

DRAFT SCOPING REPORT

Draft Scoping Report for the proposed development of the Vhuvhili Solar Photovoltaic (PV) Facility near Secunda in the Mpumalanga Province.



CHAPTER 6:

Issues and Potential Impacts

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6. ISSUES AND POTENTIAL IMPACTS

The purpose of this chapter is to present a synthesis of the key issues and potential impacts that have been identified thus far as part of the Scoping Process. These issues and impacts have been identified via the environmental status quo of the receiving environment (environmental, social and heritage features present on site) (discussed in Chapter 3 of this Draft Scoping Report), a review of environmental impacts from other similar solar energy projects, and scoping inputs from the specialists that form part of the project team (which are included in Appendix G of this Draft Scoping Report). The Terms of Reference (ToRs) for the Specialist Assessments that have been deemed necessary, based on the relevant issues and impacts discussed within this chapter, are incorporated into the Plan of Study for the EIA (PSEIA) that is discussed in Chapter 7 of this Draft Scoping Report. It is emphasised that this chapter and the Scoping Report in general provide preliminary impacts, sensitivities and impact significance ratings which will be updated and finalised, as relevant, and presented in more detail in the detailed Specialist studies and in the EIA Report.

6.1 Key Issues

The proposed Vhuvhili SEF will result in a number of actions that will arise in the construction, operational and decommissioning phases of the project and include inter alia:

- Possible levelling of topographic features;
- Some clearance of vegetation;
- Establishment of hard paved roadways and related surfaces;
- Excavation and construction of structures;
- Establishment of transformers and on-site substations;
- Establishment of solar panel arrays;
- Cabling at a sub-surface level;
- Fencing of the site; and
- Other supportive infrastructure.

The construction phase is a relatively short-term undertaking, although “intensive” in terms of the rapid physical changes that arise on site. The operational phase is more benign in nature, with limited staff and minor activity in and around the proposed projects.

6.2 Summary of Key Issues from the Scoping Level Inputs

The issues and impacts presented in this section have been identified based on the scoping level assessments. These issues are further described in the impact assessment tables in this Chapter (sub-sections below) and will also be assessed in further detail during the EIA Phase through the specialist assessments, however, they have been summarised below in Table 6.1 for ease of reference. It must be noted that additional issues may be raised during the Scoping Phase, which could potentially be assessed during the EIA Phase.

Table 6.1: Summary of the Issues and Impacts from the Scoping Phase per Specialist Theme

Specialist Assessment / Input	Key issues to be addressed
Agriculture and Soils	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ Loss of agricultural potential by occupation of land. ▪ Loss of agricultural potential by soil degradation. <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> ▪ Agricultural potential enhancement through increased financial security for farming operations (<i>positive impact</i>). <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> ▪ Agricultural potential loss by soil degradation.
Aquatic Biodiversity and Species	<p><u>Construction, Operational and Decommissioning Phases:</u></p> <ul style="list-style-type: none"> ▪ Alteration in flow regime. ▪ Changes in sediment regimes. ▪ Introduction and spread of alien vegetation. ▪ Loss and disturbance of riparian/watercourse habitat and vegetation. ▪ Alteration in water quality due to pollution. ▪ Loss of aquatic biota.
Terrestrial Biodiversity and Species	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ The clearing of natural vegetation. ▪ The loss of threatened, protected, CITES listed and/or endemic plants/animals. ▪ Loss of faunal habitat. ▪ Direct faunal mortalities due to construction and increased traffic. ▪ Increased dust deposition. ▪ Increased human activity, noise and light levels. ▪ Establishment of alien vegetation. ▪ Increased water run-off and erosion. ▪ Changes in animal behaviour. <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> ▪ Direct faunal mortalities. ▪ Establishment of alien vegetation. ▪ Increased water run-off and erosion. ▪ Changes in animal behaviour. <p><u>Decommissioning Phase:</u></p>

Specialist Assessment / Input	Key issues to be addressed
	<ul style="list-style-type: none"> Establishment of alien vegetation. Increased water run-off and erosion.
Avifauna Impact Assessment	<p>Construction Phase:</p> <ul style="list-style-type: none"> Displacement due to disturbance and habitat transformation associated with the construction of the solar PV plants and associated infrastructure. <p>Operational Phase:</p> <ul style="list-style-type: none"> Displacement due to habitat transformation associated with the presence of the solar panels. Collisions with the solar panels. Entrapment in perimeter fences. Electrocutions in the onsite substations. <p>Decommissioning Phase:</p> <ul style="list-style-type: none"> Displacement due to disturbance associated with the decommissioning of the solar PV plants and associated infrastructure.
Heritage Impact Assessment (including Archaeology and Cultural Landscape)	<p>Construction Phase</p> <ul style="list-style-type: none"> Potential impacts on archaeological remains. Potential impacts on graves. Potential impacts on the cultural landscape. <p>Operational Phase</p> <ul style="list-style-type: none"> Impacts to the cultural landscape. <p>Decommissioning Phase</p> <ul style="list-style-type: none"> Impacts to the cultural landscape.
Palaeontology Impact Assessment	<p>Construction and Decommissioning Phases:</p> <ul style="list-style-type: none"> Damage and/or destruction of scientifically valuable fossils preserved at or beneath the ground due to surface clearance or excavations. <p>Operational Phase: Note: No impacts identified for the Operational Phase.</p>
Socio-Economic Assessment	<p>Construction Phase:</p> <ul style="list-style-type: none"> Creation of employment and business opportunities during the construction phase, and the opportunity for skills development and on-site training. Potential impacts on family structures and social networks associated with the presence of construction workers. Potential impacts on family structures, social networks and community services associated with the influx of job seekers. Potential risk to farmers and farm workers, livestock and damage to farm infrastructure associated with the presence and activities of construction workers on site.

Specialist Assessment / Input	Key issues to be addressed
	<ul style="list-style-type: none"> Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires. Potential noise, dust and safety impacts associated with construction related activities. Impact on productive farmland. <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> The establishment of infrastructure to improve energy security and support the renewable sector. Creation of employment opportunities. Generation of additional income for affected landowners. Visual impacts and associated impacts on rural sense of place. Impact on property values. Impact on existing and future tourism operations. <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> Social impacts associated with retrenchment including loss of jobs, and source of income. Creation of temporary employment opportunities, which would represent a positive temporary impact.
Visual Impact Assessment	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> Potential alteration of the visual character and sense of place resulting from construction activities. Potential visual intrusion resulting from large construction vehicles and equipment. Potential visual effect of construction laydown areas and material stockpiles. Potential impacts of increased dust emissions from construction activities and related traffic. Potential visual scarring of the landscape as a result of site clearance and earthworks. Potential visual pollution resulting from littering on the construction site. <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> Potential alteration of the visual character and sense of place. Potential visual intrusion resulting from the presence of PV arrays, particularly in more natural undisturbed settings. Potential visual clutter caused by substation and other associated infrastructure on-site. Potential impacts of increased dust emissions from maintenance vehicles accessing the site via gravel roads. Potential visual scarring of the landscape as a result of site clearance and earthworks. Potential glint and glare impacts on passing motorists and nearby receptors. Potential visual impact on the night-time visual environment. <p><u>Decommissioning Phase:</u></p>

Specialist Assessment / Input	Key issues to be addressed
	<ul style="list-style-type: none"> ▪ Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process. ▪ Potential impacts of increased dust emissions resulting from decommissioning activities and related traffic. ▪ Potential visual scarring of the landscape as a result of decommissioning activities. ▪ Potential visual intrusion of any remaining infrastructure on the site.
Battery Energy Storage Facility	<p><u>The following issues are for consideration for the proposed BESS:</u></p> <ul style="list-style-type: none"> ▪ Toxic smoke and fires/explosions and proximity to occupied residences. ▪ Suitable secondary spill containment for the large volume of electrolyte.

6.3 Assessments to be undertaken during the EIA Phase

The specialist assessments listed in Table 6.2 below are required during the EIA Phase, in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as any other additional relevant legislation, policies and guidelines that may be deemed necessary, if applicable (i.e. relevant gazette protocols, as described below). The relevant mitigation and management actions will be incorporated into the Environmental Management Programme (EMPr) that will form part of the EIA Report. Refer to Chapter 7 of this Draft Scoping Report for a detailed outline of the ToRs for the specialist assessments to be undertaken during the EIA Phase.

Table 6.2: Specialist Assessments and Additional Inputs to be undertaken as part of the EIA Phase and relevant applicable legislation

Specialist Assessment / Input	Assessment to be undertaken in the EIA Phase
Agriculture and Soils Assessment	The Agricultural Assessment must comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN R320. This specifically includes the Agriculture Protocol that applies to all onshore wind and/or solar PV energy activities requiring EA. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended
Terrestrial Biodiversity and Species	<p>The Terrestrial Biodiversity Specialist is required to compile a Specialist Assessment in adherence to the following gazetted Environmental Assessment Protocols, which replace the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended:</p> <ul style="list-style-type: none"> ▪ Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Terrestrial Biodiversity (GG 43110 / GN R320, 20 March 2020); and ▪ Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species (GG 43855 / GN R1150, 30 October 2020).
Aquatic Biodiversity and Species	The Aquatic Biodiversity Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Aquatic Biodiversity' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended.
Avifauna Impact Assessment	<p>The Avifauna Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species (GG 43855 / GN R1150, 30 October 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The Avifauna Assessment will also be undertaken in terms of the following:</p> <ul style="list-style-type: none"> ▪ Guidelines for the Implementation of the Terrestrial Flora and Terrestrial Fauna Species Protocols for EIAs in South Africa produced by the SANBI on behalf of the Department of Environment, Forestry and Fisheries (2020); and ▪ The BirdLife South Africa (BLSA) Guidelines for assessing and monitoring the impact of solar power generating facilities on birds

Specialist Assessment / Input	Assessment to be undertaken in the EIA Phase
	in southern Africa ¹ to determine the level of survey effort that is required.
Visual Impact Assessment	<ul style="list-style-type: none"> The Visual Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020). The Visual Impact Assessment (VIA) Report must be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.
Heritage Impact Assessment (including Archaeology and Cultural Landscape)	<ul style="list-style-type: none"> The Heritage Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020). The Heritage Impact Assessment (HIA) Report will be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The HIA must also comply with the requirements of the South African Heritage Resources Agency (SAHRA).
Palaeontology Assessment	<ul style="list-style-type: none"> The Palaeontologist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020). The Palaeontologist conducted a site visit and field surveys in order to identify the level of sensitivity assigned to the project area, and to verify and confirm this sensitivity and land use as per the National Web-Based Screening Tool. Based on the findings of the site visit, a Site Sensitivity Verification report was prepared in accordance with Part A of the aforementioned Assessment Protocols (GG 43110 / GNR 320, 20 March 2020) and a full specialist assessment is not required.
Socio-Economic Assessment	The Socio-Economic Specialist is required to undertake a Specialist Assessment in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended.

¹ BirdLife South Africa by Jenkins, A.R., Ralston-Patton, Smit- Robinson, A.H. 2017.

Specialist Assessment / Input	Assessment to be undertaken in the EIA Phase
Battery Energy Storage Systems (BESS) High Level Risk Assessment	This assessment is not classified as a specialist study as per Appendix 6 of the NEMA EIA Regulations, as it is a risk assessment.
Civil Aviation	A Civil Aviation Assessment is required to comply with the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Civil Aviation Installations' (GG 43110 / GN R320, 20 March 2020). Additional detail will be provided in the EIA Phase. Refer to Chapters 3, 4 and 7 of this Draft Scoping Report for additional information.
Defence	A Defence Assessment is required to comply with the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Defence Installations' (GG 43110 / GN R320, 20 March 2020). Additional detail will be provided in the EIA Phase. Refer to Chapters 3, 4 and 7 of this Draft Scoping Report for additional information.

6.4 Scoping-level Impact Assessment

Based on the scoping-level inputs from the various specialists, a **high-level preliminary** scoping impact assessment was conducted and outlined in Table 6.3 below. The impact ratings will be confirmed and detailed during the EIA Phase based on more detailed studies being undertaken, including modelling where required. The mitigation measures provided in this section are also high-level for the purposes of Scoping and will be detailed during the EIA Phase.

Please see Chapter 7 of this Scoping Report for the PSEIA, which includes the Methodology for the assessment of impacts (Section 7.4) and the ToR for the specialist assessments (Section 7.7).

Table 6.3: Scoping Level Assessment of Potential Risks/Impacts of the proposed Vhuvhili solar PV facility, including high-level mitigation measures

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
AGRICULTURE AND SOILS						
CONSTRUCTION PHASE						
Agricultural potential loss by land occupation	Status	Negative	Low (4)	● None possible	Low (4)	High
	Spatial Extent	Site Specific				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				
Agricultural potential loss by soil degradation	Status	Negative	Very low (5)	● Maintain vegetation and facilitate re-vegetation. ● Strip, stockpile and re-spread topsoil.	Very low (5)	High
	Spatial Extent	Site Specific				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Duration	Long-term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	Moderate				
	Irreplaceability	Low				
OPERATIONAL PHASE						
Agricultural potential enhancement through increased financial security for farming operations	Status	Positive	Very low (5)	● None possible	Very low (5)	High
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Slight				
	Probability	Likely				
	Reversibility	High				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Irreplaceability	Moderate				
DECOMMISSIONING PHASE						
Agricultural potential loss by soil degradation	Status	Positive	Very low (5)	<ul style="list-style-type: none">• Maintain vegetation and facilitate re-vegetation.• Strip, stockpile and re-spread topsoil.	Very low (5)	High
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Slight				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Moderate				
AQUATIC BIODIVERSITY AND SPECIES						
CONSTRUCTION PHASE						
Changes in water flow regime	Status	Negative	Moderate (3)		Low (4)	Medium

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Spatial Extent	Regional		<ul style="list-style-type: none"> The proposed layout should be revisited, and every effort made place the photovoltaic structures outside of the wetland and wetland buffer zones A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. Where development activities are located upslope from wetlands, effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. Where development activities are located upslope from wetlands, high energy stormwater input into the watercourses should be prevented at all cost. Effective culverts should be incorporated into the design of access roads. 		
	Duration	Long term				
	Consequence	Moderate Negative				
	Probability	Very likely				
	Reversibility	Low				
	Irreplaceability	Moderate				
Changes in sediment entering and exiting the system	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> The proposed layout should be revisited, and every effort made place the photovoltaic structures outside of the wetland and wetland buffer zones Where development is located upslope from wetlands, a temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Medium term				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Moderate Negative		<p>work method statements to prevent access to the adjacent portions of the watercourse.</p> <ul style="list-style-type: none"> Where development is located upslope from wetlands, effective stormwater management including sediment barriers should be a priority during both construction and operational phase. This should be monitored as part of the EMP. Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area. Protect all areas susceptible to erosion and ensure that there is no undue soil erosion as a result of activities within and adjacent to the construction camp and work areas. Monitoring should be done to ensure that sediment pollution is timeously dressed. 		
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	High				
Introduction and spread of alien vegetation	Status	<i>Negative</i>	Moderate (3)	<ul style="list-style-type: none"> The proposed layout should be revisited, and every effort made place the photovoltaic structures outside of the wetland and wetland buffer zones Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. Undertake an Alien Plant Control Plan which specifies actions and measurable targets Retain vegetation and soil in position for as long as 	Low (4)	Medium
	Spatial Extent	<i>Local</i>				
	Duration	<i>Medium term</i>				
	Consequence	<i>Moderate Negative</i>				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Probability	<i>Likely</i>		<p>possible, removing it immediately ahead of construction/earthworks in that area and returning it where possible afterwards.</p> <ul style="list-style-type: none"> Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Plan. Rehabilitate or revegetate disturbed areas 		
	Reversibility	<i>Low</i>				
	Irreplaceability	<i>Low</i>				
Loss and disturbance of watercourse habitat and fringe vegetation	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> The proposed layout should be revisited and every effort made place the photovoltaic structures outside of the wetland and wetland buffer zones Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish. Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas. Operational activities should not impact on rehabilitated or naturally vegetated areas 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
Changes in water quality due to pollution	Status	<i>Negative</i>	Moderate (3)	<ul style="list-style-type: none"> located outside of the watercourse or its associated buffer zone. 	Low (4)	Medium

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Spatial Extent	<i>Local</i>		<ul style="list-style-type: none"> Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse. The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse i.e. water runoff from cleaning of equipment, vehicle access etc. Maintenance of construction vehicles/equipment should not take place within the watercourse or watercourse buffer. Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects. Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. Regular independent water quality monitoring should form part of operational procedures in order to identify pollution. Treatment of pollution identified should be prioritized according to best practice guidelines. Develop norms and practices for the treatment of spills such as oil or hydraulic fluid. Ensure that the required equipment is available on hand to contain any spills. Appoint a reliable contractor for the removal of refuse during the construction phase. 		
	Duration	<i>Medium term</i>				
	Consequence	<i>Moderate Negative</i>				
	Probability	<i>Likely</i>				
	Reversibility	<i>Low</i>				
	Irreplaceability	<i>Low</i>				
Loss of aquatic biota	Status	Negative	Moderate (3)		Low (4)	Medium

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Spatial Extent	Local		<ul style="list-style-type: none">This impact is not easily mitigated. Further loss in diversity can be minimised by following the mitigation measures mentioned above		
	Duration	Medium term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	Low				
OPERATIONAL PHASE						
Changes in water flow regime	Status	Negative	Moderate (3)	<ul style="list-style-type: none">The proposed layout should be revisited and every effort made place the photovoltaic structures outside of the wetland and wetland buffer zones.Where development activities are located upslope from wetlands, effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP.Effective culverts should be incorporated into the design of access roads.	Low (4)	Medium
	Spatial Extent	Regional				
	Duration	Long term				
	Consequence	Moderate Negative				
	Probability	Very likely				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Reversibility	Low				
	Irreplaceability	Moderate				
Changes in sediment entering and exiting the system	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> The proposed layout should be revisited and every effort made place the photovoltaic structures outside of the wetland and wetland buffer zones. Where development is located upslope from wetlands, effective stormwater management including sediment barriers should be a priority during both construction and operational phase. This should be monitored as part of the EMP. Monitoring should be done to ensure that sediment pollution is timeously dressed. 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Medium term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	High				
Introduction and spread of alien vegetation	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. Undertake an Alien Plant Control Plan which specifies actions and measurable targets 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Medium term				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Moderate Negative		<ul style="list-style-type: none"> Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area and returning it where possible afterwards. Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Plan. 		
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	Low				
Loss and disturbance of watercourse habitat and fringe vegetation	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Amend SEF designs to exclude wetlands as well as buffer areas. Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish. Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas. Operational activities should not impact on rehabilitated or naturally vegetated areas 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
Changes in water quality due to pollution	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Amend SEF designs to exclude wetlands as well as buffer areas. 	Low (4)	Medium

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Spatial Extent	Local		<ul style="list-style-type: none"> Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone. Maintenance of construction vehicles/equipment should not take place within the watercourse or watercourse buffer Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects. Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. Regular independent water quality monitoring should form part of operational procedures in order to identify pollution. Treatment of pollution identified should be prioritized according to best practice guidelines. Develop norms and practices for the treatment of spills such as oil or hydraulic fluid. Ensure that the required equipment is available on hand to contain any spills. Appoint a reliable contractor for the removal of refuse during the operational phase. 		
	Duration	Medium term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	Low				
Loss of aquatic biota	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> This impact is not easily mitigated. Further loss in diversity can be minimised by following the mitigation measures mentioned above 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long term				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	Low				
DECOMMISSIONING PHASE						
Changes in water flow regime	Status	Negative	Moderate (3)	<ul style="list-style-type: none">The proposed layout should be revisited and every effort made place the PV structures outside of the wetland and wetland buffer zone so that during decommissioning these sensitive ecosystems are not disturbedDo not increase hardened surfaces and compaction of the soils after the removal of the solar panels and related infrastructure.Rehabilitation of exposed soil surfaces should commence as soon as practical after completion of removal of the solar panels and related infrastructure.Culverts must remain in place and must not be removed if the given road is not removed during the decommissioning phase.Vehicle movement should be restricted to designated decommissioning areas to prevent the increase in hardened surfaces an subsequent increase in runoff	Low (4)	Medium
	Spatial Extent	Regional				
	Duration	Long term				
	Consequence	Moderate Negative				
	Probability	Very likely				
	Reversibility	Low				
	Irreplaceability	Moderate				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
Changes in sediment entering and exiting the system	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> The proposed layout should be revisited and every effort made place the PV structures outside of the wetland and wetland buffer zones. Vehicle movement should be restricted to the minimum that is required for decommissioning. Unnecessary movement of vehicles will increase the degradation of paths and dirt roads leading to increased erosion risk. Progressive rehabilitation must occur. Rehabilitation has to take place as soon as decommissioning commences to prevent soil erosion. Monitoring should be done to ensure that sediment pollution is timeously dressed 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Medium term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	High				
Introduction and spread of alien vegetation	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Monitor the establishment of alien invasive species within the areas affected by the decommissioning and take immediate corrective action where invasive species are observed to establish. Undertake an Alien Plant Control Plan which specifies actions and measurable targets Retain vegetation and soil in position for as long as possible, removing it immediately ahead of decommissioning /earthworks in that area and returning it where possible afterwards. Rehabilitation must occur concurrently with decommissioning. 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Medium term				
	Consequence	Moderate Negative				
	Probability	Likely				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Reversibility	Low		<ul style="list-style-type: none"> The mixture of vegetation seed must be used during rehabilitation. The mix must include: Annual and perennial species, pioneer species, species which are indigenous to the area to ensure there is no ecological imbalance in the area. Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Plan. 		
	Irreplaceability	Low				
Loss and disturbance of watercourse habitat and fringe vegetation	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Amend SEF designs to exclude wetlands as well as buffer areas. Vehicle movement should be restricted to the minimum that is required for decommissioning. Rehabilitation of decommissioned areas must commence concurrently with decommissioning. Monitor the establishment of alien invasive species within the areas affected by the decommissioning and take immediate corrective action where invasive species are observed to establish. Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. Decommissioning activities should not impact on rehabilitated or naturally vegetated areas. 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
Changes in water quality due to pollution	Status	Negative	Moderate (3)	<ul style="list-style-type: none">This impact is not easily mitigated. Further loss in diversity can be minimised by following the mitigation measures mentioned above.	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate Negative				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	Low				
TERRESTRIAL BIODIVERSITY AND SPECIES						
CONSTRUCTION PHASE – DIRECT IMPACTS						
The clearing of natural vegetation	Status	Negative	Moderate (3)	<ul style="list-style-type: none">The impact of the vegetation clearance can be mitigated to a moderate level by maintaining a vegetative ground layer beneath the solar arrays and only clearing for underground cabling and solar array stands. Alternatively, vegetation clearance can be	Low (4)	Medium
	Spatial Extent	Site specific				
	Duration	Medium term				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Moderate (considering entire site)		<p>mitigated by allowing a ground layer to develop after construction.</p> <ul style="list-style-type: none"> Construction crew, in particular the drivers, should undergo environmental training (induction) to increase their awareness of environmental concerns. This includes awareness as to remaining within demarcated construction areas, no littering, handling of pollution and chemical spills, avoiding fire hazards and minimising wildlife interactions. Ensure that all temporary use areas e.g. laydown areas and construction camp, are located in areas of low sensitivity. Footprints of the solar panels, roads, construction and substation locations should be clearly demarcated. Vegetation clearance should be confined to the footprint of the development and unnecessary clearance should be avoided. Water courses, wetlands, rocky outcrops and rocky sheets should be avoided (Habitats 1, 3 & 7). Observe buffer zones along drainage lines (see Environmental Impact Report of aquatic specialist). All vehicles are to remain on demarcated roads and no driving through the veld should be allowed. The ECO is to provide supervision on vegetation clearing activities and other activities that may cause damage to the environment, especially when 		
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<p>construction commences and most vegetation clearing is taking place.</p> <ul style="list-style-type: none"> River/stream crossings should be placed in areas without extensive wetlands and preferably in areas where the risk of disruption and erosion is low. All river/stream crossings should be inspected by the aquatic specialist to ensure that optimal and acceptable locations have been chosen for river crossings. River/stream crossings should be specifically designed not to impede or disrupt the direction and flow of the water. Specific guidelines of the aquatic specialist should be followed. No plants may be translocated or otherwise uprooted or disturbed without express permission from the ECO. 		
The loss of threatened, protected & endemic plant and animal species	Status	Negative	Low (4)	<ul style="list-style-type: none"> Placement of infrastructure should be done in such a way as to minimise the impact on protected species. The construction crew should undergo environmental training (induction) to make them aware of the importance of protected species. 	Very Low (5)	Medium
	Spatial Extent	Site specific				
	Duration	Long-term				
	Consequence	Slight				
	Probability	Unlikely				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Reversibility	Low				
	Irreplaceability	Moderate				
Loss of faunal habitat	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Vegetation clearance should be confined to the smallest possible footprint of the development and unnecessary clearance should be avoided. Construction crew should undergo environmental training (induction) to increase their awareness of environmental concerns. Speed limits should be set on all roads and strictly adhered to. Development should avoid water courses, wetlands, rocky sheets and rocky outcrops. The outcrops may be favoured habitat for reptiles. Proper waste management procedures should be in place to avoid waste lying around and to remove all waste material from the sites. Observe buffer zones along drainage lines. 	Low (4)	Medium
	Spatial Extent	Site-specific				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Direct faunal mortalities	Status	Negative	Low (4)	<ul style="list-style-type: none"> Construction crew, in particular the drivers, should undergo environmental training to increase their awareness of environmental concerns in order to reduce the number of kills during construction and on roads. The crew should also be made aware of not 	Very Low (5)	Medium
	Spatial Extent	Site specific				
	Duration	Short-term				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Slight				
	Probability	Likely		<p>harming or collecting species such as snakes, tortoises and owls which are often persecuted.</p> <ul style="list-style-type: none"> • Proper waste management procedures should be in place to avoid litter, food or other foreign material from lying around and all waste material should be removed from the site. • No activity, including night driving, should be allowed at the site. • Speed limits should be set on all roads on site. • Personnel should not be allowed to roam into the veld. • Ensure that cabling and electrical infrastructure at the site is buried sufficiently deeply to avoid being excavated by fauna and that where such infrastructure emerges above-ground that it is sufficiently protected from gnawing animals. • Any dangerous fauna (e.g. snakes, scorpions) that are encountered during construction should not be handled or molested by construction staff and the ECO or other suitably qualified persons should be contacted to remove the animals to safety. • Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days, should have an escape ramp to allow any fauna that fall in to escape 		
	Reversibility	Moderate reversibility				
	Irreplaceability	Low irreplaceability				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none"> If there is any part of the site that needs to be lit at night for security reasons, then appropriate lighting should be installed to minimise negative effects on nocturnal animals. Should electrical fences be erected it must be done according to the norms and standards of the Nature Conservation Authorities in Mpumalanga. Access to the site should be regulated to reduce the opportunities for poaching. 		
Increased dust deposition	Status	Negative	Low (4)	<ul style="list-style-type: none"> Excessive dust can be reduced by spraying water onto the soil 	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Short-term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	-				
Increased human activity, noise & light levels	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> The SANS standards should be adhered to in terms of noise levels. 	Low (4)	High

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Spatial Extent	Site specific		<ul style="list-style-type: none">No construction should be done at night.If there is any part of the site that needs to be lit at night for security reasons, then appropriate lighting should be installed to minimise negative effects on nocturnal animals		
	Duration	Short-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	-				
CONSTRUCTION PHASE – INDIRECT IMPACTS						
Establishment of alien vegetation	Status	Negative	Low (4)	<ul style="list-style-type: none">Implement a monitoring program for the early detection of alien invasive plant species.A control program should be employed to combat declared alien invasive plant species in the most environmentally friendly manner that does not result in undesirable secondary impacts.Herbicides for the control of alien species should be applied according to the relevant instructions and by appropriately trained personnel.No alien species should be used in rehabilitation or landscaping.	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Likely				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Reversibility	Moderate		<ul style="list-style-type: none"> Use only plants and seed collected on-site for revegetation. Cleared areas may need to be fenced-off during rehabilitation to exclude livestock and wildlife. Material brought onto site e.g. building sand should be regularly checked for the germination of alien species. 		
	Irreplaceability	Low				
Increased erosion and water run-off	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Clearing of vegetation and compaction should be restricted to the footprint of the proposed development. All roads should have structures to deflect water run-off to disperse the water into the receiving area. A rehabilitation and revegetation plan should be developed as part of the EMPr. Regular monitoring of the site during construction for erosion problems. Silt traps should be used where there is a danger of topsoil eroding and entering streams and other sensitive areas. If applicable, topsoil should be removed and stockpiled, then reapplied as soon as possible in order to facilitate regeneration of the natural vegetation on cleared areas. Reduce activity on site after large rainfall events when the soils are wet. No driving off hardened roads until soils have dried out and the risk of bogging down has decreased. 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	Moderate				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none">A suitably qualified person should plan, design and supervise the proper construction of roads to minimise the impact on the environment.		
Changes in animal behaviour	Status	Negative	Moderate (3)	<ul style="list-style-type: none">Construction crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.Development should avoid wetlands and rocky outcrops.Soil compaction should be kept to a minimum by restricting driving to designated roads.Appropriate lighting should be installed to minimise negative effects on nocturnal animals.No activity should be allowed at the site between sunset and sunrise.The mitigation measures as indicated by the noise specialist must be adhered to.	Low (4)	Medium
	Spatial Extent	Site-specific				
	Duration	Medium-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				
OPERATIONAL PHASE: DIRECT IMPACTS						
Direct faunal mortalities	Status	Negative	Very Low (5)	<ul style="list-style-type: none">Maintenance crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.Access to the site should be strictly controlled.	Very Low (5)	Medium
	Spatial Extent	Site specific				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Duration	Long-term		<ul style="list-style-type: none">All excess wires, cables and waste material should be removed from the site.All vehicles at the site should adhere to a low speed limit and slow-moving fauna such as tortoises on roads should be moved off the road.No activity should be allowed at the site between sunset and sunrise.		
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	Moderate				
	Irreplaceability	Low				
OPERATIONAL PHASE: INDIRECT IMPACTS						
Establishment of alien vegetation	Status	Negative	Low (4)	<ul style="list-style-type: none">Implement a monitoring program for the early detection of alien invasive plant species and a control program to combat declared alien invasive plant species should be employed.No alien species should be used for landscaping, rehabilitation or any other purpose.Clearing of alien species should be done on a regular basis.	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Slight				
	Probability	Likely				
	Reversibility	Moderate				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Irreplaceability	Low				
Increased erosion and water run-off	Status	Negative	Low (4)	<ul style="list-style-type: none"> Proper road maintenance procedures should be in place. Regular monitoring of the site during operation for erosion problems. Should new sections of the road be needed, a suitably qualified person should plan, design and supervise the proper construction of roads. Reduced activity at the site after large rainfall events when the soils are wet. 	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				
Changes in animal behaviour	Status	Negative	Low (4)	<ul style="list-style-type: none"> Changes to the vegetation should be kept to a minimum. 	Low (4)	Medium
	Spatial Extent	Site-specific				
	Duration	Long-term				
	Consequence	Moderate				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				
DECOMMISSIONING PHASE: DIRECT IMPACTS						
Increased dust deposition	Status	Negative	Low (4)	<ul style="list-style-type: none">Excessive dust can be reduced by spraying water onto the soil.	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Short-term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	-				
Direct faunal mortalities	Status	Negative	Very Low (5)		Very Low (5)	Medium

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Spatial Extent	Site specific		<ul style="list-style-type: none">Decommissioning crew should undergo environmental training to increase their awareness of environmental concerns.Speed limits should be adhered to.Proper waste management procedures should be in place and no material should be left on site in order to prevent instances of ensnarement or ingestion of foreign material.		
	Duration	Short-term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	Moderate				
	Irreplaceability	Low				
DECOMMISSIONING PHASE: INDIRECT IMPACTS						
Establishment of alien vegetation	Status	Negative	Low (4)	<ul style="list-style-type: none">Implement a monitoring program for at least three years after decommissioning to document vegetation recovery and alien infestation across the site.A control program to combat declared alien invasive plant species should be employed.Areas where infrastructure is removed, must be revegetated with indigenous plant species.No alien species should be used for rehabilitation/revegetation or any other purpose	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Slight				
	Probability	Likely				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Reversibility	Moderate				
	Irreplaceability	Low				
Increased erosion and water run-off	Status	Negative	Low (4)	<ul style="list-style-type: none">No new roads should be built.Proper road maintenance procedures should be in place.Removal of all infrastructure components from the site.Rehabilitation of all cleared and disturbed areas with local species.Off-site disposal of all facility components.Monitoring programme for at least three years after decommissioning to document vegetation recovery on site.	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				
VISUAL						
CONSTRUCTION PHASE (Direct impacts)						
	Status	Negative	Moderate (3)	<ul style="list-style-type: none">Carefully plan to minimise the construction period and avoid construction delays.	Low (4)	Medium

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
<p>Potential visual impacts of construction affecting receptors in the study area, including:</p> <ul style="list-style-type: none"> Large construction vehicles and equipment will alter the natural character of the study area and expose visual receptors to impacts associated with construction. Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. Surface disturbance during construction would expose bare soil (scarring) which could visually contrast with the surrounding environment. Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these 	Spatial Extent	Negative		<ul style="list-style-type: none"> Where possible, restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting. Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible. Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. Vegetation clearing should take place in a phased manner. Inform receptors within 500 m of the site of the construction programme and schedules. Make use of existing gravel access roads where possible. Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible. Ensure that suitable dust suppression techniques are implemented: associated with the facilities <ul style="list-style-type: none"> on all access roads; in all areas where vegetation clearing has taken place; on all soil stockpiles. Maintain a neat construction site by removing litter, rubble and waste materials regularly. 		
	Duration	Local				
	Consequence	Short Term				
	Probability	Substantial				
	Reversibility	Very Likely				
	Irreplaceability	High				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
<p>disturbed areas could result in dust which would have a visual impact.</p> <ul style="list-style-type: none"> Litter on the construction site may result in visual pollution. 						
OPERATIONAL PHASE (Direct Impacts)						
<p>Potential visual impacts of operations affecting receptors in the study area, including:</p> <ul style="list-style-type: none"> The PV arrays may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. The proposed solar PV facility will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts. 	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Restrict vegetation clearance on the site to that which is required for the correct operation of the facility. As far as possible, limit the number of maintenance vehicles which are allowed to access the site. Ensure that suitable dust suppression techniques are implemented on all gravel access roads. As far as possible, limit the amount of security and operational lighting present on site. Light fittings for security at night should reflect the light toward the ground and prevent light spill. Lighting fixtures should make use of minimum lumen or wattage. Mounting heights of lighting fixtures should be limited, or alternatively, foot-light or bollard level lights should be used. 	Moderate (3)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Substantial				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
<ul style="list-style-type: none">▪ Glint and glare may impact nearby receptors.▪ Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers.▪ The night time visual environment will be altered as a result of operational and security lighting at the proposed PV facility.	Probability	Very likely		<ul style="list-style-type: none">• If economically and technically feasible, make use of motion detectors on security lighting.• Buildings on the site should be painted with natural tones that fit with the surrounding environment.• Non-reflective surfaces should be utilised where possible.		
	Reversibility	Moderate				
	Irreplaceability	Low				
DECOMMISSIONING PHASE – DIRECT IMPACTS						
Potential visual impacts of decommissioning affecting receptors in the study area, including: <ul style="list-style-type: none">▪ Vehicles and equipment required for decommissioning will alter the natural character of the	Status	Negative	Moderate (3)	<ul style="list-style-type: none">• All infrastructure that is not required for post-decommissioning use should be removed.• Carefully plan to minimize the decommissioning period and avoid delays.• Maintain a neat decommissioning site by removing rubble and waste materials regularly.• Ensure that dust suppression procedures are maintained on all gravel access roads associated with the facilities throughout the decommissioning phase.	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Short Term				
	Consequence	Substantial				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
<p>study area and expose visual receptors to visual impacts.</p> <ul style="list-style-type: none"> Decommissioning activities may be perceived as an unwelcome visual intrusion. Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers. Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 	Probability	Very likely		<ul style="list-style-type: none"> All cleared areas should be rehabilitated as soon as possible. 		
	Reversibility	High				
	Irreplaceability	Low				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
<ul style="list-style-type: none"> Decommissioned infrastructure left on the site may be visually intrusive. 						
HERITAGE (ARCHAEOLOGY AND CULTURAL LANDSCAPE)						
CONSTRUCTION PHASE						
Damage or destruction of archaeological materials	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Preconstruction survey. Micrositing of infrastructure where possible to minimise impacts. Sampling of any sites that cannot be avoided (waypoint 419 seems a likely candidate). 	Very Low (5)	High
	Spatial Extent	Local				
	Duration	Permanent				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
Damage or destruction of graves	Status	Negative	Low (4)	<ul style="list-style-type: none"> Preconstruction survey. Micro-siting of infrastructure to avoid impacts. Report any chance finds. Protect in situ and appoint archaeologist to exhume. 	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Permanent				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Extreme				
	Probability	Very unlikely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
Intrusion of SEF and equipment into the landscape	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Minimise duration of construction period Minimise cut-and-fill and landscape scarring in general Ensure effective rehabilitation of areas not needed during operation 	Low (4)	High
	Spatial Extent	Regional				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Damage to built heritage resources	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Ensure sufficient clearance along roads for abnormal vehicles Micro siting of roads to minimise chances of impacts Demarcate no-go areas where space is constrained and risk is higher 	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Permanent				
	Consequence	Substantial				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Probability	Unlikely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
OPERATIONAL PHASE						
Intrusion of SEF into the landscape	Status	Negative	Low (4)	▪ Ensure that all maintenance vehicles stay within designated areas	Low (4)	High
	Spatial Extent	Regional				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
DECOMMISSIONING PHASE						
Intrusion of solar PV facility and equipment into the landscape	Status	Negative	Moderate (3)	▪ Minimise duration of decommissioning period ▪ Minimise cut-and-fill and landscape scarring in general	Low (4)	High
	Spatial Extent	Regional				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Duration	Short term		<ul style="list-style-type: none">▪ Ensure effective rehabilitation of areas not needed during operation		
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
AVIFAUNA						
CONSTRUCTION PHASE						
Displacement due to disturbance associated with the construction of the solar PV plants and associated infrastructure.	Status	Negative	Moderate (3)	<ul style="list-style-type: none">▪ Activity should, as far as possible, be restricted to the footprint of the infrastructure.▪ Measures to control noise and dust should be applied according to current best practice in the industry.▪ Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.▪ Access to the rest of the property must be restricted.▪ The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the construction footprint is concerned.	Low (4)	High
	Spatial Extent	Site-specific				
	Duration	Short-term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	High				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Irreplaceability	Low		<ul style="list-style-type: none"> A 200 m exclusion zone should be placed around all surface water (drainage lines, wetlands, dams, and pans). 		
OPERATIONAL PHASE						
Total or partial displacement of avifauna due to habitat transformation associated with the presence of the solar PV plants and associated infrastructure.	Status	Negative	High (2)	<ul style="list-style-type: none"> The recommendations of the botanical specialist must be strictly implemented, especially as far as limiting the vegetation clearance to what is absolutely necessary, and rehabilitation of transformed areas are concerned. All surface water (pans and water troughs) must be buffered by 200 m to ensure unhindered access of priority species to the water. No PV panels should be constructed in this zone (see sensitivity map Figure 9 in the Avifauna Assessment (Appendix G.4 of this Draft Scoping Report)). 	Moderate (3)	Medium
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Severe				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				
Bird mortality and injury as a result of collisions with the solar panels.	Status	<i>Negative</i>	Very Low (5)	<ul style="list-style-type: none"> No mitigation is required due to the very low significance 	Very Low (5)	Medium
	Spatial Extent	<i>Site specific</i>				
	Duration	<i>Long term</i>				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	<i>Slight</i>				
	Probability	<i>Unlikely</i>				
	Reversibility	<i>High</i>				
	Irreplaceability	<i>Low</i>				
Entrapment of medium and large terrestrial birds between the perimeter fences, leading to mortality.	Status	Negative	Low (4)	<ul style="list-style-type: none"> If possible, a single perimeter fence should be used. Increasing the spacing between at least the top two wires (to a minimum of 30 cm) and ensuring they are correctly tensioned will reduce the snaring risk for owls. 	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Low				
Electrocution of priority species in the onsite substations.	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> The hardware within the proposed substation yards is too complex to warrant any mitigation for electrocution at this stage. It is recommended that if on-going impacts are recorded once operational, site specific mitigation (insulation) be applied reactively. This is an acceptable approach because Red List 	Very Low (5)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Severe				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Probability	Unlikely		priority species are unlikely to frequent the substation and be electrocuted.		
	Reversibility	High				
	Irreplaceability	Low				
DECOMMISSIONING PHASE						
The noise and movement associated with the activities at the study area will be a source of disturbance, which would lead to the displacement of avifauna from the area.	Status	Negative	Moderate (3)	<ul style="list-style-type: none">Activity should as far as possible be restricted to the footprint of the infrastructure.Measures to control noise and dust should be applied according to best practice in the industry at the time.Maximum use should be made of existing access roads during the decommissioning phase and the construction of new roads should be kept to a minimum as far as practical.The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Negative				
SOCIO-ECONOMIC						

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
CONSTRUCTION PHASE						
Creation of employment and business opportunities during the construction phase	Status	Positive	Low (4)	<ul style="list-style-type: none">Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.Where reasonable and practical, the proponent should appoint local contractors and implement a ‘locals first’ policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.Before the construction phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.	Medium (3)	High
	Spatial Extent	Regional				
	Duration	Medium Term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	N/A				
	Irreplaceability	N/A				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none"> Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase. The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. The proponent should liaise with the MM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work. 		
Potential impacts on family structures and social networks associated with the presence of construction workers.	Status	Negative	Low (4)	<ul style="list-style-type: none"> Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report and resolve incidents. Where possible, the proponent should make it a requirement for contractors to implement a 'locals 	Low (4)	High
	Spatial Extent	Regional				
	Duration	Medium Term				
	Consequence	Slight				
	Probability	Unlikely				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Reversibility	Moderate		first' policy for construction jobs, specifically for semi and low-skilled job categories.		
	Irreplaceability	Low		<ul style="list-style-type: none"> The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase with representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP. The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP. The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP. The contractor should provide transport for workers to and from the site on a daily basis. This will enable 		

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<p>the contractor to effectively manage and monitor the movement of construction workers on and off the site.</p> <ul style="list-style-type: none"> The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end. No construction workers, with the exception of security personnel, should be permitted to stay overnight on the site. 		
Potential impacts on family structures and social networks associated with the influx of job seekers.	Status	Negative	Low (4)	<ul style="list-style-type: none"> Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. The proponent, in consultation with the LM, should investigate the option of establishing a MC to monitor and identify potential problems that may arise due to the influx of job seekers to the area. The MC should also include the other proponents of solar energy projects in the area. The proponent should implement a “locals first” policy, specifically with regard to unskilled and low skilled opportunities. The proponent should implement a policy that no employment will be available at the gate. 	Low (4)	High
	Spatial Extent	Regional				
	Duration	Medium Term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	Moderate				
	Irreplaceability	Low				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none"> Set up a recruitment office in the nearby towns and local areas within proximity (where feasible) and adhere to strict labour recruitment practices that would reduce the desire of potential job seekers to loiter around the properties in the hope of finding temporary employment. Discuss with local associations (i.e., farmer associations, SAPS, etc) how crime related issues that may be linked to the proposed development may be mitigated. Control the movement of workers between the site and areas of residence to minimise loitering around the construction site. This should be achieved through the provision of scheduled transportation services between the construction site and area of residence (where feasible). Employ locals as far as feasible through the creation of a local skills database. Establish a management forum comprising key stakeholders to monitor and identify potential problems that may arise due to the influx of job seekers to the area. Assign a dedicated person to deal with complaints and concerns of affected parties. 		
Potential risk to safety of scholars, farmers and farm workers,	Status	Negative	Moderate (3)		Low (4)	High

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
livestock and damage to farm infrastructure associated with the presence of construction workers on site.	Spatial Extent	Local		<ul style="list-style-type: none"> Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. All farm gates must be closed after passing through. Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. The proponent should establish a MC and CoC for workers (see above). The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below). 		
	Duration	Medium Term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Replaceable				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none"> The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching etc. The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested. Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation. It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay overnight on the site. 		
Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. 	Low (4)	High
	Spatial Extent	Local				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
life associated with increased incidence of grass fires.	Duration	Medium Term		<ul style="list-style-type: none"> Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas. Smoking on site should be confined to designated areas. Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy summer months. Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle. Contractor should provide fire-fighting training to selected construction staff. No construction staff, with the exception of security staff, to be accommodated on site overnight. 		
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Replaceable				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none"> As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities. 		
Potential noise, dust and safety impacts associated with construction related activities.	Status	Negative	Low (4)	<ul style="list-style-type: none"> Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. Timing of construction activities should be planned to avoid / minimise impact on key farming activities, including planting and harvesting operations. The proponent should establish a MC to monitor the construction phase and the implementation of the recommended mitigation measures. The MC should be established before the construction phase commences, and should include key stakeholders, including representatives from local farmers and the contractor(s). The MF should also address issues associated with damage to roads and other construction related impacts. 	Low (4)	High
	Spatial Extent	Local				
	Duration	Medium Term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Replaceable				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none"> Ongoing communication with land owners and road users during construction period. This should be outlined in the SEP. The proponent should implement a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads. Implementation of a road maintenance programme throughout the construction phase to ensure that the affected roads maintained in a good condition and repaired once the construction phase is completed. Repair of all affected road portions at the end of construction period where required. Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers. All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. 		
Damage to farmland and loss of grazing and or crops.	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> The loss of high-quality agricultural land should be avoided and or minimised by careful planning of the final layout of the proposed SEF facilities. The 	Low (4)	High
	Spatial Extent	Local				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Duration	Medium Term		<p>recommendations of the agricultural / soil assessment should be implemented.</p> <ul style="list-style-type: none">Affected landowners should be consulted about the timing of construction related activities in advance.The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised.An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase.All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase.The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be drawn up by the Environmental Consultants appointed to manage the EIA.The implementation of the Rehabilitation Programme should be monitored by the ECO.		
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Low				
OPERATIONAL PHASE						
	Status	Positive	Moderate (3)	<ul style="list-style-type: none">Maximise the number of employment opportunities for local community members.	High (2)	High

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
Improve South Africa's energy security and reduce reliance on coal	Spatial Extent	National		<ul style="list-style-type: none"> Implement training and skills development programs for members from the local community. Maximise opportunities for local content and procurement. 		
	Duration	Long Term				
	Consequence	Moderate				
	Probability	Very Likely				
	Reversibility	N/A				
	Irreplaceability	N/A				
Creation of employment and business opportunities associated with the operational phase.	Status	Positive	Low (4)	<ul style="list-style-type: none"> Implementation of a Stakeholder Engagement Plan (SEP) during the operational phase. Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area. Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. Before the operational phase commences the proponent should meet with representatives from 	Moderate (3)	High
	Spatial Extent	Regional				
	Duration	Long Term				
	Consequence	Slight				
	Probability	Very Likely				
	Reversibility	N/A				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Irreplaceability	N/A		<p>the MM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the operational phase.</p> <ul style="list-style-type: none"> ▪ The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the operational phase of the project. ▪ Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the operational phase. ▪ The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. ▪ The proponent should liaise with the MM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work. 		

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
				<ul style="list-style-type: none"> The proponent should investigate providing training and skills development to enable locally based service providers to provide the required services for the operational phase 		
Generation of additional income for affected landowners.	Status	Positive	Low (4)	<ul style="list-style-type: none"> Implement agreements with affected landowners. The loss of high-quality agricultural land should be avoided and or minimised by careful planning in the final layout of the proposed SEF facilities. The recommendations of the agricultural / soil assessment should be implemented. 	Moderate (3)	High
	Spatial Extent	Local				
	Duration	Long Term				
	Consequence	Slight				
	Probability	Very Likely				
	Reversibility	N/A				
	Irreplaceability	N/A				
Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the areas rural sense of place.	Status	Negative	Low (4)	<ul style="list-style-type: none"> The mitigation measures proposed by the visual specialist should be adhered to. Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during operation. 	Low (4)	High
	Spatial Extent	Regional				
	Duration	Long Term				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Impact on rural sense of place and associated impact on property values.	Status	Negative	Low (4)	<ul style="list-style-type: none"> The mitigation measures proposed by the visual specialist should be adhered to. Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during operation. 	Low (4)	High
	Spatial Extent	Regional				
	Duration	Long Term				
	Consequence	Slight				
	Probability	Very Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Impact on existing and future tourism operations.	Status	Negative	Low (4)	<ul style="list-style-type: none"> The mitigation measures proposed by the visual specialist should be adhered to. 	Low (4)	High

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Spatial Extent	Regional		<ul style="list-style-type: none">Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during operation.		
	Duration	Long Term				
	Consequence	Slight				
	Probability	Very Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
	Reversibility	Negative				
	Irreplaceability	Regional				
DECOMMISSIONING PHASE						
Social impacts associated with retrenchment including loss of jobs, and source of income.	Status	Negative	Moderate (3)	<ul style="list-style-type: none">The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning.	Low (4)	High
	Spatial Extent	Local				
	Duration	Short term				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation / Enhancement)	Potential mitigation measures / enhancement measures	Significance and Ranking (Post-Mitigation / Enhancement)	Confidence Level
	Consequence	Moderate-Low				
	Probability	Likely		<ul style="list-style-type: none"> Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas. 		
	Reversibility	High				
	Irreplaceability	Low				

6.5 Conclusion

The effect of potential on-site impacts can be limited or reduced to acceptable levels through avoidance, minimisation and the implementation of appropriate mitigation measures and management actions during the construction, operational and decommissioning phases of this proposed development. Therefore, based on the scoping level specialist input potential negative impacts associated with the Vhuvhili SEF project are anticipated to mainly be of **low significance after mitigation**, whilst some positive socio-economic impacts of moderate significance are expected.

6.6 Cumulative Impacts

The Specialists will assess potential cumulative impacts by identifying other renewable energy generation facilities, within a 50 km radius of the proposed Vhuvhili SEF project, that have been approved (i.e. positive EA has been issued) or which have a BA/EIA process underway as at May 2022.

Cumulative impacts, which were identified by the Specialists during the Scoping Phase and that are associated with these similar types of development projects include *inter alia*:

- **AGRICULTURE:** Regional loss (including by degradation) of agricultural land, with a consequent decrease in agricultural production.
- **TERRESTRIAL BIODIVERSITY AND SPECIES:**
 - Loss of vegetation, habitat and threatened species;
 - Compromising integrity of CBA, ESA and NPAES;
 - Reduced ability to meet conservation obligations and targets;
 - Loss of landscape connectivity and disruption of broad-scale ecological processes.
- **AQUATIC BIODIVERSITY:**
 - CONSTRUCTION AND OPERATIONAL PHASE:
 - Changes in water flow regime
 - Invasive alien plant growth and modification of runoff characteristics.
- **AVIFAUNA:**
 - CONSTRUCTION PHASE:
 - Displacement due to disturbance associated with the construction of the solar PV plant and associated infrastructure.
 - OPERATIONAL PHASE:
 - Habitat transformation, collisions with the solar panels, entrapment in fences, and electrocution in onsite substations.
 - DECOMMISSIONING PHASE:
 - The noise and movement associated with the activities at the development area will be a source of disturbance which would lead to the displacement of avifauna from the area.

- **VISUAL (all phases):**
 - Additional renewable energy and associated grid connection infrastructure developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts.
 - Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings.
 - Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes.
 - The night- time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities in the broader area.
- **HERITAGE (ARCHAEOLOGY AND CULTURAL LANDSCAPE) (all phases):**
 - Impacts to archaeological resources; and
 - Intrusion of SEF and equipment into the landscape
- **SOCIO-ECONOMIC (all phases):**
 - Impact on Sense of Place due to the Change in Visual Characteristics of the Area.
 - Impact on local services specifically medical, education and accommodation
 - Impact on the local economy due to the creation of employment, skills development and training opportunities and creation of downstream business opportunities.

The proposed renewable energy projects located within 50 km of the proposed Vhuvhili SEF Project that will be considered in the Cumulative Impact Assessment in the EIA phase are detailed in Table 7.3 and shown in Figure 7.1 within Chapter 7 of this Draft Scoping Report.