

## 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.

<b>SIGNIFICANCE CRITERIA</b>	<b>Very High</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Negligible (very-low)</b>
<b>Value</b>	<b>16</b>	<b>8</b>	<b>4</b>	<b>2</b>	<b>1</b>
<b>Probability (likelihood) (P)</b>	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.
<b>Extent (E)</b>	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
<b>Duration (D)</b>	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.
<b>Magnitude (Intensity/ Severity) (M)</b>	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
<b>Receiving environment (Consequence): (RE)</b>	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
Insignificant	Medium	-4 to <-7
	Low	-2 to <-4
	Very Low/ Insignificant	-1 to <-2



**Positive Impacts**

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



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

Calvinia MANAGED AQUIFER RECHARGE															
Nature of Impact			Without Mitigation (Baseline)					With Mitigation					With Mitigation Score (Impact Assessment)		
Number	Aspect	Impact	Probability (Likelihood)	Extent	Duration (Frequency)	Magnitude (Intensity/Severity)	Receiving Environment (Significance/Consequence)	Without Mitigation Score (Baseline)	Probability (Likelihood)	Extent	Duration (Frequency)	Magnitude (Intensity/Severity)		Receiving Environment (Significance/Consequence)	
<b>CONSTRUCTION PHASE</b>															
1	Freshwater Resources	Soil and rubble washing down the drainage line	-8	-2	-2	-16	-8	-8	-8	-2	-2	-2	-2	-3	
2	Botanical	Special habitats: Potential impact on special habitats (e.g. true quartz or "heuweltjies")	-2	-1	-2	-1	-2	-1	-1	-1	-2	-1	-2	-1	
3		Land-use and Cover: Possible impact on socio-economic activities	-2	-1	-2	-1	-2	-1	-1	-1	-2	-1	-2	-1	
4		Vegetation Status: Loss of vulnerable or endangered vegetation and associated habitat.	-2	-1	-2	-1	-2	-1	-1	-1	-2	-1	-2	-1	
5		Conservation Priority Areas: Possible impact on Protected areas, CBA, ESA or centres of endemism.	-4	-1	-4	-2	-4	-4	-3	-2	-1	-4	-2	-4	-3
6		Connectivity: Possible loss of ecological migration corridors.	-2	-1	-4	-2	-4	-4	-3	-2	-1	-4	-1	-4	-3
7		Protected & endangered plant species: Potential impact on threatened or protected plant species.	-2	-1	-4	-2	-4	-4	-3	-2	-1	-1	-1	-4	-1
8		Fauna & Avi-fauna: Potential impact on mammals, reptiles, amphibians & birds.	-2	-1	-4	-2	-4	-4	-3	-1	-1	-1	-1	-4	-1
9		Impact on Palaeontological Resources	Possible destruction of fossil heritage	-4	-1	-8	-8	-8	-5	-4	-1	-8	-2	-1	-3
10	Impact on Archaeological Resources	No archaeological, historical, or cultural sites were identified	-2	-1	-1	-1	-1	-2	1	1	1	1	1	1	
11	Socio-economic	Creation of short- and long-term employment opportunities.	8	2	2	2	2	3	8	2	2	2	2	3	
12	Dust	Dust will be generated during the construction of the proposed development	-2	-1	-2	-2	-2	-2	-1	-1	-2	-1	-1	-2	
13	Visual	Site may be not aesthetic amid natural background.	-4	-1	-2	-2	-2	-3	-4	-1	-2	-1	-1	-2	
14	Traffic	Increase in trucks slowing down and turning to enter/ Construction area.	-2	-1	-2	-2	-2	-2	-2	-1	-2	-1	-1	-1	
15	Noise	Noise will be generated during the construction phase.	-2	-1	-2	-1	-1	-2	-2	-1	-2	-1	-1	-2	
<b>OPERATIONAL PHASE</b>															
16	Freshwater Resources	Soil and rubble washing down the drainage line	-8	-2	-2	-2	-2	-3	-2	-2	-2	-2	-2	-2	
17	Archaeological Resources	No archaeological, historical, or cultural sites were identified							1	1	1	1	1	1	
18	Socio-economic	Long-term water security							4	1	8	2	2	3	

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)
<b>CONSTRUCTION PHASE</b>					
1	<b>Freshwater Resources</b>	Soil and rubble washing down the drainage line <ul style="list-style-type: none"> <li>• Removal of the vegetation</li> <li>• Preparing the ground</li> <li>• Construction of the gabions</li> <li>• Construction of the concrete wall</li> <li>• Excavating the filter box</li> <li>• Placement of filter material</li> <li>• Removal of excavated soil</li> <li>• Clean-up, levelling and landscaping</li> </ul>	High (Negative)	<ul style="list-style-type: none"> <li>• Preserve drainage lines as much as possible</li> <li>• Preserve buffer zones as much as possible</li> <li>• Prevent loose soil and sediments from moving down the drainage line along with storm water</li> <li>• Limit the footprint</li> </ul>	Low (Negative)
2	<b>Botanical</b>	Special habitats: Potential impact on special habitats (e.g. true quartz or "heuweltjies")	Insignificant	The following mitigation actions should be implemented to ensure that the proposed development does not pose a significant threat to the environment: <ul style="list-style-type: none"> <li>• All construction must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP), which must be developed by a suitably experienced Environmental Assessment Practitioner. • A suitably qualified Environmental Control Officer must be appointed to monitor the <b>construction phase</b> in terms of the EMP and any other conditions pertaining to specialist studies.</li> <li>• Before any work is done the footprint and access roads must be clearly demarcated. The demarcation must aim at minimum footprint and minimisation of disturbance.</li> </ul>	Insignificant
3		Land-use and Cover: Possible impact on socio-economic activities	Insignificant		Insignificant
4		Vegetation Status: Loss of vulnerable or endangered vegetation and associated habitat.	Insignificant		Insignificant

APPENDIX F – IMPACT ASSESSMENT



5	<b>Botanical</b>	Conservation Priority Areas: Possible impact on Protected areas, CBA, ESA or centres of endemism.	Low (Negative)	<ul style="list-style-type: none"> <li>Once the footprint area has been finalized (before construction commences) the “Search &amp; Rescue” recommendations given in Table 10 must be implemented.</li> <li>Access roads should remain twee-spoor tracks (not accessible to the public) and should not be scraped (where-ever possible). • A Northern Cape Nature Conservation Act permit must be obtained for the “Search &amp; Rescue” and other impacts on the protected species listed in Table 10 species.</li> <li>All alien invasive species within the footprint and its immediate surroundings must be removed responsibly.                             <ul style="list-style-type: none"> <li>Care must be taken with the eradication method to ensure that the removal does not impact or lead to additional impacts (e.g., spreading of the AIP due to incorrect eradication methods);</li> <li>Care must be taken to dispose of alien plant material responsibly.</li> </ul> </li> <li>Indiscriminate clearing of any area outside of these footprints may not be allowed.</li> <li>An integrated waste management approach must be implemented during construction.                             <ul style="list-style-type: none"> <li>Construction related general and hazardous waste may only be disposed of at approved waste disposal sites.</li> </ul> </li> </ul>	Low (Negative)
6		Connectivity: Possible loss of ecological migration corridors.	Low (Negative)		Low (Negative)
7		Protected & endangered plant species: Potential impact on threatened or protected plant species.	Low (Negative)		Insignificant
8		Fauna & Avi-fauna Potential impact on mammals, reptiles, amphibians & birds.	Low (Negative)		Insignificant
9	<b>Palaeontological resources</b>	Destruction of Fossil Heritage.	Medium (Negative)	<p>If the development uncovers archaeological material, mitigation through assessment and collection is possible.</p> <ul style="list-style-type: none"> <li>If a chance find is made the person responsible for the find must immediately <b>stop working</b> and all work that could impact that finding must cease in the immediate vicinity of the find.</li> <li>The person who made the find must immediately <b>report</b> the find to his/her direct supervisor, which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.</li> </ul>	Low (Negative)

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10	<b>Archaeological resources</b>	No archaeological, historical, or cultural sites were identified	Low (Negative)	If the development uncovers archaeological material, mitigation through assessment and collection is possible.	Low (Positive)
11	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)
12	Dust	Dust will be generated during the construction of the proposed development	Low (Negative)	The following mitigation measures must be implemented: <ul style="list-style-type: none"> <li>- Stockpiled material must be covered with a plastic sheet, tarp or similar in windy conditions;</li> <li>- A water cart must be used on utilized roads to reduce construction-related dust generation;</li> <li>- 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;</li> <li>- Sprinklers may need to be installed to reduce the generation of dust by construction activities.</li> </ul>	Low (Negative)
13	Visual	Site may not be aesthetic amid natural background.	Low (Negative)	This impact cannot be avoided. Mitigation measures as per the EMP	Low (Negative)
14	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: <ul style="list-style-type: none"> <li>- The site must be made easily accessible to all construction traffic travelling along main routes;</li> <li>- 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.</li> </ul>	Very Low (Negative)
15	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: <ul style="list-style-type: none"> <li>- 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;</li> <li>- All construction vehicles must be fitted with standard silencers. All silencers must be maintained. All machinery used on site must have suppressors.</li> <li>- Working hours must be limited to and strictly adhered to standard daylight working hours (08h00-17h00).</li> </ul>	Low (Negative)

OPERATION PHASE					
16	Freshwater	Soil and rubble washing down the drainage line. <ul style="list-style-type: none"> <li>• Maintenance of the gabions</li> <li>• Maintenance of the submersible pump in the borehole</li> <li>• Replacement of the filter material in the catchpit, if necessary</li> </ul>	Low (Negative)	- Prevent loose soil and sediments from moving down the drainage line along with stormwater.	Low (Negative)
17	<b>Archaeological resources</b>	No archaeological, historical, or cultural sites were identified	Low (Positive)	-	
18	Socio-economic	Long-term water security	Low - Medium (Positive)		