

ECOLOGICAL OPINION LETTER: PROPOSED COLESKOP INFRASTRUCTURE DEVELOPMENT, EASTERN AND NORTHERN CAPE PROVINCES (DEFF REFERENCE NUMBER: 14/12/16/3/3/1/2039)

1. PROJECT DESCRIPTION

Coleskop Wind Power (the Applicant), a subsidiary of EDF Renewables (Pty) Ltd, is proposing the development of infrastructure, associated with the Coleskop Wind Energy Facility (WEF), near Noupport and Middelburg in the Pixley Ka Seme District Municipality (Northern Cape Province) and the Chris Hani District Municipality (Eastern Cape Province). The affected properties include the Remaining Extent (RE), Portion 2, Portion 7 and Portion 8 of Uitzicht (Farm 3), the RE of Elands Kloof (Farm 135) and the RE of Winterhoek (Farm 118).

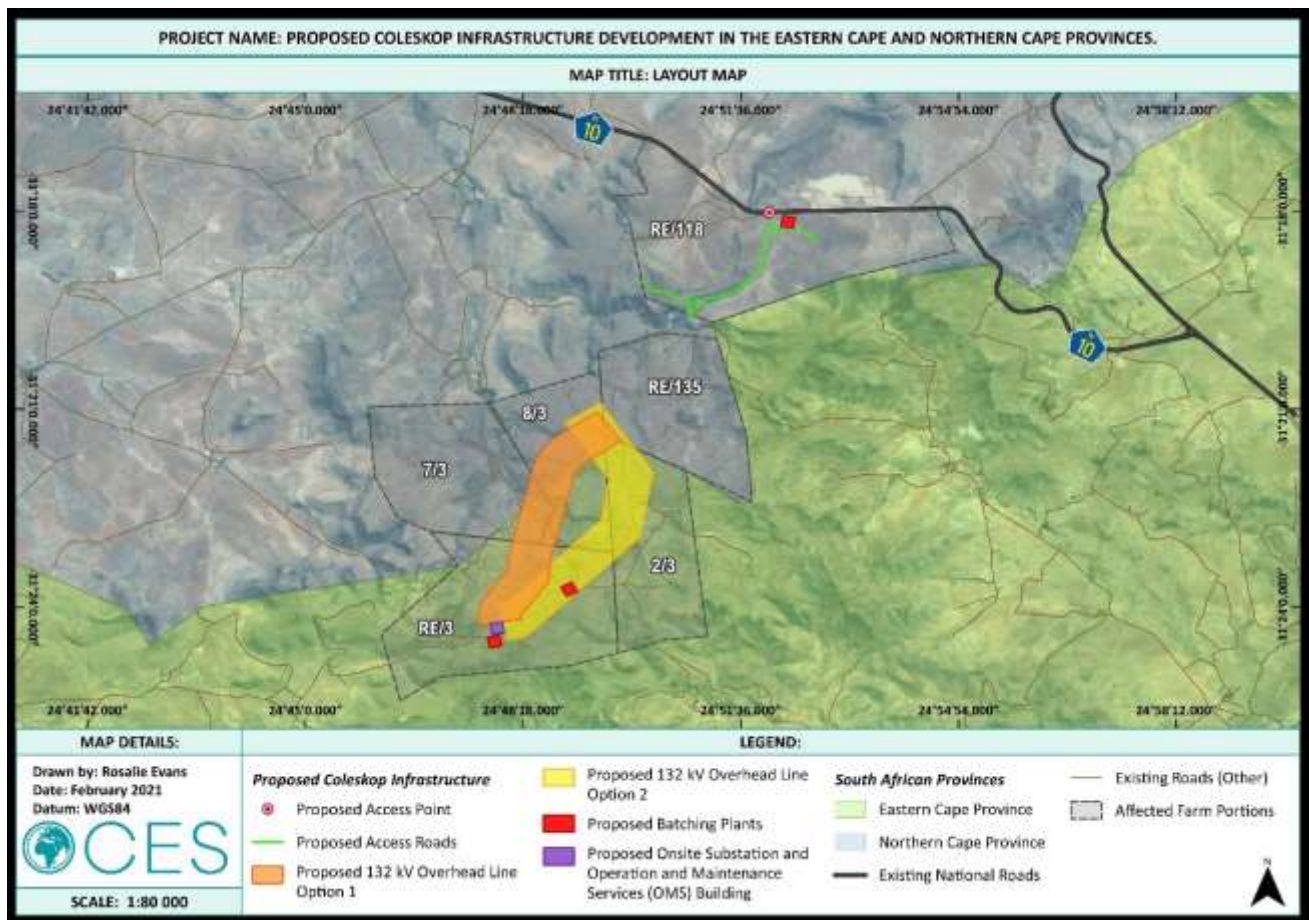


Figure 1: Layout Map of the proposed Coleskop Infrastructure Development.



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The proposed Coleskop Infrastructure Development includes the following:

- Creating a new access point and upgrading existing jeep tracks and farm roads. The greenfields portion to create new access road routes is approximately 5.7 km in length. These roads will be expanded to 12 m in width during the construction phase and rehabilitated to 5 m in width during the operational phase;
- The construction of three (3) concrete batching plants, temporary laydown areas and construction areas. Each will consist of a concrete and/or steel batching plant of approximately 11 250 m², a temporary laydown area of approximately 22 500 m² and a construction compound area of approximately 11 250 m². The combined total area to be cleared for these three (3) concrete batching plants, temporary laydown areas and construction areas is approximately 135 000 m² (13.5 ha);
- The construction of electrical infrastructure which includes an Operation and Maintenance Services (OMS) building of up to 60 m x 60 m, requiring the clearance of up to 3 600 m² (0.36 ha); and
- Two (2) 500 m corridor alternatives for the construction of a 132 kV overhead line of approximately 7.6 km in length, which will be routed from the onsite Coleskop 33 kV/132 kV Substation (22 500 m²) to the MTS Substation (authorised). This will include a double circuit, twin Tern 132 kV conductor. The overhead line will connect the proposed infrastructure to the existing electrical grid.

A comprehensive site visit and Ecological Impact Assessment Report was undertaken and compiled for the Coleskop Wind Energy Facility (CES, 2015/18). This Ecological Opinion Letter relates specifically to the proposed Coleskop Infrastructure Development and provides updated information pertaining to the vegetation types, biodiversity priority areas and surface water features of the project area based on the latest documents/plans, including:

- The South African Vegetation Map (SA VEGMAP) (Mucina *et al.*, 2018);
- The National Biodiversity Assessment (NBA) (SANBI, 2018);
- The Eastern Cape Biodiversity Conservation Plan (ECBCP, 2019);
- The Northern Cape Critical Biodiversity Areas (NC CBA, 2016); and
- The National Freshwater Ecosystem Priority Areas (NFEPA, 2011).

2. TERMS OF REFERENCE

The following terms of reference were used for the objectives of this study:

- Describe the study site in terms of the vegetation types, biodiversity priority areas (including Ecological Support Areas and Critical Biodiversity Areas) and surface water features.
- Produce a sensitivity map that illustrates areas with significant development constraints.



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- Describe the likely scope, scale and significance of direct and indirect positive and negative impacts resulting from the proposed Coleskop Infrastructure Development both in terms of the footprint and the immediate surrounding area during construction and operation, as well as the no-go option, while taking into consideration the impacts identified in the original Ecological Impact Assessment (CES, 2015/18) for the Coleskop WEF.
- Provide a detailed description of appropriate mitigation measures that could be adopted to reduce negative impacts for each phase of the project, where required.

3. BIOPHYSICAL DESCRIPTION

3.1 Vegetation and Floristics – SA VEGMAP (Mucina *et al.*, 2018)

The South African Vegetation Map (SA VEGMAP) of 2018 is an important resource for biodiversity monitoring and conservation management in South Africa. The map provides a detailed description of each of South Africa's unique vegetation types along with a comprehensive list of the important species associated with each, including endemic and biologically important species.

According to the SA VEGMAP (2018) the proposed Coleskop Infrastructure Development occurs within two biomes, namely the Nama-Karoo Biome and the Grassland Biome. The vegetation types of the study area include Besemkaree Koppies Shrubland and Eastern Upper Karoo Vegetation. These findings are in line with the original Ecological Report compiled for the Coleskop Wind Energy Facility (CES, 2018). In terms of the National Biodiversity Assessment (NBA, 2018), the conservation status of both vegetation types is classified as Least Concern.

3.2 Biodiversity Indicators

3.2.1 Eastern Cape Biodiversity Conservation Plan (ECBCP, 2019)

The ECBCP (2019) replaces the ECBCP (2007) in its entirety and provides a map of important biodiversity areas, outside of the Protected Areas network, which must be used to inform land use and resource-use planning and decision making. The objectives of the ECBCP (2019) are to:

- 1) Identify the minimum spatial requirements needed to maintain a living landscape that continues to support all aspects of biodiversity and retain/maintain essential ecological infrastructure. This is achieved through the selection of areas, based on achieving targets, which represent important biodiversity pattern AND ecological processes;
- 2) Serve as the primary source of biodiversity information for land use planning and decision-making; and
- 3) Inform conservation and restoration action in important biodiversity areas.



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The aim of the ECBCP (2019) was to map biodiversity priority areas through a systematic conservation planning process. The main outputs of the ECBCP include Protected Areas (PA), Critical Biodiversity Areas (CBA), Ecological Support Areas (ESA), Other Natural Areas (ONA) and No Natural Habitat Remaining (NNR) for both terrestrial and aquatic ecosystems.

The ECBCP (2019) has been adopted by DEDEAT as a systematic biodiversity plan for the Eastern Cape Province. According to the ECBCP (2019), both alternatives for the proposed 132kV Overhead Line occur within a terrestrial CBA 1 and CBA2. The selection of these CBAs is based on the need to conserve a representative portion of these ecosystems to achieve national targets. However, only the southern end portion of the 132kV Overhead Line **Alternative 1** occurs within a CBA 1 while the remainder of the development footprint occurs within a CBA 2. In comparison, the 132kV Overhead Line **Alternative 2** covers more of an area classified as a CBA 1. Both 132kV Overhead Line **Alternative 1** and **Alternative 2** traverses an area classified as an aquatic ESA 1. According to the ECBCP (2019) Handbook, aquatic ESAs extend into catchments that are essential for the maintenance of CBA rivers and wetlands.

According to the ECBCP 2019 Handbook, the following management objectives apply to CBAs and ESAs:

Table 1: Management objectives for identified biodiversity priority areas (ECBCP, 2019).

CBA MAP CATEGORY	MANAGEMENT OBJECTIVES
<p style="text-align: center;">CBA 1</p>	<p>Maintain in a natural state (or near-natural state if this is the current condition of the site) that secures the retention of biodiversity pattern and ecological processes:</p> <p>For areas classified as CBA1, the following objectives must apply:</p> <ul style="list-style-type: none"> • Ecosystem and species must remain intact and undisturbed; • Since these areas demonstrate high irreplaceability, if disturbed or lost, biodiversity targets will not be met; • Important: these biodiversity features are at, or beyond, their limits of acceptable change. <p>If land use activities are unavoidable in these areas and depending on expert opinion of the condition of the site, a Biodiversity Offset must be designed and implemented.</p>
<p style="text-align: center;">CBA 2</p>	<p>Maintain in natural (or near-natural state if this is the current condition of the site) that secures the retention of biodiversity pattern and ecological processes:</p> <p>For areas classified as CBA2, the following objectives must apply:</p> <ul style="list-style-type: none"> • Ecosystem and species must remain intact and undisturbed; • There is some flexibility in the landscape to achieve biodiversity targets in these areas. It must be noted that the loss of a CBA2 area may elevate other CBA 2 areas to a CBA 1 category. • These biodiversity features are at risk of reaching their limits of acceptable change. <p>If land use activities are unavoidable in these areas, and depending on the condition of the site, set-aside areas must be designed in the layout and implemented. If site specific data</p>

	confirms that biodiversity is significant, unique and/or highly threatened or that a Critically Endangered or Endangered species is present, Biodiversity Offsets must be implemented.
ESA 1	<p>Maintain ecological function within the localised and broader landscape. A functional state in this context means that the area must be maintained in a semi-natural state such that ecological function and ecosystem services are maintained.</p> <p>For areas classified as ESA1, the following objectives apply:</p> <ul style="list-style-type: none"> • These areas are not required to meet biodiversity targets, but they still perform essential roles in terms of connectivity, ecosystem service delivery and climate change resilience. • These systems may vary in condition and maintaining function is the main objective, therefore: <ul style="list-style-type: none"> → Ecosystems still in natural, near natural state should be maintained. → Ecosystems that are moderately disturbed/degraded should be restored.

3.2.2 Northern Cape Critical Biodiversity Areas (NC CBA, 2016)

The Northern Cape Critical Biodiversity Area (NC CBA, 2016) Map provides an updated and revised systematic biodiversity plan for the Northern Cape Province. It identifies and maps biodiversity priority areas, including CBAs, Ecological Support Areas (ESAs), Protected Areas (Pas), and Other Natural Areas (ONAs), through a Systematic Conservation Planning Approach. The plan provides important information on the minimum spatial requirements for the persistence of a viable representative sample of all ecosystem types and species required in order to ensure the maintenance of ecological functioning and landscapes as a whole.

According to the NC CBA (2016), the proposed Coleskop Infrastructure Development occurs within a terrestrial CBA 1 and CBA 2. However, the 132kV Overhead Line **Alternative 1** covers the largest area classified as a CBA 1, while the 132kV Overhead Line **Alternative 2** covers a smaller area of a CBA 1. Both the northern portions of 132kV Overhead Line **Alternative 1** and 132kV Overhead Line **Alternative 2** occur within a terrestrial CBA 2. The remaining infrastructure, including roads and the northern most batching plant, occur within a terrestrial CBA 2.

3.3 Surface Water Features

The project area occurs within the D32C Quaternary Catchment of the Orange Water Management Area (WMA 6). Both the 132kV Overhead Line **Alternative 1** and **Alternative 2** traverse a NFEPA (2011) and NBA (2018) unnamed river classified as Class C: Moderately Modified, as well as a number of its tributaries. The unnamed river is a Code 4 FEPA River suggesting the river forms part of an 'upstream management area'. The 132kV Overhead Line **Alternative 1** occurs within the regulatory buffers of six (6) NFEPA (2011) wetlands, of which 5 are classified as artificial, while the 132kV Overhead Line **Alternative 2** occurs within the regulatory buffer of nine (9) NFEPA (2011) wetlands, of which seven (7) are classified as artificial.



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4. SITE SENSITIVITY

The proposed site has been mapped in terms of the ecological sensitivity (Figure 2). The sensitivity ratings and reasons therefore have been provided below and are based on those specified in the original Ecological Impact Assessment (CES, 2015/18) compiled for the Coleskop WEF. The recommended mitigation measures that need to be implemented in order to minimise the ecological impacts of the development are described in Section 5 below.

Areas of **high sensitivity** include:

- Process areas such as rivers, tributaries and wetlands which are important for ecosystem functioning;
- 20 m buffers on all rivers and tributaries for the protection of riparian vegetation and ecosystem functioning;
- 50 m buffers on all NFEPA wetlands for the protection of riparian vegetation and ecosystem functioning; and
- Areas classified as CBA 1 (NC CBA, 2016 and ECBCP, 2019) which are likely to contain SCC.

* It should be noted that SCC are considered highly sensitive. As such, infrastructure that can be slightly shifted to avoid SCC is preferred. Where this is not feasible, the relevant permits will need to be obtained in order to relocate or remove these species. A ground-truthing exercise and floral Search and Rescue must be undertaken prior to vegetation clearance and all mitigation measures as specified in this report are applicable to these areas.

Areas of **moderate sensitivity** include:

- 100 m regulatory (DWS) buffers on all rivers and tributaries;
- 500 m regulatory (DWS) buffers on all wetlands; and
- Areas classified as CBA 2 (NC CBA, 2016 and ECBCP, 2019) which might contain SCC.

Areas of **low sensitivity** include:

- Transformed areas such as roads and urban areas; and
- Highly degraded areas which are unlikely to support SCC.

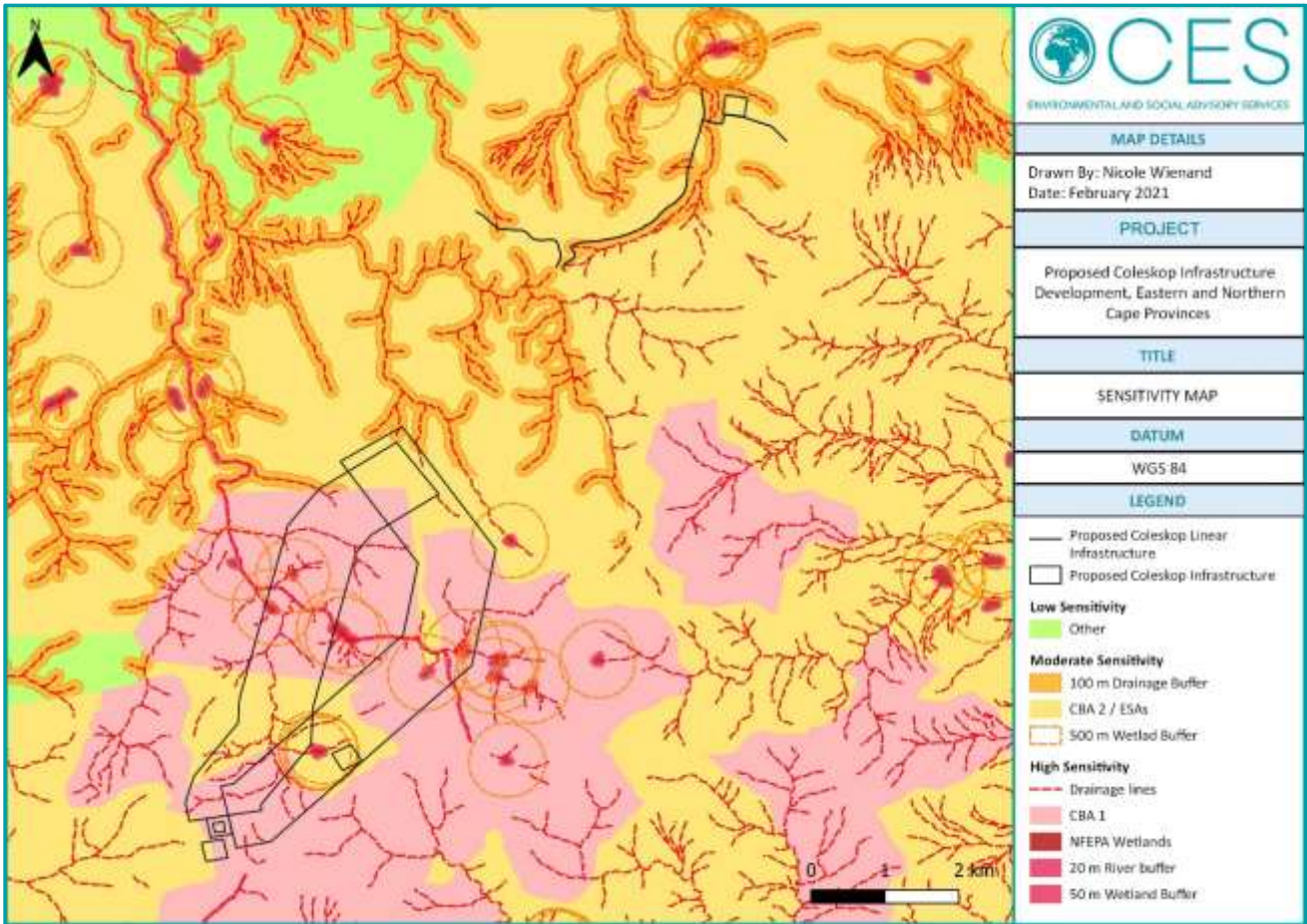


Figure 2: Sensitivity Map for the proposed Coleskop Infrastructure Development.

5. IMPACT IDENTIFICATION AND ASSESSMENT

The previous Ecological Impact Assessment that was undertaken for the Coleskop WEF (CES, 2015/18) together with the findings of this Ecological Opinion Letter provides the necessary information in order to assess the impacts of the proposed Coleskop Infrastructure Development on the ecology of the area at the appropriate spatial and temporal scales. The impacts identified and described in the Section below have been assessed in terms of the criteria described in Appendix A of this report.

PLANNING AND DESIGN PHASE

IMPACT 1: LEGAL AND POLICY COMPLIANCE

Cause and Comment: *All Alternatives:* Failure to obtain and adhere to the necessary permits and/or authorisations, as well as failure to adhere to existing policies and legal obligations relating to the ecological environment, could lead to the project conflicting with local, provincial and national policies, legislation, etc. This could result in a lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.

No-Go Alternative: The no-go alternative will not result in any conflict with local, provincial, and/or national policies, legislation, etc.

Mitigation Measures:

- All necessary permitting and authorisations must be obtained prior to the commencement of any construction activities;
- A suitably qualified Environmental Control Officer (ECO) must be appointed prior to the commencement of the construction phase;
- Ensure that all relevant legislation and policy is consulted and further ensure that the project is compliant with such legislation and policy; and
- Planning for the construction and operation of the proposed development should consider available best practice guidelines.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct & Indirect	Long-Term	Regional/National	Severe	May Occur	HIGH NEGATIVE (-)	Reversible	Resource will be lost	Achievable	LOW NEGATIVE (-)
No-Go Alternative	<i>Not Applicable</i>									

CONSTRUCTION PHASE

IMPACT 2: LOSS OF NATURAL VEGETATION DUE TO VEGETATION CLEARING																																											
<p>Cause and Comment: <i>All Alternatives:</i> Vegetation clearance for the construction of the proposed Coleskop Infrastructure Development will result in the direct loss of indigenous vegetation, including Besemkaree Koppies Shrubland and Eastern Upper Karoo Vegetation.</p> <p><i>No-Go Alternative:</i> The no-go alternative has been classified as Low Negative as vegetation has already been lost due to the clearance of vegetation for access roads.</p>																																											
<p>Mitigation Measures:</p> <ul style="list-style-type: none"> → The clearance of vegetation at any given time should be kept to a minimum and vegetation clearance must be strictly limited to the development footprint; → Employees must be prohibited from making fires and harvesting plants; → As far as practically possible, existing access roads should be utilised; → The development footprint/construction area must be demarcated to prevent encroachment of construction activities into surrounding areas; → Ensure that roads on slopes incorporate storm water diversion; → Where possible, reserve and store natural vegetation for re-vegetation post construction; → Only indigenous plant species must be used for rehabilitation purposes; → Topsoil must be carefully removed and used to rehabilitate the site. 																																											
<p>Significance Assessment:</p> <table border="1"> <thead> <tr> <th>Impact</th> <th>Nature</th> <th>Duration</th> <th>Extent</th> <th>Severity</th> <th>Likelihood</th> <th>Significance Before Mitigation</th> <th>Reversibility</th> <th>Irreplaceable Loss</th> <th>Mitigation Potential</th> <th>Significance After Mitigation</th> </tr> </thead> <tbody> <tr> <td>All Alternatives</td> <td>Direct</td> <td>Permanent</td> <td>Study Area</td> <td>Moderate</td> <td>Definite</td> <td style="background-color: #f4a460;">MODERATE NEGATIVE (-)</td> <td>Irreversible</td> <td>Resource will be lost</td> <td>Achievable</td> <td style="background-color: #668099; color: white;">Low NEGATIVE (-)</td> </tr> <tr> <td>No-Go Alternative</td> <td>Existing</td> <td>Permanent</td> <td>Localised</td> <td>Slight</td> <td>Definite</td> <td style="background-color: #668099; color: white;">LOW NEGATIVE (-)</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>											Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation	All Alternatives	Direct	Permanent	Study Area	Moderate	Definite	MODERATE NEGATIVE (-)	Irreversible	Resource will be lost	Achievable	Low NEGATIVE (-)	No-Go Alternative	Existing	Permanent	Localised	Slight	Definite	LOW NEGATIVE (-)	N/A	N/A	N/A	N/A
Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation																																	
All Alternatives	Direct	Permanent	Study Area	Moderate	Definite	MODERATE NEGATIVE (-)	Irreversible	Resource will be lost	Achievable	Low NEGATIVE (-)																																	
No-Go Alternative	Existing	Permanent	Localised	Slight	Definite	LOW NEGATIVE (-)	N/A	N/A	N/A	N/A																																	
IMPACT 3: LOSS OF SPECIES OF CONSERVATION CONCERN (SCC)																																											
<p>Cause and Comment: <i>All Alternatives:</i> The clearance of vegetation for the construction of the proposed Coleskop Infrastructure Development could result in the loss of plant Species of Conservation Concern.</p> <p><i>No-Go Alternative:</i> The no-go alternative will not require vegetation clearance and will therefore not result in the loss of plant SCC.</p>																																											
<p>Mitigation Measures:</p>																																											

- The proposed Coleskop Infrastructure Layout must be surveyed by a qualified botanical specialist in peak flowering season, prior to construction. Where feasible, minor re-alignment should be considered to preserve the species *in situ*. Where this is not feasible, all identified SCC must be translocated to the nearest appropriate habitat, preferably a protected portion of the property;
- Permits for the removal/translocation of all SCC must be obtained prior to vegetation clearance for the construction phase; and
- In the unlikely event that a protected tree species must to be removed, a permit to do so must be attained from the Department of Agriculture, Forestry and Fisheries (DAFF).

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct/ Cumulative	Permanent	Study Area	Severe	May Occur	HIGH NEGATIVE (-)	Irreversible	Resource will be lost	Achievable	LOW NEGATIVE (-)
No-Go Alternative	Not Applicable									

IMPACT 4: DISTURBANCE OF FAUNAL SPECIES AND LOSS OF FAUNAL HABITAT

Cause and Comment: *All Alternatives:* During the construction phase, vegetation clearance and associated construction activities (including noise and vehicular movement) could result in the disturbance of faunal species and the subsequent movement of species out of the area. Additionally, the loss of vegetation coincides with the loss of faunal habitat, reducing feeding, breeding and rearing locales. Faunal populations could become locally extinct or diminish in size.

No-Go Alternative: The no-go alternative will not result in the disturbance of faunal populations or the loss of faunal habitat.

Mitigation Measures:

- A faunal Search and Rescue should be conducted prior to the commencement of construction activities;
- Search and clear the area directly prior to vegetation clearance;
- Vehicle speed must be limited to 40km/hr to reduce faunal collision mortality;
- Construction activities must be restricted to the approved layout plans;
- Permit only limited construction activities before sunrise or after sunset. The ECO must be notified in this instance.
- No animal shall be killed or injured as a result of the construction of the Coleskop Infrastructure Development and presence of construction staff; and
- No hunting, baiting or trapping shall be allowed within the affected properties or surrounding properties by construction staff.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
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All Alternatives	Direct/ Indirect	Short-term	Localised	Moderate	Probable	MODERATE NEGATIVE (-)	Reversible	Resource will be lost	Achievable	LOW NEGATIVE (-)
No-Go Alternative	Not Applicable									

IMPACT 5: WILDLIFE POACHING

Cause and Comment: *All Alternatives:* During the construction phase, the increase in individuals accessing the project area for the proposed Coleskop Infrastructure Development could result in an increase in wildlife poaching.

No-Go Alternative: The no-go alternative has been classified as Low Negative as wildlife poaching has been identified as an existing impact in the project area.

Mitigation Measures:

- All individuals should sign a register prior to accessing the construction site, including construction workers;
- Construction workers must not be housed onsite;
- No animal shall be killed or injured as a result of the construction of the Coleskop Infrastructure Development and presence of construction staff;
- The appointed Environmental Control Officer (ECO) should inquire and undertake an overview inspection of the site for the evidence of snares during the construction phase;
- No hunting, baiting or trapping shall be allowed within the affected properties or surrounding properties by construction staff.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct/ Indirect	Short-term	Localised	Moderate	May Occur	MODERATE NEGATIVE (-)	Reversible	Resource will be lost	Achievable	LOW NEGATIVE (-)
No-Go Alternative	Existing	Short-Term	Localised	Slight	Definite	LOW NEGATIVE (-)	N/A	N/A	N/A	N/A

IMPACT 6: DISTURBANCE OF SENSITIVE AREAS

Cause and Comment: *All Alternatives:* During the construction phase, the construction of the proposed Coleskop Infrastructure Development, could erode and degrade watercourses and the associated riparian vegetation due to negligent construction practises.

No-Go Alternative: The no-go alternative will not result in the disturbance of sensitive areas.

Mitigation Measures:

- The relevant Water Use Authorisation (WUA) must be obtained prior to construction within the 100 m regulatory buffers of all rivers and tributaries as well as within 500 m of all identified wetlands;
- Construction must take place within the smallest possible construction footprint, where construction is required within the regulatory buffers of watercourses;
- Construction within the regulatory buffers of watercourses should take place during the dry season, where reasonable and feasible; and
- Construction within the regulatory buffers of watercourses must be followed by erosion stabilisation and re-vegetation.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct/ Indirect	Short-term	Localised	Severe	Definite	HIGH NEGATIVE (-)	Reversible	Resource will be lost	Achievable	MODERATE NEGATIVE (-)
No-Go Alternative	Not Applicable									

IMPACT 7: ESTABLISHMENT OF ALIEN PLANT SPECIES

Cause and Comment: *All Alternatives:* The removal of existing natural vegetation creates 'open' habitats which favours the establishment of undesirable vegetation in areas that are typically very difficult to eradicate which could pose a threat to surrounding ecosystems. Failure to successfully rehabilitate land to its natural state will exacerbate this impact.

No-Go Alternative: The no-go alternative has the risk of alien plant species establishment in the absence of the Coleskop Infrastructure Development.

Mitigation Measures:

- An Alien Vegetation Management Plan must be compiled and implemented during the Construction Phase.
- A Rehabilitation Management Plan must be compiled and implemented during the Construction Phase.
- Any alien vegetation which establishes during the construction phase should be removed from site and disposed of at a registered waste disposal site. Continuous monitoring for seedlings should take place throughout the construction phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct/ Indirect	Long-Term	Localised	Moderate	Probable	MODERATE NEGATIVE (-)	Reversible	Resource will be lost	Achievable	LOW NEGATIVE (-)



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No-Go Alternative	Existing	Long-Term	Localised	Moderate	Definite	MODERATE NEGATIVE (-)	N/A	N/A	N/A	N/A
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OPERATIONAL PHASE

IMPACT 8: ESTABLISHMENT OF ALIEN PLANT SPECIES

Cause and Comment: *All Alternatives:* During the operational phase, failure to remove and manage alien vegetation during construction could result in the permanent establishment of alien vegetation in the study area. Failure to successfully rehabilitate land to its natural state will exacerbate this impact and could lead to the permanent degradation of ecosystems as well as allow invasion by alien plant species.

No-Go Alternative: The no-go alternative has the risk of alien plant species establishment in the absence of the Coleskop Infrastructure Development.

Mitigation Measures:

- The Alien Vegetation Management Plan must be compiled and implemented to prevent the establishment and the spread of undesirable alien plant species during the Operational Phase.
- Monitoring of the establishment of alien seedlings should continue throughout the operational phase. Any alien seedlings should be removed and disposed of at a registered landfill.
- A Rehabilitation Management Plan must be compiled and implemented during the Operational Phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct/ Indirect	Long-Term	Localised	Moderate	May Occur	MODERATE NEGATIVE (-)	Reversible	Resource will be lost	Achievable	LOW NEGATIVE (-)
No-Go Alternative	Existing	Long-term	Localised	Moderate	Definite	MODERATE NEGATIVE (-)	N/A	N/A	N/A	N/A

IMPACT 9: IMPACTS OF NOISE AND LIGHTING ON FAUNAL POPULATIONS

Cause and Comment: *All Alternatives:* During the operational phase, noise and lighting associated with the proposed Coleskop Infrastructure Development (including maintenance activities) could cause a disturbance to surrounding faunal populations within the project area.

No-Go Alternative: The no-go alternative will not result in an increase in noise and lighting.

Mitigation Measures:

- Regular maintenance and checks of the infrastructure must be undertaken to ensure that infrastructure is within regulated/standard noise limits;
- Minimise access to the site; and
- Where possible, external lighting should be avoided.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Localised	Moderate	Probable	MODERATE NEGATIVE (-)	Reversible	Resource will be lost	Achievable	Low NEGATIVE (-)
No-Go Alternative	<i>Not Applicable</i>									

DECOMMISSIONING PHASE

IMPACT 10: INADEQUATE REHABILITATION

Cause and Comment: *All Alternatives:* The inadequate rehabilitation of the development footprint could result in unsuccessful site re-vegetation and resultant long-term ecological degradation.

No-Go Alternative: The no-go alternative will not result in environmental disturbance and will therefore not require the rehabilitation.

Mitigation Measures:

- A portion of the operational phase earnings should be set aside for costs associated with the landscaping and re-vegetation of the development footprint;
- All temporary disturbed areas that do not form part of development, must be rehabilitated using only indigenous vegetation;
- All impacted areas must be restored as per the EMP requirements; and
- A Rehabilitation Plan should be compiled and implemented during the decommissioning phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Long-Term	Localised	Moderate	May Occur	MODERATE NEGATIVE (-)	Reversible	Resource will be lost	Achievable	Low NEGATIVE (-)



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No-Go Alternative	Not Applicable
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IMPACT 11: DISTURBANCE OF FAUNAL SPECIES AND LOSS OF FAUNAL HABITAT

Cause and Comment: *All Alternatives:* Decommissioning activities (including noise and vehicular movement) could result in the disturbance of faunal species and the subsequent movement of species out of the area. Additionally, the loss of vegetation, coupled with inadequate rehabilitation, coincides with the loss of faunal habitat, reducing feeding, breeding and rearing locales. Faunal populations could become locally extinct or diminish in size.

No-Go Alternative: The no-go alternative will not result in the disturbance of faunal species and/or loss of faunal habitat.

Mitigation Measures:

- Search and clear the area directly prior to decommissioning;
- Vehicle speed must be limited to 40km/hr to reduce faunal collision mortality;
- Limit decommissioning activities before sunrise or after sunset;
- No animal shall be killed or injured as a result of the decommissioning of the Coleskop Infrastructure Development and presence of staff; and
- No hunting, baiting or trapping shall be allowed within the affected properties or surrounding properties by construction staff.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Localised	Slight	May Occur	LOW NEGATIVE (-)	Reversible	Resource will be lost	Achievable	LOW NEGATIVE (-)

No-Go Alternative	Not Applicable
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IMPACT 12: WILDLIFE POACHING

Cause and Comment: *All Alternatives:* During the decommissioning phase, the increase in individuals accessing the project area for the proposed Coleskop Infrastructure Development could result in an increase in wildlife poaching.

No-Go Alternative: The no-go alternative has been classified as Low Negative as wildlife poaching has been identified as an existing impact in the project area.

Mitigation Measures:

- All individuals should sign a register prior to accessing the site;
- Construction workers must not be housed onsite;
- No animal shall be killed or injured as a result of the decommissioning of the Coleskop Infrastructure Development and presence of construction staff;

- An ECO should be appointed for the duration of the decommissioning phase;
- The ECO should investigate the site for evidence of snares during the decommissioning phase; and
- No hunting, baiting or trapping shall be allowed within the affected properties or surrounding properties by construction staff

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
All Alternatives	Direct	Short-Term	Localised	Moderate	May Occur	MODERATE NEGATIVE (-)	Reversible	Resource will be lost	Achievable	LOW NEGATIVE (-)
No-Go Alternative	Existing	Short-Term	Localised	Slight	Definite	LOW NEGATIVE (-)	N/A	N/A	N/A	N/A

CUMULATIVE IMPACTS

Cumulative impacts are defined as those “that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impact identification process is conducted.”

To assess the cumulative impacts that the proposed Coleskop Infrastructure Development will have on the terrestrial ecology of the site, it is necessary to assess this at a broader level by looking at other developments in the area.

The cumulative impacts associated with the project will include the following:

- Loss of vegetation communities at a regional scale will be exacerbated;
- The spread of invasive alien plant species could be exacerbated;
- Habitat fragmentation and disruption of ecosystem function and process could be exacerbated.

The cumulative impact associated with the construction and operation of the proposed Coleskop Infrastructure Development, is likely to be of low significance due to the relatively small development footprint. However, to limit the impact, it is important that the Alien Invasive Management Plan is implemented, and that vegetation clearance is strictly limited to the development footprint of the Coleskop Infrastructure Development. Rehabilitation to restore ecological



function is also a key element of mitigating cumulative impacts, and it is therefore important to implement and monitor rehabilitation.

6. IMPACT STATEMENT, RECOMMENDATIONS AND CONCLUSION

The ecological impacts identified in the Ecological Impact Assessment (CES, 2015/18) for the greater Coleskop WEF were reviewed and incorporated into this report. Twelve (12) impacts associated with the proposed Coleskop Infrastructure Development were identified, nine (9) of which were identified in the original Ecological Impact Assessment (CES, 2015/18). An additional three (3) impacts were identified in this report, including *Legal and Policy Compliance* (Planning and Design Phase), *Establishment of Alien Plant Species* (Construction phase), and *Impacts of Noise and Lighting on Faunal Populations* (Operational Phase).

The majority of the impacts identified are associated with the Construction Phase of the proposed Coleskop Infrastructure Development and were classified as moderate negative, with three (3) impacts classified as high significance prior to mitigation, two (2) of which occur within the Construction Phase (Table 2). All impacts will be reduced in significance if the mitigation measures proposed in this report are implemented and adhered to. The impacts associated with the proposed Coleskop Infrastructure development are not deemed insurmountable provided the recommendations and mitigation measure identified in this report are implemented.

Table 2: Summary of all twelve (12) impacts identified for the proposed Coleskop Infrastructure Development.

IMPACT	PRIOR TO MITIGATION	POST-MITIGATION	NO-GO ALTERNATIVE
PLANNING AND DESIGN PHASE			
Impact 1: Legal and Policy Compliance	HIGH NEGATIVE (-)	LOW NEGATIVE (-)	N/A
CONSTRUCTION PHASE			
Impact 2: Loss of Natural Vegetation due to Vegetation Clearing	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	Low Negative (-)
Impact 3: Loss of Species of Conservation Concern (SCC)	HIGH NEGATIVE (-)	LOW NEGATIVE (-)	N/A
Impact 4: Disturbance of Faunal Species and Loss of Faunal Habitat	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	N/A
Impact 5: Wildlife Poaching	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	N/A
Impact 6: Disturbance of Sensitive Areas	HIGH NEGATIVE (-)	MODERATE NEGATIVE (-)	N/A
Impact 7: Establishment of Alien Plant Species	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	MODERATE NEGATIVE (-)
OPERATIONAL PHASE			
Impact 8: Establishment of Alien Plant Species	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	MODERATE NEGATIVE (-)
Impact 9: Impacts of Noise and Lighting on Faunal Populations	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	N/A
DECOMMISSIONING PHASE			



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Impact 10: Inadequate Rehabilitation	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	N/A
Impact 11: Disturbance of Faunal Species and Loss of Faunal Habitat	LOW NEGATIVE (-)	LOW NEGATIVE (-)	N/A
Impact 12: Wildlife Poaching	MODERATE NEGATIVE (-)	LOW NEGATIVE (-)	LOW NEGATIVE (-)

6.1 Existing Impacts

Based on the findings of site visit undertaken for the original Ecological Impact Assessment (CES, 2015/18) for the Coleskop WEF, as well as analysis of Google Earth Imagery, the following existing impacts have been identified:

- Loss of Indigenous vegetation, and
- Establishment of alien plant species.

6.2 No-go Areas

Although no 'no-go' areas have been identified for the proposed Coleskop Infrastructure Development, process areas such as rivers, tributaries and wetlands, areas classified as CBA 1 and all plant SCC have been allocated HIGH sensitivity. The significance of the impact on these sensitive areas is moderate-low, due to the limited development footprint.

The mitigation measures and recommendations specified in this report must be rigorously implemented in these areas. It is imperative that minor realignments (where possible) are made to accommodate identified populations of SCC. In addition, a Faunal and Floral Search and Rescue be undertaken prior to any vegetation clearance and that the vegetation clearance and activities associated with the construction of the proposed Coleskop Infrastructure Development are restricted to the development footprint as indicated on approved layout maps.

6.3 Conditions of Authorisation

The following recommendations must be included in the Final EMPr and as well as the conditions of the Environmental Authorisation (EA), if granted:

- Ground-truthing of all the infrastructure areas prior to vegetation clearing. This must inform any minor re-alignments where appropriate;
- All necessary permitting and authorisations must be obtained prior to the commencement of any construction activities;
- A Faunal and Floral Search and Rescue must be undertaken prior to vegetation clearance;
- A suitably qualified ECO must be appointed prior to the commencement of the construction phase;

Coastal and Environmental Services (Pty) Ltd

T +27 41 393 0700 | F +27 86 604 8781

36 Pickering Street, Newton Park, Port Elizabeth, 6001

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www.cesnet.co.za

Directors: AM Avis.



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- An Erosion Management Plan must be developed prior to the commencement of construction activities in order to mitigate the unnecessary loss of topsoil and runoff; and
- The Alien Vegetation Management Plan compiled for the Coleskop WEF must be implemented during the phases that follow the Planning and Design Phase.
- A Rehabilitation Management Plan must be developed and implemented.

6.4 Mitigation Measures

All mitigation measures identified for the impacts associated with the proposed Coleksop Infrastructure Development must be implemented during the relevant phase associated therewith (please refer to Section 5 of this Ecological Opinion Letter for the identified impacts and mitigation measures).

6.5 Conclusion

The ecological impacts of all aspects of the proposed Coleskop Infrastructure Development were assessed and considered to be ecologically acceptable, provided the mitigation measures outlined in this report are implemented. The majority of the impacts were identified for the construction phase of the proposed development and were rated as moderately negative. Therefore, the implementation of the recommended mitigation measures and monitoring, especially during construction, is critical to ensure a development that is environmentally sound.

Based on the findings of the original Ecological Impact Assessment (CES, 2015/2018) as well as the findings of this report, it is the opinion of the Ecological Specialist that the proposed Coleskop Infrastructure Development will not result in any VERY HIGH negative ecological impacts which could present a fatal flaw to the proposed development.

Kind Regards,
Nicole Wienand

Environmental Consultant

CES - Environmental and Social Advisory Services

Coastal and Environmental Services (Pty) Ltd

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36 Pickering Street, Newton Park, Port Elizabeth, 6001

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APPENDIX A: ASSESSMENT METHODOLOGY

Pre-Mitigation Evaluation Criteria

This rating scale adopts four (4) key factors to determine the overall significance of the impact prior to mitigation:

1. **Temporal Scale:** This scale defines the duration of any given impact over time. This may extend from the short-term (less than 5 years, equivalent to the construction phase) to permanent. Generally, the longer the impact occurs the greater the significance of any given impact.
2. **Spatial Scale:** This scale defines the spatial extent of any given impact. This may extend from the local area to an impact that crosses international boundaries. The wider the impact extends, the more significant it is likely to be.
3. **Severity/Benefits Scale:** This scale defines how severe negative impacts would be, or how beneficial positive impacts would be. This negative/positive scale is critical in determining the overall significance of any impacts.
4. **Likelihood Scale:** This scale defines the risk or chance of any given impact occurring. While many impacts generally do occur, there is considerable uncertainty in terms of others. The scale varies from unlikely to definite, with the overall impact significance increasing as the likelihood increases.

For each impact, these four (4) scales are ranked and assigned a score. These scores are combined and used to determine the overall impact significance prior to mitigation.

Table A1: Pre-Mitigation Evaluation Criteria.

TEMPORAL SCALE		
Short term	Less than 5 years	
Medium term	Between 5-20 years	
Long term	Between 20 and 40 years (a generation) and from a human perspective also permanent	
Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there	
SPATIAL SCALE		
Localised	At localised scale and a few hectares in extent	
Study Area	The proposed site and its immediate environs	
Regional	District and Provincial level	
National	Country	
International	Internationally	
SEVERITY SCALE	SEVERITY	BENEFIT
Slight	Slight impacts on the affected system(s) or party(ies)	Slightly beneficial to the affected system(s) and party(ies)
Moderate	Moderate impacts on the affected system(s) or party(ies)	Moderately beneficial to the affected system(s) and party(ies)
Severe/ Beneficial	Severe impacts on the affected system(s) or party(ies)	A substantial benefit to the affected system(s) and party(ies)
Very Severe/ Beneficial	Very severe change to the affected system(s) or party(ies)	A very substantial benefit to the affected system(s) and party(ies)
LIKELIHOOD SCALE		
Unlikely	The likelihood of these impacts occurring is slight	

May Occur	The likelihood of these impacts occurring is possible
Probable	The likelihood of these impacts occurring is probable
Definite	The likelihood is that this impact will definitely occur

Table A2: Significance Descriptions.

SIGNIFICANCE RATE		DESCRIPTION
LOW NEGATIVE	LOW POSITIVE	<i>Impacts of low significance are typically acceptable impacts for which mitigation is desirable but not essential. The impact by itself is insufficient, even in combination with other low impacts, to prevent the development being approved. These impacts will result in negative medium to short term effects on the natural environment or on social systems.</i>
MODERATE NEGATIVE	MODERATE POSITIVE	<i>Impacts of moderate significance are impacts that require mitigation. The impact is insufficient by itself to prevent the implementation of the project but in conjunction with other impacts may prevent its implementation. These impacts will usually result in a negative medium to long-term effect on the natural environment or on social systems.</i>
HIGH NEGATIVE	HIGH POSITIVE	<i>Impacts that are rated as being high are serious impacts and may prevent the implementation of the project if no mitigation measures are implemented, or the impact is very difficult to mitigate. These impacts would be considered by society as constituting a major and usually long-term change to the environment or social systems and result in severe effects.</i>
VERY HIGH NEGATIVE	VERY HIGH POSITIVE	<i>Impacts that are rated as very high are very serious impact which may be sufficient by itself to prevent the implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigable and usually result in very severe effects or very beneficial effects.</i>

Post-Mitigation Criteria

Once mitigation measures are proposed, the following three (3) factors are then considered to determine the overall significance of the impact after mitigation.

- 1. Reversibility Scale:** This scale defines the degree to which an environment can be returned to its original/partially original state.
- 2. Irreplaceable loss Scale:** This scale defines the degree of loss which an impact may cause.
- 3. Mitigation potential Scale:** This scale defines the degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

Table A3: Post-Mitigation Criteria.

REVERSIBILITY	
Reversible	<i>The activity will lead to an impact that can be reversed provided appropriate mitigation measures are implemented.</i>
Irreversible	<i>The activity will lead to an impact that is permanent regardless of the implementation of mitigation measures.</i>
IRREPLACEABLE LOSS	
Resource	<i>The resource will not be lost/destroyed provided mitigation measures are implemented.</i>

will not be lost	
Resource will be partly lost	<i>The resource will be partially destroyed even though mitigation measures are implemented.</i>
Resource will be lost	<i>The resource will be lost despite the implementation of mitigation measures.</i>
MITIGATION POTENTIAL	
Easily achievable	<i>The impact can be easily, effectively and cost effectively mitigated/reversed.</i>
Achievable	<i>The impact can be effectively mitigated/reversed without much difficulty or cost.</i>
Difficult	<i>The impact could be mitigated/reversed but there will be some difficulty in ensuring effectiveness and/or implementation, and significant costs.</i>
Very Difficult	<i>The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly.</i>

The following assumptions and limitations are inherent in the rating methodology:

- **Value Judgements**: Although this scale attempts to provide a balance and rigor to assessing the significance of impacts, the evaluation relies heavily on the values of the person making the judgment. For this reason, impacts of especially a social nature need to reflect the values of the affected society.
- **Cumulative Impacts**: These affect the significance rating of an impact because it considers the impact in terms of both on-site and off-site sources. This is particularly problematic in terms of impacts beyond the scope of the proposed development and the BA. For this reason, it is important to consider impacts in terms of their cumulative nature.
- **Seasonality**: Certain impacts will vary in significance based on seasonal change. Thus, it is difficult to provide a static assessment. Seasonality will need to be implicit in the temporal scale and, with management measures being imposed accordingly (e.g. dust suppression measures being implemented during the dry season).