

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.

APPENDIX F – IMPACT ASSESSMENT



SIGNIFICANCE CRITERIA	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. 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 2 - 15 years. Impact is reversible but only with on-going mitigation	Short-term / temporary The impact is expected to be temporary or last for a relatively short time with rehabilitation expected to be <2years. The impact is 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

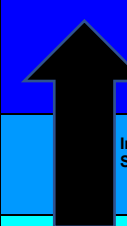


Table 1: Environmental Significance Rating Methodology (rating criteria and significance key)

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	Biodiversity	Flora, Potential impact on threatened or protected plant species.	Medium-Low (Negative)	Three (3) species protected in terms of the NCNCA were observed within the footprint, see below mitigation recommendations (Refer to Table 1). Table 1: Northern Cape protected plant species with impact minimisation recommendations. <table><tr><th>NO.</th><th>SPECIES NAME</th><th>COMMENTS</th><th>RECOMMENDATIONS</th></tr><tr><td>1.</td><td><i>Aloinopsis spathulata</i> Schedule 2 protected. (All plants in this Family)</td><td>Several individuals observed, seemingly restricted to the rockier northeastern part of the study area This is a range restricted but locally common species with a red-list status of Least Concern.</td><td>Search & rescue It is recommended that all individuals within the footprint areas are transplanted to areas that will not be disturbed (within the same property). A NCNCA Permit application must be obtained for the impacts on this species.</td></tr><tr><td>2.</td><td><i>Cleretum cf. lyratifolium</i> Schedule 2 protected. (All plants in this Family)</td><td>Occasionally observed and seemingly restricted to the rockier northeastern part of the study area This is a range restricted but locally common species with a red-list status of Least Concern.</td><td>No Search & rescue proposed. Topsoil should be re-used for the rehabilitation of disturbed areas, which will allow for seed store protection). A NCNCA Permit application must be obtained for the impacts on this species.</td></tr><tr><td>3.</td><td><i>Brunsvigia cf. bosmaniae</i> Schedule 2 protected (All plants in this Family)</td><td>The occasional bulb (leaves only) were observed. This is a widespread and common species with a red-list status of Least Concern</td><td>Search & rescue It is recommended that all bulbs of the Amaryllidaceae observed within the footprint areas are transplanted to areas that will not be disturbed (within the same property). A NCNCA Permit application must be obtained for the impacts on this species.</td></tr></table>	NO.	SPECIES NAME	COMMENTS	RECOMMENDATIONS	1.	<i>Aloinopsis spathulata</i> Schedule 2 protected. (All plants in this Family)	Several individuals observed, seemingly restricted to the rockier northeastern part of the study area This is a range restricted but locally common species with a red-list status of Least Concern.	Search & rescue It is recommended that all individuals within the footprint areas are transplanted to areas that will not be disturbed (within the same property). A NCNCA Permit application must be obtained for the impacts on this species.	2.	<i>Cleretum cf. lyratifolium</i> Schedule 2 protected. (All plants in this Family)	Occasionally observed and seemingly restricted to the rockier northeastern part of the study area This is a range restricted but locally common species with a red-list status of Least Concern.	No Search & rescue proposed. Topsoil should be re-used for the rehabilitation of disturbed areas, which will allow for seed store protection). A NCNCA Permit application must be obtained for the impacts on this species.	3.	<i>Brunsvigia cf. bosmaniae</i> Schedule 2 protected (All plants in this Family)	The occasional bulb (leaves only) were observed. This is a widespread and common species with a red-list status of Least Concern	Search & rescue It is recommended that all bulbs of the Amaryllidaceae observed within the footprint areas are transplanted to areas that will not be disturbed (within the same property). A NCNCA Permit application must be obtained for the impacts on this species.	Low (Negative)
NO.	SPECIES NAME	COMMENTS	RECOMMENDATIONS																		
1.	<i>Aloinopsis spathulata</i> Schedule 2 protected. (All plants in this Family)	Several individuals observed, seemingly restricted to the rockier northeastern part of the study area This is a range restricted but locally common species with a red-list status of Least Concern.	Search & rescue It is recommended that all individuals within the footprint areas are transplanted to areas that will not be disturbed (within the same property). A NCNCA Permit application must be obtained for the impacts on this species.																		
2.	<i>Cleretum cf. lyratifolium</i> Schedule 2 protected. (All plants in this Family)	Occasionally observed and seemingly restricted to the rockier northeastern part of the study area This is a range restricted but locally common species with a red-list status of Least Concern.	No Search & rescue proposed. Topsoil should be re-used for the rehabilitation of disturbed areas, which will allow for seed store protection). A NCNCA Permit application must be obtained for the impacts on this species.																		
3.	<i>Brunsvigia cf. bosmaniae</i> Schedule 2 protected (All plants in this Family)	The occasional bulb (leaves only) were observed. This is a widespread and common species with a red-list status of Least Concern	Search & rescue It is recommended that all bulbs of the Amaryllidaceae observed within the footprint areas are transplanted to areas that will not be disturbed (within the same property). A NCNCA Permit application must be obtained for the impacts on this species.																		
2		Potential impact on Fauna and Avi-Fauna	Low (Negative)	The DFFE Screening report identifies the Animal Species theme as Medium Sensitive as a result of the potential impact on one sensitive bird (Ludwig’s bustard), one sensitive insect (The James blue butterfly) and one sensitive mammal (the riverine rabbit). However, due to the small development footprint and distance from any feasible watercourses, this has been confirmed as a Low Sensitivity in the Terrestrial Biodiversity Compliance Statement (Appendix D1).	Low (Negative)																
3		Potential impact on protected areas, CBAs, ESAs, SANParks NPAES or Centres of Endemism.	Medium-Low (Negative)	The site visit confirmed as per the Terrestrial Biodiversity Compliance Statement (Appendix D1), that the proposed development will only impact on one vegetation type, namely, Roggeveld Shale Renosterveld and this is a vegetation type that is not categorised as Vulnerable or Endangered. The proposed site overlaps a CBA in terms	Low (Negative)																

APPENDIX F1 – 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)
				of the SANBI BGIS. However, the proposed site does not overlap CBA in terms of the Northern Cape CBA map (2024) or on an NPAES focus areas according to the June 2025 update of the SANParks PAES map. However, the study area is located in the Hantam-Roggeveld Centre of endemism. From a terrestrial biodiversity viewpoint, the following recommendations should be considered: – A suitably qualified Environmental Control Officer (ECO) should be appointed to oversee the final placement and construction phase of the project. – The 3 telescope building sites should be located as close to the existing access road as possible, to minimize the impact of additional access roads (Refer to the updated layout plan - Figure 9 of the Terrestrial Biodiversity Compliance Statement (Appendix D1), which addresses the findings of this study as well as recommendations from a freshwater perspective). – The area marked in green in Figure 9 of the Terrestrial Biodiversity Compliance Statement (Appendix D1), should be avoided, if possible. – Before construction, the topsoil should be removed from the areas that will be impacted by the construction of the telescope buildings. – Topsoil should be removed to a depth of 15cm – 20 cm (which should include most of the smaller bulb species as well as its indigenous plant seed store). This topsoil should be used to rehabilitate disturbed areas in the immediate surroundings (the same vegetation type). – The solar panels should be placed on pedestals or frame structures, away from the ground. NB blanket clearing of these sites should be avoided if possible.	
4	Freshwater Resources	Potential impact to Freshwater resources from construction	Very Low (Negative)	The closest aquatic feature is a very faint drainage line located more than 100m away to the northwest. The proposed development will therefore not cause any measurable effect on the aquatic environment, according to the Freshwater Compliance Statement (Appendix D2).	Very Low (Negative)
5	Archaeological and Heritage Resource	Potential impact on ESA, MSA and LSA pieces, Graves or any sites of human settlement or activity	Very Low (Negative)	It is unlikely that the site contains any archaeological or heritage resources, as the site is dominated by sand and a bit of sandstone. No mitigation is recommended, but the EMPr must be referred to in the unlikely event of any heritage resources being encountered.	Very Low (Negative)
6	Palaeontology	Potential impact Palaeontology resources	Low (Negative)	The DFFE Screening report gives the Palaeontological theme a Very High Sensitivity rating. However, the Palaeontological Impact Statement (Appendix D3), confirms the sensitivity as Low. The following recommendations pertain to the palaeontological significance of the site:	Very Low (Negative)

Nature of Impact			Impact Assessment Ranking and Proposed Mitigation		
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				- Training of accountable supervisory personnel by a qualified palaeontologist in the recognition of fossil heritage is necessary. - If Palaeontological Heritage is uncovered during surface clearing and excavations, the Chance Find Protocol attached should be implemented immediately. Fossil discoveries ought to be protected and the ECO/site manager must report to South African Heritage Resources Agency (SAHRA) so that mitigation (recording and collection) can be carried out. - Before any fossil material can be collected from the development site, the specialist must apply for and obtain a collection permit from SAHRA. Fossil material must be housed in an official collection (museum or university) and all reports and fieldwork must meet the minimum standards for palaeontological impact studies proposed by SAHRA (2012). - These recommendations should be incorporated into the Environmental Management Plan for the proposed development.	
7	Socio-economic	Creation of short- and long-term employment opportunities.	Very Low (Negative)	The construction of the remote observatory 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)
8	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).	Very Low (Negative)
9	Dust	Dust will be generated during the construction of the proposed development.	Low (Negative)	The following mitigation measures must be implemented: - Stockpiled material must be covered with a plastic sheet, tarp or similar material in windy conditions; - A water cart should be used to spray roads to reduce construction-related dust - Sprinklers may need to be installed to reduce the generation of dust by construction activities.	Very Low (Negative)

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OPERATIONAL PHASE					
10	Visual	Potential light pollution and visually, the site may not look aesthetically appealing amid natural background.	Medium (Negative)	Dark-Sky & Visual Protection - Roll-off roofs to keep building height low and eliminate shiny domes. - Exterior lighting: full-cut-off 2 700 K LEDs on motion sensors; disabled during imaging. - All finishes are matte earth tones; fencing is colour-matched, minimising daytime visibility.	Low (Negative)
11	Socio-economic	Increase employment opportunities	Low (Positive)	The operation of the remote observatory 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	Increased ambient dust	Low (Negative)	Dust to be suppressed by compacted gravel; no concrete drains—only shallow swales that mimic natural infiltration.	Very Low (Negative)

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NO-GO ALTERNATIVE					
10	Socio-economic	No creation of short- and long-term employment opportunities.	Low (Negative)	No mitigation, the development would not occur and thus no job opportunities would be created	Low (Negative)
11	Environmental impacts	Environmental impacts	None	No mitigation, the site would remain in its current state	None