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*

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**	Disturbance of river bed during trenching	Low (Negative)	- Limit the footprint - Level and landscape after construction - Exit pipe from the river bed well out of riparian zone	Low (Negative)
2		Disturbance of drainage lines at crossings during the dismantling and construction of the new pipelines at drainage line crossings	Low (Negative)	- Limit footprint - Clean up after construction - If new pedestals are required, construct well out of riparian zone	Low (Negative)
3		Create preferential flow paths	High (Negative)	- Prevent construction of new road - Limit use of roads	Medium (Negative)
4		Disrupt flow and promote replenishment of ground water as a result of reconstruction of retaining walls in Buffels River	High (Negative)	- Limit footprint - Clean up after construction	High (Negative)

5	**Botanical**	Possible impact on socio-economic activities as a result of the temporary disturbance along the underground pipeline route (13 - 14km), which might impact on grazing practices.	Low (Negative)	- All construction must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP), which must include the recommendations made in this report. A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMP and any other conditions pertaining to specialist studies. - Before any work is done search & rescue must be completed. - Lay-down areas or construction sites must be located within the construction footprint. - No clearing of any area outside of the construction footprint may be allowed. - All waste that had been illegally dumped within the footprint must be removed to a Municipal approved waste disposal site. - An integrated waste management approach must be implemented during construction. • Construction related general and hazardous waste may only be disposed of at Municipal approved waste disposal sites. - Alien invasive *Prosopis* plants within the footprint (and immediate surroundings) must be removed in a responsible way (to ensure against regrowth).	Insignificant
6		Vegetation Status: Possible loss of vulnerable or endangered vegetation and associated habitat.	Low (Negative)		Insignificant
7		Conservation Priority Areas: Possible impact on Protected areas, CBA, ESA or centres of endemism.	Medium (Negative)		Insignificant
8		Connectivity: Possible loss of ecological corridors.	Insignificant		Insignificant
9		Protected & endangered plant species: Potential impact on threatened or protected plant species.	Low (Negative)		Insignificant
10		Invasive Alien Species: Possible alien infestation as a result of activities.	Low (Negative)		Insignificant
11		Veld Fire: The risk of veld fires as a result of the proposed activities.	Insignificant		Insignificant
12		No-Go	Low (Negative)		

13	**Palaeontological resources**	Loss and/or damage to potential fossils within the construction footprint	Low (Negative)	- No areas of particular palaeontological sensitivity are identified. - Notably, where the new water main pipeline is below ground in the superficial Q-s2 deposits, it replaces the pipeline in the existing disturbed material of the shallow trench, further decreasing the potential for fossil finds. - Notwithstanding, although improbable, a chance occurrence of fossil bone material cannot be entirely dismissed and when fossils are found in low-sensitivity formations, they are often very significant additions to the geological understanding of the area. - The monitoring of excavations by on-site personnel is recommended during installation of the upgraded water supply infrastructure, under supervision of the Environmental Control Officer (ECO). As part of Environmental and Health & Safety awareness training, personnel must be instructed to be alert for the occurrence of fossil bones, archaeological material and of unrecorded burials. - A basic Fossil Find Procedure for incorporation into the Environmental Management Programme for the project.	Insignificant
14	**Archaeological resources**	Loss and/or damage to potential pre- colonial archaeological and historical sites within the construction footprint	Insignificant	- No mitigation of archaeological resources is required is required prior to construction activities commencing. - If any human burials, or ostrich eggshell caches, for example, are uncovered during construction activities then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and will require inspection by a professional archaeologist. - The above recommendations must be included in the Environmental Management Plan (EMP) for the proposed development.	Insignificant
15	Socio-economic	Creation of short- and long-term employment opportunities.	Low (Positive)	The construction of the Komaggas pipeline 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)
16	Dust	Dust will be generated during the construction of the proposed development which may impact drivers on the N7.	Low (Negative)	The following mitigation measures must be implemented: - No material may be stockpiled within 100m of the N7 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 eastern boundary of the site to reduce the amount of dust being blown onto the N7 from the construction site; - Sprinklers may need to be installed to reduce the generation of dust by construction activities.	Low (Negative)

17	Visual	Site may be not aesthetic amid natural background.	Low (Negative)	This impact cannot be avoided. Mitigation measures as per the EMP	Low (Negative)
18	Traffic	Increase in trucks and other construction vehicles.	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 main routes; - 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)
19	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					
20	Freshwater Resources	Destruction of tree line as a result of ongoing abstraction of water from the alluvium	High (Negative)	- Limit water abstraction to sustainable levels - Disallow increase of abstraction - Plan for alternative water resources - Monitor tree line and adjust abstraction according to monitoring results	Medium (Negative)
21	Socioeconomic	Creation of short- and long-term employment opportunities.	Low (Positive)	This is a positive impact. The construction and operation of the pipeline 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)
22		Improvement access to freshwater for the community.	Medium (Positive)	Proper management and maintenance of the pipeline	Medium (Positive)