vegetation and habitat features of the proposed development site will remain unaffected.
Magnitude:	6	2	6	2	-
Duration:	2	2	2	2	-
Extent:	1	1	1	1	-
Irreplaceable:	3	1	3	1	-
Reversibility:	2	2	2	2	-
Probability:	4	3	4	3	-
Total SP:	56	24	56	24	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• It is recommended that a botanical walkthrough be conducted prior to the commencement of the project during the flowering period of most species (spring). This will ensure that no protected or significant species have potentially been omitted; • All disturbed and compacted soils need to be ripped, re-profiled and reseeded and/or replanted with indigenous species; • Keep areas affected to a minimum, strictly prohibit any disturbance outside the demarcated foundation footprint area; • Clear as little indigenous vegetation as possible, aim to maintain vegetation where it will not interfere with the construction or operation of the development, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations of the relevant EMP'r, if possible; • Indigenous vegetation unique to the area must be used during landscaping activities; • There should be a pre-construction environmental induction for all construction staff on site to ensure that basic environmental biodiversity principles are adhered to; • Restoration measures will be required to reinstate functionality in the disturbed soil and vegetation; • Impacts to sensitive sites (drainage lines) must be avoided; • No vegetation may be gathered for the purpose of creating fire; and, • Areas to be cleared should be agreed and demarcated before the start of the clearing operations.				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
Nature of impact: Dust nuisance generated by the operation of machinery and vehicles.	**Activity:** The construction activities of the proposed project could potentially result in fugitive dust emissions due to vegetation removal Dust could spread into the surrounding areas. The significance of this potential impact will likely; however, be only temporary.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	2	0	2	0	-
Duration:	2	2	2	2	-
Extent:	1	1	1	1	-
Irreplaceable:	2	2	2	2	-
Reversibility:	3	3	3	3	-
Probability:	3	2	3	2	-
Total SP:	30	16	30	16	-
Significance rating:	L	L	L	L	-
Cumulative impact:	L	L	L	L	-
Proposed Mitigation:	• Implement suitable dust management and prevention measures during the construction phase; • Ensure all vehicles remain on designated roads and avoid the opening of detour or by-pass tracks; • Vehicles delivering or removing soil must be covered to reduce spills and windblown dust; • Any complaints received by the Contractor regarding dust will be recorded and communicated to the ECO; and, • Areas around the proposed project footprint must be adequately rehabilitated to prevent significant dust emissions.				N/A
Nature of impact: Fauna and Flora will be directly impacted as a result of construction activities and human presence at the site.	**Activity:** The construction of facilities will result in some habitat loss for resident fauna, as some species will occur within the affected areas. In addition, increased levels of noise, pollution, disturbance and human presence during construction will be detrimental to resident fauna. Sensitive and shy fauna may move away from the area during the construction phase as a result of the noise and human activities present, while some slow-moving species (such as mole rats or blind snakes) would not be able to avoid the construction activities and might be killed.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	2	0	2	0	-
Duration:	2	2	2	2	-
Extent:	1	1	1	1	-
Irreplaceable:	1	1	1	1	-
Reversibility:	2	2	2	2	-
Probability:	2	1	2	1	-
Total SP:	16	6	16	6	-
Significance rating:	L	L	L	L	-

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• No hunting, snaring, shooting, nest raiding or egg collection by the construction staff may be allowed; • Holes and trenches must not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days should have places where the loose material has been returned to the trench to form an escape ramp present at regular intervals to allow any fauna that fall in to escape; • Fires should only be allowed within fire safe demarcated area; • Construction workers should be educated on sensitive species likely to be found in the area and posters should be put up of species of conservation concern. If any of these species are found during construction, they will be advised to contact the ECO immediately in order to prevent harm to these species and their habitats; • Keep the facility neat, tidy and clean in order not to attract scavenging animals such as rats and mice; • Ensure that the construction area is fenced off from adjacent areas which may harbour wild animals; • Do not store building materials and excess stockpiled soils within riparian zones or within areas where natural vegetation occur; and • Should any fauna be discovered it should be relocated to an area outside the development footprint by a trained professional.				N/A
Nature of impact: Spread and establishment of Alien and Invasive Species	Activity: Soil disturbances from construction will enhance the encroachment of Alien and Invasive vegetation that will out compete indigenous counterpart species for resources, displace and reduce faunal and flora biodiversity. Clearing current Invasive Alien species will increase the risk of spreading species if not properly removed and safety transported.				No impact will occur as the development activities will not take place. Vegetation and habitat features of the proposed development site will remain unaffected.
Magnitude:	6	2	6	2	-
Duration:	3	3	3	3	-
Extent:	2	1	2	1	-
Irreplaceable:	3	2	3	2	-
Reversibility:	1	1	1	1	-
Probability:	4	2	4	2	-
Total SP:	60	18	60	18	-
Significance rating:	M	L	M	L	-
Cumulative impact:	L	-	L	-	-
Proposed Mitigation:	• Alien plant material removed during construction and eradication efforts should be contained and disposed of properly to limit accidental spread; • Construction activities must be limited to the smallest possible area;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Designated authorised service roads must be used by all Construction Vehicles; and, • Ongoing Alien and Invasive vegetation removal should take place in and around the development footprint.				
Nature of impact: Water quality of run-off water.	Activity: The drainage line can potentially be at risk to increased surface runoff due to change in surface texture and effluent from the proposed development.				No impact will occur as the development activities will not take place. Vegetation and habitat features of the proposed development site will remain unaffected.
Magnitude:	6	4	6	4	-
Duration:	2	2	2	2	-
Extent:	2	2	2	2	-
Irreplaceable:	3	1	3	1	-
Reversibility:	3	3	3	3	-
Probability:	3	2	3	2	-
Total SP:	48	24	48	24	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Provision of adequate on-site sewerage management; • Sewerage and sanitation facilities should be regularly maintained and checked; • An integrated waste management programme must be developed for the development; • Sufficient waste receptacles should be placed around the development in order to encourage people to use them; • The principle of reduce; re-use and recycle should be followed; • The Construction site should be kept clean and tidy; • Any waste should be disposed in a registered landfill and not be allowed to be dumped in the surrounding landscape; • All surfaces used for waste storage and loading areas should have an impermeable surface; • Avoid the use of concrete lined channels for stormwater management as this can increase the speed of water. This in turn increases erosion potential that can cause erosion on site and in riverbanks and increase siltation downstream. If concrete-lined channels are used, they should end in silt traps; • Structures must be inspected regularly for the accumulation of debris, blockages, instabilities and erosion with continual remedial and maintenance actions; • Regular inspections will be undertaken of any access roads and stormwater management drains for signs of erosion and sedimentation;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Regularly inspect all construction vehicles for leaks. Re-fuelling of vehicles must take place on a sealed surface area surrounded by berms to prevent ingress of hydrocarbons into topsoil; • No dumping of waste or any other materials is allowed within any stormwater canals or the irrigation canal; • If any spills occur, they should be immediately cleaned up; • Spill kits must be stored on site. In case of accidental spills of oil, petroleum products etc., good oil absorbent materials must be on hand to allow for the quick remediation of the spill. The kits should be well marked and all personnel should be educated to deal with the spill. Vehicles must be kept in good working order and leaks must be fixed immediately on an oil absorbent mat. The use of a product such as Sunsorb is advised; • Removed soil and stockpiling of soil must occur outside the extent of canals and water affected areas to prevent siltation and increased runoff during construction; and, • Proper ablution facilities must be available during the construction and decommissioning phases. The impact of human waste on the system is immense. Chemical toilets must be provided which should always be well serviced and spaced as per the occupational health and safety laws, and placed outside one hundred meters (100 m) from any watercourses.				

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS:					
Nature of impact: Occupational Health and Safety.	**Activity:** During the construction phase, accidents, occupational diseases, ill health and damage to property can occur if pre-cautionary measures are not taken. Increased movement of vehicles may lead to increased accidents among local communities, construction workers and vehicle operators.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	10	4	10	4	-
Duration:	2	2	2	2	-
Extent:	2	2	2	2	-
Irreplaceable:	4	4	4	4	-
Reversibility:	4	4	4	4	-
Probability:	3	2	3	2	-
Total SP:	66	32	66	32	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Ensure that PPE is available to Personnel; • Adhere to the Occupational Health and Safety Act;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Keep the first aid kit stocked; • Issue all workers with necessary health and safety items; • Potentially hazardous areas must be demarcated with danger tape; • Appropriate signage must be placed to caution Employees and contractors not to enter certain structures without Authorisation; • Regular safety inspections must be conducted to ensure that participants are equipped with necessary safety equipment; and, • All construction personnel to wear hard hats and reflector jackets at all times.				
Nature of impact: Construction activities may have a positive impact on the local and regional socio economic conditions.	Activity: During the construction phase of the project the construction process may have a positive impact on the local and regional socio-economic conditions by means of job creation.				The proposed development will not take place and as such no socio-economic benefits will be derived from this construction period. The impact will thus be a negative one.
Magnitude:	4	N/A	4	N/A	4
Duration:	2		2		2
Extent:	2		2		2
Irreplaceable:	0		0		0
Reversibility:	0		0		3
Probability:	4		4		1
Total SP:	32		32		11
Significance rating:	L+	-	L+	-	L
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Where reasonable and practical the contractors appointed by the proponent should appoint local contractors and implement a “Local First” policy, especially for semi and low-skilled job categories; • Where feasible, efforts should be made to employ Local Contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria; • Trench bedding material (sand) should be sought locally; • Prior to construction phase the proponent and its Contractors should meet with representatives’ from the Local Municipality to establish the existence of a skills database for the area. If such a database exists it should be made available to the Contractors appointed for the construction phase; and,				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• The recruitment selection process should seek to promote gender equality and the employment of women where possible, particularly for less labour-intensive work such as supervision.				

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS:					
Nature of impact: Damage and destruction of vertebrate fossils during excavation activities.(Heritage)	**Activity:** Excavation activities can result in the discovery of cultural and historical artefacts beneath the earth surface. Damage or loss can occur if the correct procedures are not followed.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	2	0	2	0	-
Duration:	2	2	2	2	-
Extent:	1	1	1	1	-
Irreplaceable:	2	2	2	2	-
Reversibility:	4	4	4	4	-
Probability:	2	1	2	1	-
Total SP:	22	9	22	9	-
Significance rating:	L	L	L	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Should any heritage resources (including but not limited to fossil bones, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, stone artefacts or bone remains, structures and other built features, rock art and rock engravings) be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped. A trained Palaeontologist or Heritage Specialist must be notified to assess the finds, and this must then be reported to the South African National Resources Agency; • Heritage remains uncovered or disturbed during earthworks must not be disturbed further until the necessary approval has been obtained from the Heritage Authority. A registered Heritage Specialist must be called to the site for inspection and removal once authority to do so, has been given; • Excavations must be limited to the footprint area and be maintained in a narrow corridor; • All operations of excavation equipment must be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures must be followed: ○ All construction in the immediate 50 m vicinity radius of the site must cease;				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	○ The Heritage Practitioner must be informed as soon as possible; ○ In the event of obvious human remains SAPS must be notified; ○ Mitigation measures (such as refilling, etc.) must not be attempted; ○ The area in a 50 m radius of the find must be cordoned off with hazard tape; and, • Public access must be limited and the area must be placed under guard.				

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL VISUAL IMPACTS:					
Nature of impact: Impact on the sense of place for surrounding users.	**Activity:** The movement of construction vehicles, machinery and personnel on site shall result in a visual impact on surrounding users. Furthermore to this, the storage of materials and excavation shall result in disturbance and an unsightly character.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	2	2	2	2	-
Extent:	1	1	1	1	-
Irreplaceable:	2	2	2	2	-
Reversibility:	1	1	1	1	-
Probability:	5	3	5	3	-
Total SP:	50	24	50	24	-
Significance rating:	M	L	M	L	-
Cumulative impact:	L	-	L	-	-
Proposed Mitigation:	• Access roads are to be kept clean and dust suppression techniques should be implemented to minimise impacts of vehicle movement; • Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions. Roofs should be grey and non-reflective; • Construction camps as well as development areas must be screened with netting; • Lights within the construction camp must face directly down (angle of 180˚); • Minimum vegetation may be removed to ensure the visual absorption capacity remain high; • Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact; and, • Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare.				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON NOISE ASPECTS:					
Nature of impact: Noise nuisance generated by construction works, vehicles and personnel.	**Activity:** The operating of vehicles and machinery on site results in the generation of noise disturbing users of the surrounding area.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	2	2	2	2	-
Extent:	1	1	1	1	-
Irreplaceable:	2	2	2	2	-
Reversibility:	1	1	1	1	-
Probability:	5	3	5	3	-
Total SP:	50	24	50	24	-
Significance rating:	M	L	M	L	-
Cumulative impact:	L	-	L	-	-
Proposed Mitigation:	• Should multiple activities result in the excessive generation of noise, it must be strived to coordinate the incidence of these at the same time; • Fit machinery with silencers; • All stationary noisy equipment such as compressors and pumps must be contained behind acoustic covers, screens or sheds where possible; • The regular inspection and maintenance of equipment must be undertaken to ensure that all components function optimally; • Vehicles must avoid the use of their reverse gear as far as possible so as to avoid the sounding of sirens. This must not be considered for temporary access routes as disturbance of adjacent vegetation is to be avoided; • Where recurrent use of machinery is frequent, machines must be shut down during intermediate periods; • Unless otherwise specified by the DEO, normal working hours will apply (i.e. from 07H00–18H00, Mondays to Fridays); • No loud music is permitted on site or in the Camp; • Ensure that Employees and staff conduct themselves in an acceptable manner while on site, both during working hours and after hours; and,				N/A

Planning, design and construction phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Vehicles are to abide by speed restrictions on access roads and limit trip generation so as to minimise disturbance to surrounding land users.				

(b) **Impacts that may result from the operational phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the operational phase.**

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON GEOGRAPHICAL AND PHYSICAL ASPECTS:					
Nature of impact: Handling of general waste materials on the development site.	**Activity:** Waste will be generated on site, if not disposed of correctly it will become a nuisance within the area.				No operational phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	4	4	4	4	-
Extent:	2	1	2	1	-
Irreplaceable:	2	1	2	1	-
Reversibility:	1	1	1	1	-
Probability:	4	3	4	3	-
Total SP:	52	27	52	27	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Waste must not be stored on site in excess of ninety (90) days; • All general waste must be disposed of at a registered landfill site as mentioned in the Basic Assessment Report; • Carcasses will be stored on site for a period of forty eight hours (48 h); where after, it will be sold to lion farmers within the area; • Manure emanating from the proposed development will be collected from the dams and distributed to grain farmers within the study area; • An adequate number of scavenger proof litter bins are to be placed throughout the site. Two waste bins at least must be present, one (1) for hazardous waste and one (1) for non-hazardous waste at each working site. Dumping of waste on site is prohibited;				N/A

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Waste sorting and separation must form part of the environmental induction and awareness programme, to encourage personnel to collect waste paper, glass and metal waste separately; • Keep all work sites including storage areas, offices and workshops neat and tidy; • Dedicate a demarcated and signposted storage area on site for the collection of waste; • All domestic waste is to be removed from site and disposed of at a registered solid waste landfill site as mentioned in the Basic Assessment Report; • Care must be taken to ensure that no waste fall off disposal vehicles on-route to the landfill. If needed, a tarpaulin can be utilised; • The burning or burying of solid waste on site is prohibited. Do not burn PVC pipes or other plastic materials, as this is regarded as hazardous waste; • Littering by personnel shall not be permitted; • General refuse/rubbish shall be removed from site on a weekly basis to an approved registered landfill site or as soon as the waste bins are reaching full capacity; • Minimise waste by sorting wastes into recyclable and non-recyclable waste; • Hazardous waste must be sorted from non-hazardous waste and disposed of at a hazardous treatment facility, records and proof of disposal must be kept; and, • A register must be kept of the quantities of waste disposed and proof of disposal must be available at the site office.				
Nature of impact: Traffic impacts associated with the movement of vehicles within the area.	Activity: The regular movement of residents and business clients within the area would increase traffic flow and impede vehicle movement.				No operational phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	6	2	-
Duration:	3	3	3	3	-
Extent:	2	2	2	2	-
Irreplaceable:	1	1	1	1	-
Reversibility:	2	2	2	2	-
Probability:	5	2	5	3	-
Total SP:	60	20	70	30	-
Significance rating:	M	L	M	L	-
Cumulative impact:	L	L	L	L	-
Proposed Mitigation:	• A stop sign must be placed at the exit of the complex to ensure that residents take other motorist into consideration;				N/A

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• Adequate parking must be provided for residents, visitors and business clients to ensure that vehicles are not parked within the road reserve; • All speed limits need to be adhered to; and, • U-turns within Conroy Street and in front of the complex will be prohibited.				
Nature of impact: Surface and groundwater contamination from the Feedlot Facilities.	Activity: Surface and groundwater can become contaminated due to operation of the feedlot facilities.				No operational phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	6	4	-
Duration:	4	4	4	4	-
Extent:	2	2	2	2	-
Irreplaceable:	2	1	2	1	-
Reversibility:	1	1	1	1	-
Probability:	4	2	4	2	-
Total SP:	52	20	60	24	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Measures must be implemented to prevent the contamination of clean run-off from the site in order to protect the degradation of the drainage areas; • Stormwater must be conducted in a manner which prevent soil erosion (i.e natural areas must be landscaped in order to ensure energy is removed from run-off); • Drip trays must be placed beneath all stationary operational equipment; • Hazardous substances must be stored within a bund area able to contain 110% of the volume of the substance stored within; • Water samples must be taken from the nearest borehole and be tested for any pollution; • Should a spill occur on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials; • Infrastructure and manure dams to contain run-off from the feedlot area to contain contaminated run-off currently in place on the premises must be used; and, • The run-off should be channelled along grassed filter channel to the manure dams; • Surface run-off from the feedlot should be collected in a drainage channel, with a sufficient cross-section. To prevent effluent being washed into a watercourse, all contaminated flow should be directed to stabilisation ponds for treatment; • The effluent dams should be monitored regularly for leaks and should be repaired accordingly.				N/A

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
Nature of impact: Soil Compaction	Activity: Erosion and degradation of soil surrounding the feedlot.				No operational phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	4	4	4	4	-
Extent:	1	1	1	1	-
Irreplaceable:	3	3	3	3	-
Reversibility:	1	1	1	1	-
Probability:	4	2	4	2	-
Total SP:	52	22	52	22	-
Significance rating:	M	L	M	L	-
Cumulative impact:	L	-	L	-	-
Proposed Mitigation:	• The layout of the area should be optimised to limit the erosion potential; • Rehabilitate denude areas especially slopes with appropriate species and erosion protection measures (i.e. geo-textiles; rocks; topsoil mixtures as per specifications); • Limit the overcrowding in feedlots; • The manure dams should be monitored after rainfall to ensure that it does not flood.				N/A
Nature of impact: Increased risk of veld fires.	Activity: Due to the presence of construction personnel in natural areas, fires can occur if not managed to the correct standard.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	10	6	10	6	-
Duration:	4	2	4	2	-
Extent:	2	2	2	2	-
Irreplaceable:	4	4	4	4	-
Reversibility:	4	4	4	4	-
Probability:	3	2	3	2	-
Total SP:	72	36	72	36	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
Proposed Mitigation:	• The Applicant shall take all reasonable and precautionary steps to ensure that fires are not started as a consequence of the activities on site; • Ensure the work site is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veldt areas, and at least one fire extinguisher of the appropriate type irrespective of the site; • Workers must be adequately trained in the handling of firefighting equipment, and can include but not limited to: ➢ Regular fire prevention talks and drills; and, ➢ Posting of regular reminders to staff; • No open fires are permitted anywhere on site; • Do not store any fuel or chemicals under trees; • Do not store gas and liquid fuel in the same storage area (Hazardous substances to be stored in accordance with SANS); • Any fires that occur on site shall be reported to the ECO immediately and then to the relevant Authorities; • In the event of a fire, the Contractor shall immediately employ such plant and personnel as is at his disposal and take all necessary action to prevent the spread of the fire and bring it under control; • Do not permit any smoking within 3m of any fuel or chemical storage area, or refuelling area. A designated smoking area must be established on site; and, • All construction vehicles must be fitted with at least one fire extinguisher.				N/A

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS:					
Nature of impact: Infestation of the area with Alien and Invasive Species	Activity: Implementation of an Alien and Invasive Management Plan in order to control and eradicate Alien and Invasive Species.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	6	2	6	2	-
Duration:	4	4	4	4	-
Extent:	2	1	2	1	-
Irreplaceable:	3	3	3	3	-
Reversibility:	1	1	1	1	-
Probability:	4	2	4	2	-
Total SP:	64	22	64	22	-
Significance rating:	M	L	M	L	-

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	***Clearing and Guiding Principles*** • Alien control programs are long-term management projects and should include a clearing plan which includes follow up actions for rehabilitation of the cleared area; • The lighter infested areas should be cleared first to prevent seed build-up; • Pre-existing dense areas should be left for last, as they probably will not increase in density or pose a greater threat than they are currently; and, • All clearing actions should be monitored and documented to keep track of which are due for follow-up clearing. ***Clearing Methods*** • Different species require different control methods such as manual, chemical or biological methods or a combination of the two; • Care should be taken to ensure that the clearing methods used do not encourage further invasion. As such, regardless of the methods used, soil disturbance should be kept to a minimum. The vegetative stage of the plants should also be considered before clearing; • Fire is not a natural phenomenon in the area and should not be used in general for alien control or vegetation management at the site. Only *Cylindropuntia sp* should be destroyed by burning after removal, since these plants can spread vegetatively as well as with seed; and, • The best-practice clearing method for each species identified should be used. The preferred clearing methods for most alien species can be obtained from the Department of Water and Agricultural Affairs (DWAF) Working for Water website: http://www.dwaf.gov.za/wfw/Control/. ***Use of Herbicides for Alien Control*** Although it is usually preferable to use manual clearing methods where possible, such methods may create additional mechanical disturbance which may stimulate alien invasion and may also be ineffective for many woody species which resprout. Where herbicides are to be used , the impact of the eradication program on the natural environment should be minimised be observing the following: • Area contamination must be minimised by careful, accurate application with a minimum amount of herbicide to achieve good control; • Care must be taken to prevent contamination of water bodies. This includes special care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures; • Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of in a suitable place;				N/A

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
	• To avoid damage to indigenous or other desirable vegetation, herbicides that would have the least effect on the indigenous vegetation should be used; • Droplet nozzles with a course spray pattern should be fitted to avoid drift of herbicides onto neighbouring vegetation; and, • The appropriate health and safety precautions should be followed regarding the storage, handling and disposal of herbicides.				

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS:					
Nature of impact: Operation Activities may have a positive impact on the local and regional socio economic conditions.	**Activity:** During the operational phase of the proposed development will create employment opportunities for individuals from the Local Community.				Should the proposed development not take place, users within the area will continue to experience weak signal and dropped calls.
Magnitude:	4	N/A	4	N/A	6
Duration:	4		4		4
Extent:	2		2		2
Irreplaceable:	0		0		0
Reversibility:	0		0		0
Probability:	5		5		5
Total SP:	50		50		60
Significance rating:	M (+)		M (+)		M
Cumulative impact:	-		-		-
Proposed Mitigation:	• Mitigation measures are not applicable as the impact is positive.				N/A
Nature of impact: Occupational Health and Safety.	Activity: During the operation phase, accidents, occupational diseases, ill health and damage to property can occur if pre-cautionary measures are not taken. Increased movement of vehicles may lead to increased accidents among local communities, construction workers and vehicle operators.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	10	2	10	2	-
Duration:	4	4	4	4	-
Extent:	1	1	1	1	-

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
Irreplaceable:	4	4	4	4	-
Reversibility:	4	4	4	4	-
Probability:	3	2	3	2	-
Total SP:	69	30	69	30	-
Significance rating:	M	L	M	L	-
Cumulative impact:	-	-	-	-	-
Proposed Mitigation:	• Ensure that PPE is available to Personnel; • Adhere to the Occupational Health and Safety Act; • Keep the first aid kit stocked; • Issue all workers with necessary health and safety items; • Potentially hazardous areas must be demarcated with danger tape; • Appropriate signage must be placed to caution Employees and contractors not to enter certain structures without Authorisation; • Regular safety inspections must be conducted to ensure that participants are equipped with necessary safety equipment; and, • All construction personnel to wear hard hats and reflector jackets at all times.				N/A

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL IMPACTS ON NOISE:					
Nature of impact: Noise nuisance generated by site operations.	**Activity:** Noise nuisance that may be created by the operation and maintenance work.				No operational phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	4	2	4	2	-
Duration:	4	4	4	4	-
Extent:	1	0	1	0	-
Irreplaceable:	1	0	1	0	-
Reversibility:	1	1	1	1	-
Probability:	3	3	3	3	-
Total SP:	33	21	33	21	-

Operational Phase	Layout Alternative 1		Layout Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
Significance rating:	L	L	L	L	-
Cumulative impact:	L	-	L	-	-
Proposed Mitigation:	• Limit working hours of noisy equipment to daylight hours; • The body corporate must implement a curfew for loud music. Should residence not adhere to the curfew, they must pay a fine. The amount will be determined by the body corporate; and, • Ensure that Employees and maintenance staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.				N/A

(c) **Impacts that may result from the decommissioning and closure phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase.**

The activity will not be decommissioned in the future and therefore the proposed impacts therefore were not assessed.