PROJECT IMPACT ASSESSMENT, SIGNIFICANCE AND MITIGATION MEASURES SUMMARY

The following impact rating approach used by EnviroAfrica CC is a basic exponential rating system to assess actual and potential negative and positive environmental impacts.

Environmental activities or aspects are identified, based on:

- the phases of the project,
- the nature (or description) of the actual and potential impacts of the activities.

For every project activity or aspect, various environmental impacts are listed. Every negative impact is allocated a -value as per each of the following criteria:

- Probability (Likelihood)
- Extent
- Duration (Frequency)
- Consequence (Receiving Environment)
- Magnitude (Intensity/severity)

Every positive impact is allocated a +value as per each of the following criteria:

- Probability (Likelihood)
- Extent
- Duration (Frequency)
- Magnitude (Intensity/severity)

Once a value is allocated for each of the criterion, the scores are averaged to determine the final impact rating see Table 1 below.

EnviroAfrica then further assesses environmental significance, based on the nature of the impact, as per the score and colour key which forms part of Table 1 below. This results in impacts having either a low (indicated in green), medium (indicated in yellow) or high (indicated in orange and red) negative significance, and a low (light blue), medium (blue) or a high (dark blue) positive significance

Note: i. As a baseline, impact rating values/scores are allocated taking the **worst case** scenario into account i.e. with no mitigation. The baseline rating is compared with those after mitigation has been taken into account i.e. the post-mitigation rating. Post mitigation rating is used for the actual impact assessment.

SIGNIFICANCE CRITIERIA	Very High	High	Medium	Low	Negligible (very-low)
Value	**16**	**8**	**4**	**2**	**1**
Probability (likelihood) **(P)**	Definite. Impact will definitely occur (impact will occur regardless of any prevention measures)	Highly probable. Very likely for impact to occur.	Probable. Impact may likely occur.	Improbable. Impact may occur. Distinct Possibility	Improbable. Low likelihood/unlikely for impact to occur.
Extent (E)	Impact potentially reaches beyond national boundaries	Impact has definite provincial/potential national consequences	Impact confined to regional area/ town	Impact confined to local region and impact on neighbouring properties	Impact confined to project property / site
Duration (D)	Permanent The impact is expected to have a permanent impact, with very little to no rehabilitation possible	Long-Term The impact is expected to last for a long time after construction with rehabilitation expected to be 15-50 years. Impact is reversible but only with long-term mitigation	Medium-term The impact is expected to last for some time after construction with rehabilitation expected to be 5 - 15 years. Impact is reversible but only with on-going mitigation	Short-term The impact is expected to last for a relatively short time with rehabilitation expected to be 2-5 years. The impact is reversible through natural process and/or some mitigation.	Very short/ temporary The impact is expected to be temporary and last for a very short time with rehabilitation expected to be less than 2 years. The impact is easily reversible through natural process and/or some mitigation.
Magnitude (Intensity/ Severity) **(M)**	It is expected that the activity will have a very severe to permanent impact on the surrounding environment. Functioning irreversibly impaired. Rehabilitation often impossible or unfeasible	It is expected that the activity will have a severe impact on the surrounding environment. Functioning may be severely impaired and may be temporarily cease. Rehabilitation will be needed to restore system integrity	It is expected that the activity will have an impact on the surrounding environment, but it will maintain its function, even if moderately modified (overall integrity not compromised). Rehabilitation easily achieved	It is expected that the activity will have a perceptible impact on the surrounding environment, but it will maintain its function, even if slightly modified (overall integrity not compromised). Rehabilitation easily achieved	It is expected that the impact will have little or no effect on the integrity of the surrounding environment
Receiving environment (Consequence): **(RE)**	Very sensitive, pristine area – protected site or species permanently or seasonally present	Unused area containing only indigenous fauna / flora species	Unused area containing indigenous and alien fauna / flora species	Semi-disturbed area already rehabilitated / recovered from prior impact, or with moderate alien vegetation	Disturbed area/ transformed/ heavy alien vegetation

ENVIRONMENTAL RATING SIGNIFICANCE KEY:

Negative Impacts

SIGNIFICANCE	RATING	Final rating score / value range
Very Significant	Very High	-11 to -16
Significant	High	-7 to <-11
Increasing Significance	Medium	-4 to <-7
Insignificant	Low	-2 to <-4
	Very Low	-1 to <-2

Positive Impacts

SIGNIFICANCE	RATING	Final rating score / value range
Significant	High	10 to 16
Increasing Significance	Medium	4 to <10
Insignificant	Low	1 to <4

Table 1: **Environmental Significance Rating Methodology (rating criteria and significance key)**

**INSERT RATING SCORING MATRIX*

APPENDIX F – IMPACT ASSESSMENT

Nature of Impact			Impact Assessment Ranking and Proposed Mitigation		
No.	**Aspect**	**Impact**	**Environmental Significance (without Mitigation)**	**Proposed Mitigation (i.e. Proposed mitigation to reverse/ avoid, manage or mitigate identified impacts associated with construction, operation, and decommissioning/ closure phases)**	**Environmental Significance (After Mitigation)**
CONSTRUCTION PHASE					
1	Freshwater Resources	Loosening of soil during construction phase, washing of soil down the drainage line and into the Orange River during a storm event	Medium (Negative)	- Construction only during the dry season, limit the foot print, vegetate disturbed areas.	Low (Negative)
2	Botanical: Natural Vegetation	Transformation of natural habitat to vineyard.	Medium (Negative)	• Development should be contained within the proposed footprint and unnecessary clearance or disturbance adjacent to the site should be avoided. • No-go areas, e.g. drainage lines should be avoided. • Two protected tree species were recorded on site. They are mainly restricted to the drainage line in the south (plant community 1). This habitat should be avoided and not be transformed. • Permits have to be obtained for the removal of any protected tree species. • Dust control measures should be implemented during vineyard preparation and reservoir construction. • Prevent soil erosion on and from the site. • Vehicles should remain on existing demarcated roads. • Stream crossings to be designed not to impede or disrupt the direction and flow of water.	Low (Negative)
3		Total loss of indigenous vegetation on the footprint of the development.			
4		Increased dust levels during vineyard preparation.			
5		Increased weedy and alien invasive plants.			
6		Loss of faunal habitat.			
7	Botanical: Alien Vegetation	As a result of the loss of indigenous vegetation and resulting disturbance, alien plant species might invade the area.	Medium (Negative)	• Development should be restricted to the proposed site. • Use existing and dedicated access roads to limit disturbance of the natural vegetation. • Raise awareness regarding the negative impacts of alien invasive plant species. • Establish a monitoring program for the early detection and control of alien invasive plant species. • Indigenous trees and shrubs should be retained where possible. • No alien invasive plant species should be used in landscaping on or around the site.	Low (Negative)

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				• Alien invasive species should be eradicated on site. Monitor and control new declared weedy and alien invasive species. However, restrict the use of herbicides for the control of alien species.	
8	Botanical: Drainage channels	Loss of vegetation in smaller drainage channels.	Medium (Negative)	• No diversion of drainage channels should occur. • No impeding of water flow should occur. • Use existing and dedicated access roads to limit disturbance of the natural vegetation. • Monitor and control declared weedy and alien invasive species. • Measures to prevent soil erosion should be applied. • Minimise clearance of natural vegetation and disturbance to the areas surrounding the development. Measures should be put in place to rehabilitate denuded and disturbed areas as soon as possible with indigenous vegetation.	Low (Negative)
9		Loss of protected tree species.			
10		Loss of biodiversity and habitat for fauna.			
11		Impeding and/or diversion of the natural flow of water.			
12		Increase in weedy and alien invasive plant species.			
13		Increase in soil erosion.			
14	Impact on Cultural, Archaeological and Heritage resources	A total of 17 occurrences of MSA lithic material was recorded outside the development footprint on Olyvenhouts Drift Erf 1074. The recorded lithic material consists of low- to medium-density background scatters made predominantly from BIF, CCS and dolomite.	Low (Negative)	No mitigation required	Low (Negative)
15	Impact on Cultural, Archaeological and Heritage Resources	A total of 4 incidences of historical material without archaeological context was recorded outside the	Low (Negative)	No mitigation required	Low (Negative)

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		development footprint on Olyvenhouts Drift Erf 1074.			
16	Impact on Cultural, Archaeological and Heritage	An informal graveyard with a minimum of 27 graves was recorded near the southern edge of the proposed irrigation dam development footprint on Olyvenhouts Drift Erf 1074.	Low (Negative)	Sites should be included in the heritage register and may be mitigated	Low (Negative)
17	Impact on Palaeontological resources	The Palaeontological Sensitivity of the Gordonia Formation of the Kalahari Group is low while the Palaeontological Sensitivity of the Bethesda Formation is insignificant.	Low (Negative)	No mitigation required	Low (Negative)
18	Socio-economic	Creation of short- and long-term employment opportunities.	Medium (Positive)	The construction of the development will have positive impacts on the socio-economic dynamics relative to direct and indirect, short- and long-term employment opportunities and skills development.	Medium (Positive)
19	Dust	Dust will be generated during the construction of the proposed development which may impact the N10 and/or surrounding agricultural developments.	Low (Negative)	The following mitigation measures must be implemented: - No material may be stockpiled within 100m of the N10 or the watercourse; - Stockpiled material must be covered with a plastic sheet; - A water cart must be used on utilized roads to reduce construction-related dust generation; - If dust generation is not adequately mitigated by proposed measures, shade netting must be installed along the north-western boundary of the site to reduce the amount of dust being blown onto the N10 from the construction site; - Sprinklers may need to be installed to reduce the generation of dust by construction activities.	Low (Negative)

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20	Visual	Site may be not aesthetic amid natural background.	Low (Negative)	This impact cannot be avoided.	Low (Negative)
21	Traffic	Increase in trucks slowing down and turning to enter/ exit construction site.	Low (Negative)	Given the location of the site, it is likely that construction traffic will impact road users however the following mitigation measures will be implemented: - The site must be made easily accessible to all construction traffic travelling along the N10; - - If required, point's men must be in attendance to direct traffic when heavy vehicles are accessing or leaving the site to ensure that there are no accidents.	Low (Negative)
22	Noise	Noise will be generated during the construction phase.	Low (Negative)	Any noise generated by construction activities will be a temporary impact however, the following mitigation measures will be implemented: - A complaint register to be maintained on-site. Any complaints received must be responded to and rectified accordingly. The ECO must be notified of any complaints; - All construction vehicles must be fitted with standard silencers. All silencers must be maintained. All machinery used on site must have suppressors. - Working hours must be limited to and strictly adhered to standard daylight working hours (08h00-17h00).	Low (Negative)
OPERATION PHASE					
23	Freshwater Resources	Agricultural return flow because of over-irrigation can be a severe impact.	Medium (Negative)	• When the new vineyard is developed, it should be done during the dry season. No more land should be disturbed than is really necessary and the foot print should not be any bigger than the design area of the vineyard. Earth moving machinery and farming implements should not be allowed outside of the designated area. • The drainage line next to the new vineyard should be preserved, with an allowance for flow from the catchment right through to the main drainage line on the other side and adjacent to Turksvy Farm, similar to the already present drainage channels through the vineyards. • Disturbed areas next to the new vineyard should be vegetated as soon as possible to prevent erosion and sediment transport. • Over-irrigation should be prevented at all costs. State-of-the-art instrumentation is available to measure soil moisture and to aid decisions regarding the correct volume of irrigated water. Apart from huge saving of costs, scientific measurement as standard operating procedures prevents	Low (Negative)

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				agricultural return flow, the loss of fertiliser downstream and more prolific growth of reeds in the drainage line.	
24		Possibility of works washing away during sever flood leading to pollution of aquatic habitat and deleterious impact on downstream farming	Low (Negative)	Carry out proper hydraulic modelling	Low (Negative)
25	Socioeconomic	Creation of short- and long-term employment opportunities.	Low (Positive)	This is a positive impact. The construction of the development will have positive impacts on the socio-economic dynamics relative to direct and indirect, short- and long-term employment opportunities and skills development.	Low (Positive)