

Appendix F: Impacts Assessment Methodology

Potential impacts (terrestrial ecology (including flora, fauna and avifauna), wetlands, soils, heritage, visual and social) were assessed through the Basic Assessment process for the proposed **Becrux Two Solar PV Energy Facility**, in the Free State Province. These impacts were identified through specialist reports included in **Appendix D** of the Basic Assessment Report. All the specialists followed the method outlined below to evaluate and assess the environmental impacts associated with the development.

Potential impacts associated with the construction and operation of the proposed solar energy facility and associated infrastructure are discussed below. The following methodology was used in assessing impacts related to the proposed development. All impacts are assessed according to the following criteria:

- » The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. a score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- » The **duration**, wherein it is indicated whether:
 - * The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1.
 - * The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2.
 - * Medium-term (5–15 years) – assigned a score of 3.
 - * Long-term (> 15 years) - assigned a score of 4.
 - * Permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
 - * 0 is small and will have no effect on the environment.
 - * 2 is minor and will not result in an impact on processes.
 - * 4 is low and will cause a slight impact on processes.
 - * 6 is moderate and will result in processes continuing but in a modified way.
 - * 8 is high (processes are altered to the extent that they temporarily cease).
 - * 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
 - * 1–5, where 1 is very improbable (probably will not happen).
 - * 2 is improbable (some possibility, but low likelihood.)
 - * 3 is probable (distinct possibility).
 - * 4 is highly probable (most likely).
 - * 5 is definite (impact will occur regardless of any prevention measures).
- » The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- » The **status**, which is described as either positive, negative or neutral.
- » The degree to which the impact can be reversed.
- » The degree to which the impact may cause irreplaceable loss of resources.
- » The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$S = (E+D+M) P$; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » **< 30 points:** Low (i.e., where this impact would not have a direct influence on the decision to develop in the area).
- » **30-60 points:** Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated).
- » **60 points:** High (i.e., where the impact must have an influence on the decision process to develop in the area).

IMPACT ASSESSMENT

For the assessment of the proposed project a Terrestrial Ecology (including flora, fauna and avifauna) and Wetland Impact Assessment, Pedology Impact Assessment, Heritage Impact Assessment (including archaeology and palaeontology), Visual Impact Assessment and a Social Impact Assessment were conducted.

1. TERRESTRIAL ECOLOGY AND WETLAND IMPACT ASSESSMENT

1.1. Terrestrial Ecology (including flora, fauna and avifauna)

The development area falls within the Central Free State vegetation type, which is characterised by undulating plains supporting short grassland, in natural conditions dominated by *Themeda triandra* while *Eragrostis curvula* and *E. chloromelas* become dominant in degraded habitats. It overlaps with a degraded area and other natural areas and is situated 2.2km from a National Protected Area Expansion Strategy (NPAES) focus area. Two red data plant species which are regarded as protected under the Red List of South African plants (South African National Biodiversity Institute (SANBI), 2017) were identified within development area and grid connection corridor. The red data plant species occur frequently within the development area and grid connection corridor and may therefore require a permit from the provincial environmental Department. No plant species protected in terms of the Free State Nature Conservation Ordinance 8 of 1969 and the National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA) were recorded during the field survey of the development area. In addition, no tree species protected in terms of the National Forest Act (No. 84 of 1998) were identified on site.

Six (6) habitats were identified within the development area and grid connection corridor, namely, transformed areas, degraded grassland, disturbed grassland, seepage wetlands, unchannelled valley bottom wetlands, and artificial wetlands (refer to **Figure 1**). The identified habitats were allocated a sensitivity category using the guidelines for interpreting site ecological importance in the context of the proposed development activities. According to these guidelines, the natural wetlands (i.e., seep and unchannelled valley bottom) are regarded to be of high sensitivity, the degraded grassland and artificial wetlands are regarded to be of medium sensitivity, and the disturbed grassland and transformed areas are regarded to be of low and very low sensitivity, respectively (refer to **Figure 2**). No mammal, reptile, and amphibian species of conservation concern were recorded during the survey period for the development area.

The development area is located ~45km from an Important Bird Area (IBA), namely, the Suikerbosrand Nature Reserve. Fifty-one (51) bird species were recorded during the survey of the development area and grid connection corridor. Of the identified bird species, the Laughing Doves has the highest abundance, followed by the Southern Red Bishops and the Cape Turtle Doves. None of the species recorded were of conservation concern. Two types of nests were observed, namely, the nests of the Southern Masked Weavers and the White-browed Sparrow Weavers. It is therefore recommended that if feasible, construction activities take place during the breeding season (September to March).

Eleven species were found that would be regarded as high-risk species, namely, the Egyptian Goose, Red-billed Teal, African Black Duck, Yellow-billed Duc, Black-headed Heron, Hadedda Ibis, Steppe Buzzard, Helmeted Guineafowl, Spur-winged Goose, Glossy Ibis, and African Sacred Ibis. High risk species are species that are regarded as collision prone species and species that would have a high electrocution risk on powerlines.

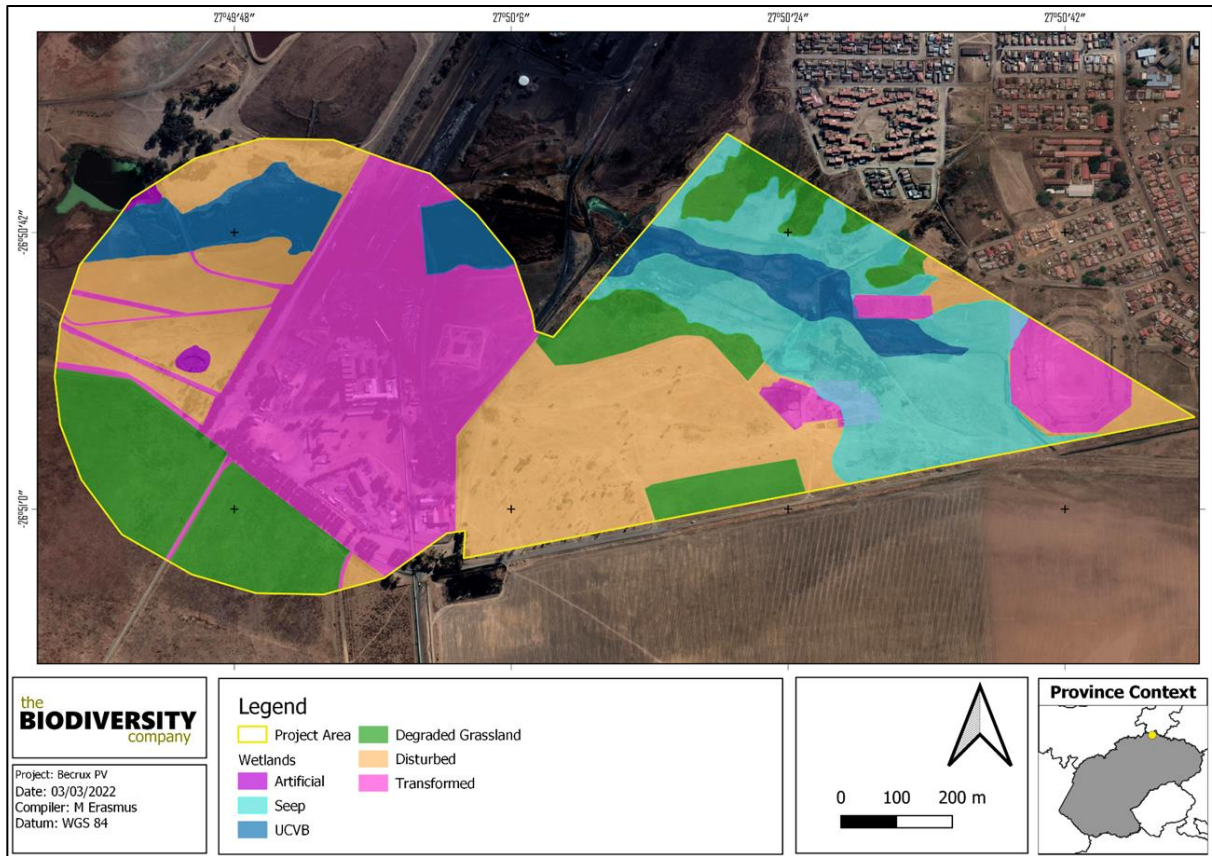


Figure 1: Habitats identified in the development area and grid connection corridor.

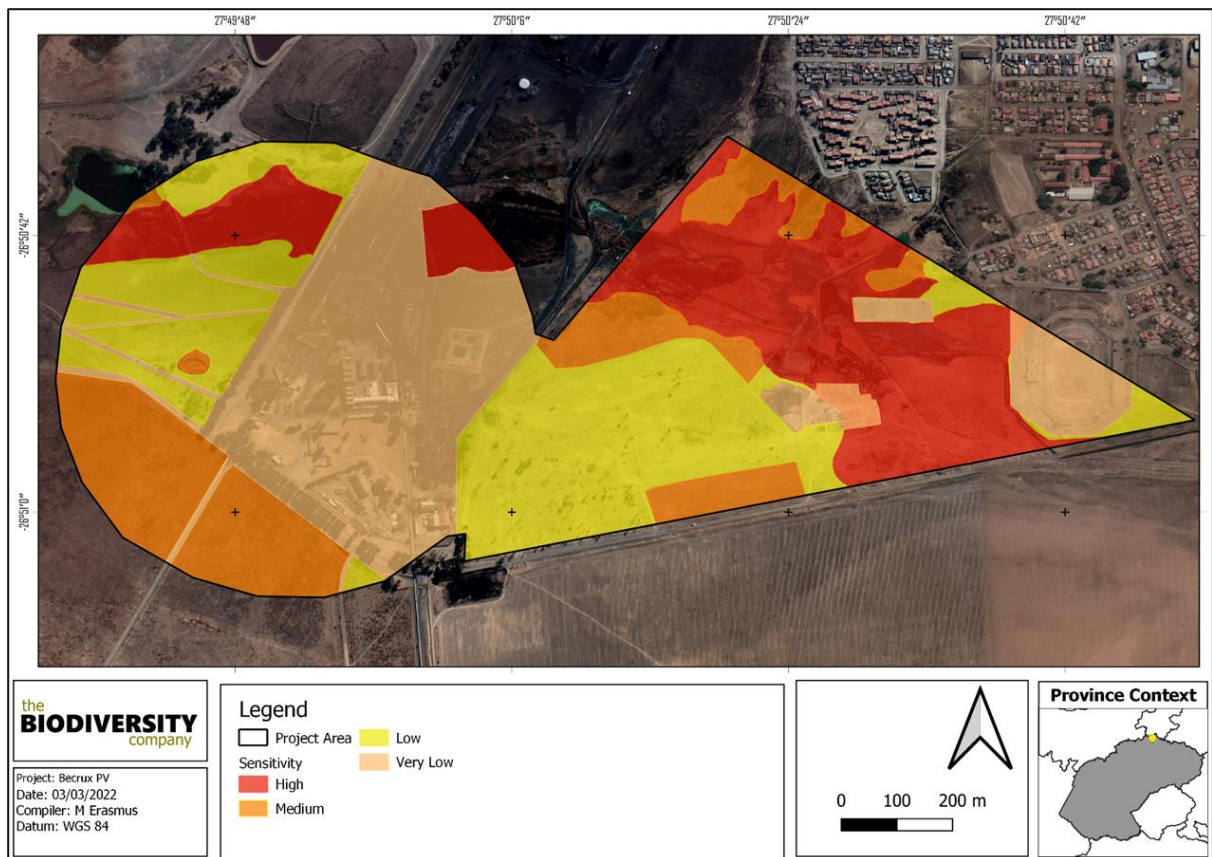


Figure 2: Sensitivity of the of habitats identified within the development area and grid connection corridor

1.2. Wetlands

A total of three (3) wetland systems were identified and delineated within the 500m regulated area surrounding the development area (refer to **Figure 3**). These comprised both natural and artificial systems, with the artificial systems consisting of impoundments/dams and drainage features. Of the three (3) wetland systems relevant to the development area, only two are classified as natural systems, namely, the unchanneled valley bottom wetland associated with an unnamed tributary of the Leeuspruit system, and hillslope seepage areas.

Both the unchannelled valley bottom wetland and seepage wetlands overall scored Moderately Low in terms of wetland ecosystem services. Overall, the Unchannelled valley bottom wetland and the seepage areas were determined to be in a critically modified (Class F) to seriously modified (Class E) state, respectively. The overall ecological importance and sensitivity of the systems was determined to be moderate. A 22m 'no-go' buffer around the identified wetland features was initially calculated assuming mitigation measures are applied. However, taking into consideration the Critically Endangered threat status of the wetlands, it is recommended that a conservative approach be opted for the wetland systems and a minimum buffer width of 30m be implemented.

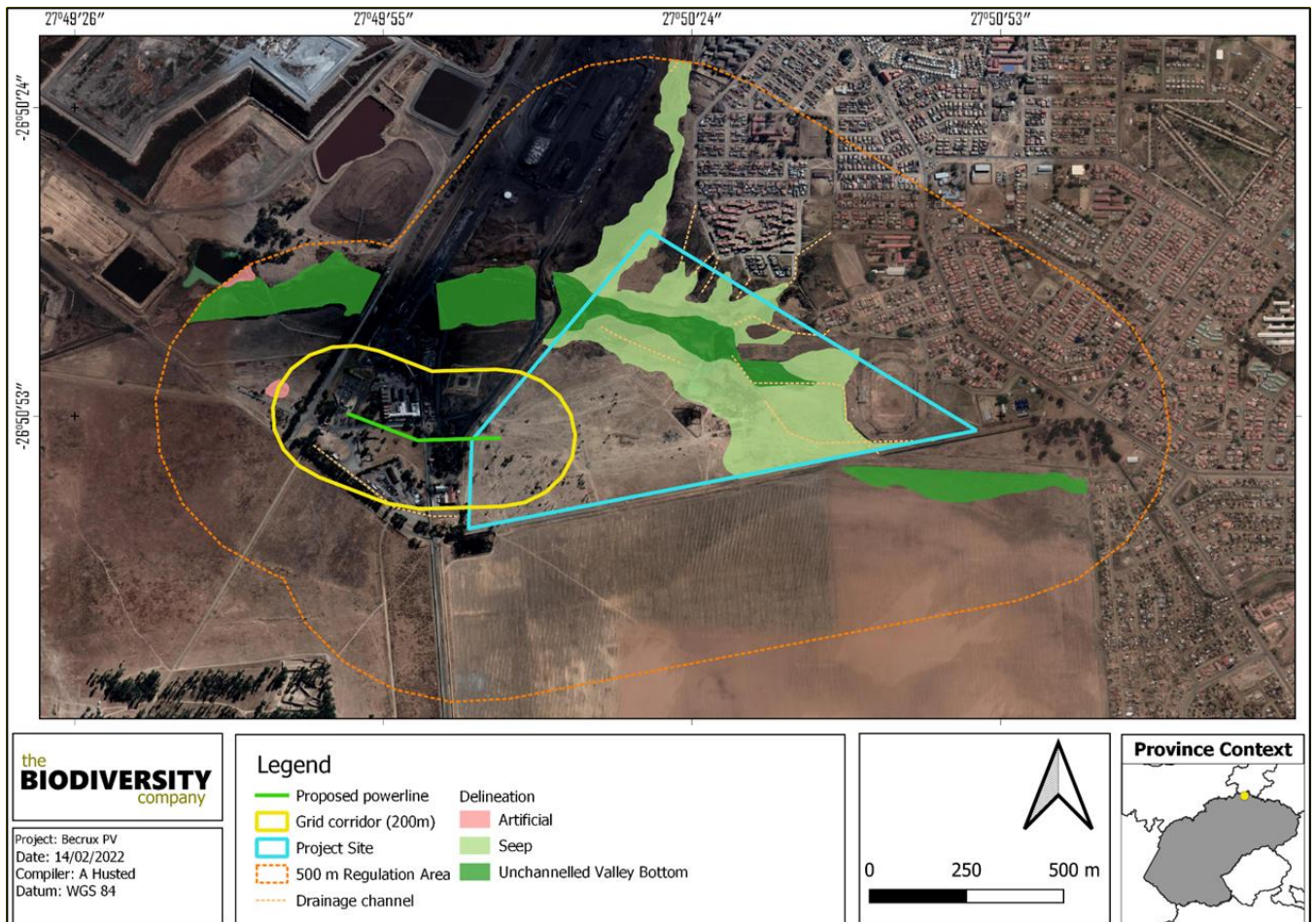


Figure 3: Delineated wetland systems within the 500m regulated area

1.3. Impact Assessment Tables

Construction Phase

Nature: <u>Loss of vegetation within the development footprint</u>		
Destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including protected species.		
	Without Mitigation	With Mitigation
Extent	Moderate (3)	Very low (1)
Duration	Permanent (5)	Short term (2)
Magnitude	High (8)	Minor (2)
Probability	Highly probable (4)	Probable (3)
Significance	High (64)	Low (15)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes, although this impact cannot be well mitigated as the loss of vegetation is unavoidable.	
Mitigation:		
<ul style="list-style-type: none"> » Areas rated as High sensitivity and their buffers in proximity to the development areas should be avoided as much is feasible. Avoided areas must be declared as 'no-go' areas during the life of the project, and all efforts must be made to prevent access to these areas from construction workers and machinery. The infrastructure should be realigned to prioritise development within very low/ low sensitivity areas. Mitigated development in medium sensitivity areas is permissible. » Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible. All activities must be restricted to within the low/medium sensitivity areas. No further loss of very high sensitivity areas should be permitted. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon. » Existing access routes, especially roads must be made use of. » All laydown, chemical toilets etc. should be restricted to medium sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction phase has been concluded. No permanent construction phase structures should be permitted. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials where possible. No storage of vehicles or equipment will be allowed outside of the designated project areas. » A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment. Construction activities and vehicles could cause spillages of lubricants, fuels and waste material potentially negatively affecting the functioning of the ecosystem. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area. » It should be made an offence for any staff to take/ bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants. » A fire management plan needs to be compiled and implemented to restrict the impact fire might have on the surrounding areas. 		

- » Any individual of the protected plants that are present needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any protected plants in order to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. Infrastructure, development areas and routes where protected plants cannot be avoided, these plants many being geophytes or small succulents should be removed from the soil and relocated/ re-planted in similar habitats where they should be able to resprout and flourish again. All protected and red-data plants should be relocated, and as many other geophytic species as possible. If the plants cannot be relocated seed must be collected and utilised as part of the rehabilitation process.
- » Environmentally friendly dust suppressants must be utilised.
- » A qualified Environmental Control Officer must be on site when construction begins. A site walk through is recommended by a suitably qualified ecologist prior to any construction activities, preferably during the wet season and any SSC should be noted. In situations where the threatened and protected plants must be removed, the proponent may only do so after the required permission/permits have been obtained in accordance with national and provincial legislation. In the abovementioned situation the development of a search, rescue and recovery program is suggested for the protection of these species. Should animals not move out of the area on their own, relevant specialists must be contacted to advise on how the species can be relocated.
- » All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" areas to be avoided.

Residual Impacts:

The loss of currently intact vegetation is an unavoidable consequence of the project and cannot be entirely mitigated. The residual impact would however be low.

Nature: Introduction of alien species, especially plants		
Degradation and loss of surrounding natural vegetation arising from construction activities and dust precipitation		
	Without mitigation	With mitigation
Extent	High (4)	Low (2)
Duration	Long term (4)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (56)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
» Compilation of and implementation of an alien vegetation management plan.		
» The footprint area should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprint of the roads must be kept to prescribed widths.		
» A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the likely presence of SCCs.		

Residual Impacts:

Long-term broad scale IAP infestation if not mitigated.

Nature: Destruction of protected plant species

Loss of protected plant species, these are mainly provincially protected species

	Without mitigation	With mitigation
Extent	Moderate (3)	Very low (1)
Duration	Permanent (5)	Short term (2)
Magnitude	High (8)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	High (64)	Low (10)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	The plant SCCs require a permit for relocation.	

Mitigation:

- » Any individual of the protected plants that are present needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any protected plants in order to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. Infrastructure, development areas and routes where protected plants cannot be avoided, these plants many being geophytes or small succulents should be removed from the soil and relocated/ re-planted in similar habitats where they should be able to resprout and flourish again. All protected and red-data plants should be relocated, and as many other geophytic species as possible. If the plants cannot be relocated seed must be collected and utilised as part of the rehabilitation process.
- » A qualified Environmental Control Officer must be on site when construction begins. A site walk through is recommended by a suitably qualified ecologist prior to any construction activities, preferably during the wet season and any SSC should be noted. In situations where the threatened and protected plants must be removed, the proponent may only do so after the required permission/permits have been obtained in accordance with national and provincial legislation. In the abovementioned situation the development of a search, rescue and recovery program is suggested for the protection of these species.

Residual Impacts:

The loss of some of the protected species are unavoidable.

Nature: Displacement of faunal community due to habitat loss, direct mortalities and disturbance

Construction activity will likely lead to direct mortality of fauna due to earthworks, vehicle collisions, accidental hazardous chemical spills and persecution. Disturbance due to dust and noise pollution and vibration may disrupt behaviour.

	Without mitigation	With mitigation
Extent	Moderate (3)	Low (2)
Duration	Moderate term (3)	Very short term (1)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (48)	Low (10)

Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, to some extent. Noise and disturbance cannot be well mitigated. Impacts on fauna due to human presence, such as vehicle collisions, poaching, and persecution can be mitigated.	
Mitigation:		
<ul style="list-style-type: none"> » A site walk through is recommended by a suitably qualified ecologist prior to any construction activities, preferably during the wet season and any SSC should be noted. Should animals not move out of the area on their own, relevant specialists must be contacted to advise on how the species can be relocated. » The duration of the construction phase should be minimized to as short term as possible, to reduce the period of disturbance on fauna. » Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals. » No trapping, killing, or poisoning of any wildlife is to be allowed. » Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible. » All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited. » All areas to be developed must be walked through prior to any activity to ensure no nests or fauna species are found in the area. Should any Species of Conservation Concern not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken. » Any holes/deep excavations must be dug and planned in a progressive manner and shouldn't be left open overnight unless appropriate demarcation is in place. Should the holes be left open overnight, they must be covered temporarily to ensure no small fauna species fall in. » Ensure that cables and connections are insulated successfully to reduce electrocution risk and preferably buried. » A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment. Construction activities and vehicles could cause spillages of lubricants, fuels and waste material potentially negatively affecting the functioning of the ecosystem. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area. » Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces. No non environmentally friendly suppressants may be used as this could result in pollution of water sources 		
Residual Impacts:		
It is probable that some individuals of susceptible species will be lost to construction-related activities despite mitigation. However, this is not likely to impact the viability of the local population of any fauna species.		

Nature: Collection of eggs, nest destruction and poaching		
	Without mitigation	With mitigation
Extent	High (4)	Low (2)

Duration	Permanent (5)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (60)	Low (16)
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting or hunting terrestrial species (e.g., guineafowl, francolin), and owls, which are often persecuted out of superstition. » Signs must be put up stating that should any person be found poaching any species they will be fined. » The duration of construction phase should be kept to a minimum and must take place as much is feasible in the winter to avoid disturbing avifauna. » White strips should be placed along the edges of the panels, to reduce similarity to water and deter birds and insects (Horvath et al, 2010). Consider the use of bird deterrent devices to limit collision risk. » All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution. » The design of the proposed PV must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa (Jenkins et al., 2015). » Ensure that cables and connections are insulated successfully to reduce electrocution risk and preferably buried. 		
Residual Impacts:		
There is a possibility that the eggs to be poached could be that of an SCC with decreasing numbers.		

Operation Phase

Nature: Continued fragmentation and degradation of habitats and ecosystems		
Disturbance created during the construction phase will leave the project area vulnerable to erosion and IAP encroachment.		
	Without Mitigation	With Mitigation
Extent	Moderate (3)	Low (2)
Duration	Long term (4)	Very short term (1)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (52)	Low (10)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes, with proper management and avoidance, this impact can be mitigated to a low level.	
Mitigation:		
<ul style="list-style-type: none"> » Speed limits must be put in place to reduce erosion. » A stormwater management plan must be compiled and implemented. 		

- » All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMP. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" areas to be avoided.
- » Environmentally friendly dust suppressants must be utilised.
- » A fire management plan needs to be compiled and implemented to restrict the impact fire might have on the surrounding areas.
- » A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area.
- » It should be made an offence for any staff to take/ bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.
- » Areas that are denuded during construction need to be re-vegetated with indigenous vegetation where possible to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species.

Residual Impacts:

There is still some potential for erosion and IAP encroachment even with the implementation of control measures. Impacts will however be low with the implementation of control measures.

Nature: Spread of alien and/or invasive species		
Degradation and loss of surrounding natural vegetation		
	Without mitigation	With mitigation
Extent	High (4)	Low (2)
Duration	Long term (4)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (56)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
» Compilation of and implementation of an alien vegetation management plan.		
» The footprint area should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprint of the roads must be kept to prescribed widths.		
» A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the likely presence of SCCs.		
Residual Impacts:		
Long term broad scale IAP infestation if not mitigated.		

Nature: Ongoing displacement and direct mortalities of faunal community (including SCC) due to disturbance (road collisions, collisions with substation, noise, light, dust, vibration)		
The operation and maintenance of the proposed development may lead to disturbance or persecution of fauna in the vicinity of the development.		
	Without Mitigation	With Mitigation
Extent	Moderate (3)	Low (2)
Duration	Long term (4)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	Medium (39)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals. » Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible. » All maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited. 		
Residual Impacts:		
<ul style="list-style-type: none"> » Disturbance from maintenance activities will occur albeit at a low and infrequent level. » Less migratory species will be found in the area. » Road killings are still a possibility. » Migratory routes of fauna will change, fauna and flora species composition will change. 		

Nature: Collisions with PV panels, associated powerlines and connection lines and fences		
	Without mitigation	With mitigation
Extent	High (4)	High (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Moderate (6)
Probability	Highly probable (4)	Probable (3)
Significance	High (64)	Medium (42)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	

<p>Mitigation:</p> <ul style="list-style-type: none"> » The design of the proposed solar plant must be of a type or similar structure as endorsed by the Eskom-Endangered Wildlife Trust (EWT) Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa. » Infrastructure should be consolidated where possible in order to minimise the amount of ground and air space used. This would involve using existing/approved pylons and associated infrastructure for the 11kV lines. » If any powerlines/connection lines from existing lines to the facility are to be placed above ground, they must be marked with industry standard bird flight diverters. » Fencing mitigations: <ul style="list-style-type: none"> * Top 2 strands must be smooth wire * Routinely retention loose wires * Minimum 30cm between wires * Place markers on fences
<p>Residual Impacts: Some collisions of avifauna might still occur regardless of mitigation</p>

Nature: <u>Electrocution by solar plant connections and powerline</u>		
	Without mitigation	With mitigation
Extent	High (4)	High (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Moderate (6)
Probability	Highly probable (4)	Improbable (2)
Significance	High (64)	Low (28)
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
<p>Mitigation:</p> <ul style="list-style-type: none"> » Infrastructure should be consolidated where possible/practical in order to minimise the amount of ground and air space used. This would involve using the existing/approved pylons and associated infrastructure for different lines. » Ensure that monitoring is sufficiently frequent (preferably monthly) to detect electrocutions reliably and that any areas where electrocutions occurred are repaired as soon as possible. » During the first year of operation, quarterly reports summarizing interim findings should be compiled by the developer and submitted to BirdLife South Africa. If the findings indicate that electrocutions have not occurred or are minimal with no red-listed species, an annual report can be submitted. 		
<p>Residual Impacts: Electrocutions might still occur regardless of mitigations</p>		

Decommissioning Phase

Nature: <u>Continued fragmentation and degradation of habitats</u>		
	Without mitigation	With mitigation
Extent	Moderate (3)	Low (2)
Duration	Long term (4)	Very short term (1)
Magnitude	High (8)	Minor (2)
Probability	Highly probable (4)	Very improbable (1)

Significance	Medium (60)	Low (5)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » Implementation of a rehabilitation plan. » Implementation of an alien invasive management plan and monitoring on an annual basis for 3 years post construction. » There should be follow-up rehabilitation and revegetation of any remaining bare areas with indigenous flora including seeds of the SCCs found on site 		
Residual Impacts:		
No significant residual risks are expected, although IAP encroachment and erosion might still occur but would have a negligible impact if effectively managed.		

Nature: <u>Displacement of faunal community due disturbance (road collisions, noise, dust, vibration)</u>		
	Without mitigation	With mitigation
Extent	High (4)	Moderate (3)
Duration	Long term (4)	Moderate term (3)
Magnitude	High (8)	Moderate (6)
Probability	Highly probable (4)	Probable (3)
Significance	High (64)	Medium (36)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » Dust management needs to be undertaken in the areas where the infrastructure will be removed. This includes wetting of the soil. This area must be rehabilitated as soon as possible. » All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the decommissioning area. » All vehicles (construction or other) accessing the site should adhere to a low-speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g., nightjars and owls) which sometimes forage or rest on roads, especially at night. » The area must be walked through prior to decommissioning to ensure fauna species are not affected by the removal of the infrastructure. 		
Residual Impacts:		
If this is mitigated and monitored correctly no residual impacts should be present.		

Nature: <u>Electrocution by solar plant connections and powerline</u>		
	Without mitigation	With mitigation
Extent	High (4)	High (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Moderate (6)

Probability	Highly probable (4)	Improbable (2)
Significance	High (64)	Low (28)
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:		
» The removal of the powerline and solar panels will negate this impact		
Residual impacts:		
No residual impact		

1.4. Cumulative Impact Assessment

The development of the proposed infrastructure will contribute to cumulative habitat loss, especially in the ecological corridors like the wetland and thereby impact the water resource and ecological processes in the region.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Moderate (3)	Moderate (3)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Medium (33)
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:		
» Should the vegetation be removed, the impact cannot be mitigated.		
Residual impacts:		
Will result in the loss of:		
» Wetlands.		
» Less migratory species will be found in the area.		
» Road killings are still a possibility.		
» Migratory routes of fauna will change.		
» Fauna and flora species composition will change.		

1.5. Conclusion

The Terrestrial Ecology and Wetland Impact Assessment (**Appendix D1** of the BA Report) determined that no significant impacts from a terrestrial ecology (including fauna, avifauna and flora) and wetlands perspective are expected subject to the implementation the recommended mitigation measures, especially pertaining to wetlands, as much of the areas have been found to be modified. Historically, mining and the land use has led to the deterioration of the six habitats identified within the development area and grid connection corridor. The classification of the development area as degraded and other natural area is therefore corroborated.

2. PEDOLOGY IMPACT ASSESSMENT

A Pedology Assessment of the development area was undertaken as part of the BA process (refer to **Appendix D2** of the BA Report). The study found that the development area falls within Land Types Ca 1 and Dc 7. The Ca land type is characterised by plinthic catena. Upland duplex and/or margalitic soils are common in this land type and is undifferentiated. The Dc land type is characterised by Prismacutanic and/or pedocutanic diagnostic horizons with the addition of one or more of the following: Vertic, melanic and red structured diagnostic horizons. Four soil forms were identified throughout the 50 m regulated area, namely, Avalon, Longlands, Westleigh and Rensburg, with the Avalon soil form being the most dominant soil form over the regulated area. Various hydromorphic soil forms were also identified throughout the 50 m regulated area, which were mostly dominated by the Rensburg soil form. The Avalon soil form is regarded to be most important in the development area as it demonstrates the most sensitive land capability. It consists of an orthic topsoil on top of a yellow- brown apedal horizon, which in turn is underlain by a soft plinthic horizon.

Three land potential levels were determined within the development area and grid connection corridor, namely, land potential level 5, level 'Vlei', and level 6. Five potential land capability classes are located within the development area and grid connection corridor, namely land capability classes 6 to 8, which are regarded to be of low/moderate and moderate sensitivity, and land capability classes 9 to 10, which are regarded to be of moderately high sensitivity (refer to **Figure 4**).

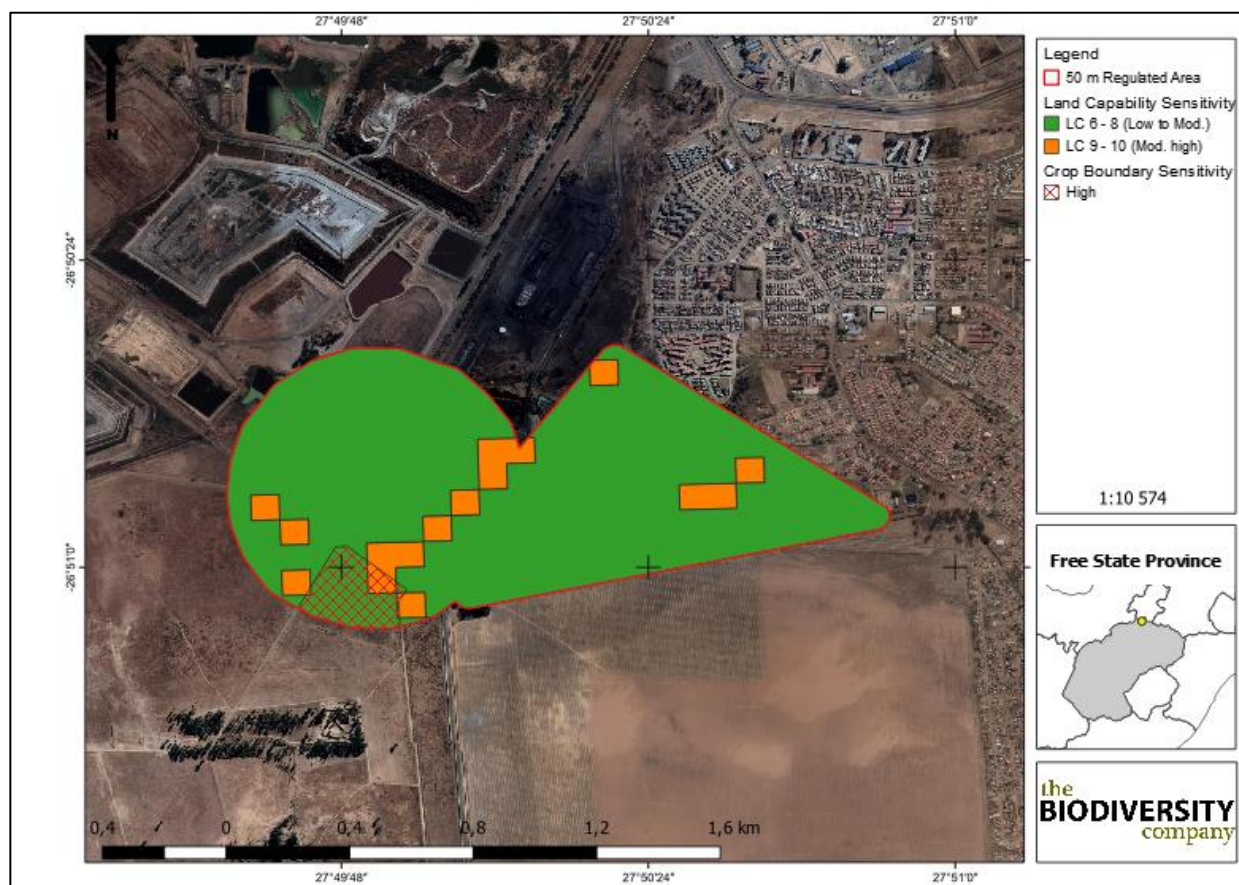


Figure 4: Land Capability Sensitivity (DAFF, 2017) and Crop Boundary Sensitivity (DFFE, 2022).

2.1. Impact Assessment Tables

Construction Phase

PV Area

Nature: <u>Loss of land capability</u>		
	Without mitigation	With mitigation
Extent	Low (2)	Low (2)
Duration	Short Term (2)	Short Term (2)
Magnitude	High (8)	High (8)
Probability	Definite (5)	Highly probable (4)
Significance	Medium (60)	Medium (48)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Mitigation:		
<ul style="list-style-type: none"> » The establishment of large concrete areas should be avoided as far as possible. » Develop and implement a rehabilitation management and monitoring plan from the onset of construction. » Demarcate all access routes. » Vegetate or cover all stockpiles after stripping/removing soils. » All contractors must have spill kits available and be trained in the correct use thereof. » All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping". » Have action plans on site, and training for contractors and employees in the event of spills, leaks and other impacts to the aquatic systems. 		
Residual Impacts:		
Limited residual impacts will be associated with these activities due to the fact that the soil is not classified as being sensitive and therefore the project area will not be characterised by measurable residual impacts.		

Overhead Power Line

Nature: <u>Loss of land capability</u>		
	Without mitigation	With mitigation
Extent	Low (2)	Low (2)
Duration	Short Term (2)	Short Term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	Low (24)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	High	High

Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » All contractors must have spill kits available and be trained in the correct use thereof. » All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping". » Have action plans on site, and training for contractors and employees in the event of spills, leaks and other impacts to the aquatic systems. 		
Residual Impacts:		
Limited residual impacts will be associated with these activities due to low levels of impacts foreseen.		

Substation

Nature: <u>Loss of land capability</u>		
	Without mitigation	With mitigation
Extent	Low (2)	Low (2)
Duration	Short Term (2)	Short Term (2)
Magnitude	High (8)	High (8)
Probability	Definite (5)	Highly probable (4)
Significance	Medium (60)	Medium (48)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Mitigation:		
<ul style="list-style-type: none"> » The establishment of large concrete areas should be avoided as far as possible. » Vegetate or cover all stockpiles after stripping/removing soils. » All contractors must have spill kits available and be trained in the correct use thereof. » All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping". » Have action plans on site, and training for contractors and employees in the event of spills, leaks and other impacts to the aquatic systems. 		
Residual Impacts:		
Limited residual impacts will be associated with these activities due to the fact that the soil is not classified as being sensitive and therefore the project area will not be characterised by measurable residual impacts.		

Operation Phase

PV Area

Nature: <u>Loss of land capability</u>		
	Without mitigation	With mitigation

Extent	Low (2)	Low (2)
Duration	Short Term (2)	Short Term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (18)
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
» Continuously monitor erosion on site.		
» Monitor compaction on site.		
Residual Impacts:		
Limited residual impacts will be associated with these activities due to low levels of impacts foreseen.		

Overhead Power Line

Nature: <u>Loss of land capability</u>		
	Without mitigation	With mitigation
Extent	Very Low (1)	Very Low (1)
Duration	Long Term (4)	Long Term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Improbable (2)	Very improbable (1)
Significance	Low (14)	Low (7)
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
» Continuously monitor erosion on site.		
» Monitor compaction on site.		
Residual Impacts:		
Limited residual impacts will be associated with these activities due to low levels of impacts foreseen.		

Substation

Nature: <u>Loss of land capability</u>		
	Without mitigation	With mitigation
Extent	Low (2)	Low (2)
Duration	Short Term (2)	Short Term (2)

Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (18)
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » Continuously monitor erosion on site. » Monitor compaction on site. 		
Residual Impacts:		
Limited residual impacts will be associated with these activities due to low levels of impacts foreseen.		

2.2. Cumulative Impact Assessment

Cumulative impacts within the proposed PV area and its surroundings have been determined to be low. Soil resources in the area have been impacted upon by means of built-up areas, yet, not to such an extent that the larger integrity of soil resources within the area is at stake.

Nature: <u>Loss of land capability</u>		
	<i>Cumulative impact of the project and other projects in the area</i>	<i>Cumulative impact of the project and other projects in the area</i>
<i>Extent</i>	Low (2)	Low (2)
<i>Duration</i>	Permanent (5)	Permanent (5)
<i>Magnitude</i>	Minor (2)	Minor (2)
<i>Probability</i>	Improbable (2)	Improbable (2)
Significance	Low (18)	Low (18)
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> » The establishment of large concrete areas should be avoided as far as possible. » Develop and implement a rehabilitation management and monitoring plan from the onset of construction. » Demarcate all access routes. » Vegetate or cover all stockpiles after stripping/removing soils. » All contractors must have spill kits available and be trained in the correct use thereof. » All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping". » Have action plans on site, and training for contractors and employees in the event of spills, leaks and other impacts to the aquatic systems. » Continuously monitor erosion on site. 		

» Monitor compaction on site.

2.3. Conclusion

Considering the primarily low sensitivities associated with the land potential resources, it is the specialist's opinion that the proposed activities will have an acceptable impact on soil resources and that the proposed activities should proceed as have been planned as no loss of land capability is evident. It is also expected that no segregation of high production agricultural resources will occur.

3. HERITAGE IMPACT ASSESSMENT

The development area was thoroughly assessed in the field assessment, as detailed in the Heritage Impact Assessment (refer to **Appendix D3** of the BA Report) (HIA). During the field survey, no heritage and archaeological resources of significance were identified within the development area. Therefore, no impacts to heritage resources are anticipated.

Based on the desktop assessment completed, it was noted that although the area proposed for the development of the Becrux Two Solar PV Energy Facility has been extensively previously disturbed, significant archaeological heritage is known from the broader area and as such, it is possible that the proposed development may negatively impact on similar archaeological heritage.

In terms of palaeontology, the development area is underlain by very highly sensitive rocks of the Vryheid Formation (Ecca Group, Karoo Supergroup) that could potentially preserve impression fossils of the Glossopteris flora. The site visit confirmed that there were no fossils visible on the site and along the route for the grid connection. Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint.

The area proposed for development has been extensively previously disturbed through agriculture and mining infrastructure (Becrux Two Solar PV Energy Facility is proposed to be located adjacent to the Sigma Colliery).

The installation of a Solar PV Energy Facility is therefore in keeping with the broader development character of the immediate surroundings which lie on the peri-urban edge of Sasolburg and the massive Sigma coal mine nearby to the east and northwest. A number of monuments, burial grounds and significant historical structures are located within 10km of the development area; however, none, of these heritage resources are anticipated to be impacted directly or indirectly by the proposed development.

3.1. Impact Assessment Tables

Construction Phase

Nature: It is possible that buried archaeological resources may be impacted by the proposed development in the preferred location		
	Without mitigation	With mitigation
Magnitude	Low (1)	Low (1)
Duration	Permanent (5)	Permanent (5)
Extent	Low (1)	Low (1)

Probability	Very improbable (1)	Very improbable (1)
Significance	Low (7)	Low (7)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Not likely	Not likely
Can impacts be mitigated?	Yes	
Mitigation:		
» Should any previously unrecorded archaeological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way		
Residual Impacts:		
None		

Nature: It is possible that buried palaeontological resources may be impacted by the project in the project area		
	Without mitigation	With mitigation
Magnitude	Low (1)	Low (1)
Duration	Permanent (5)	Permanent (5)
Extent	Low (1)	Low (1)
Probability	Very improbable (1)	Very improbable (1)
Significance	Low (7)	Low (7)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Not likely	Not likely
Can impacts be mitigated?	Yes	
Mitigation:		
» The attached Chance Fossil Finds Procedure must be implemented for the duration of construction activities		
» Should any previously unrecorded palaeontological resources be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.		
Residual Impacts:		
None		

3.2. Cumulative Impact Assessment

In terms of cumulative impacts, there is only one renewable energy facility within 30km of the proposed site. It may also be important to note that the site is located within an area that has been disturbed by numerous mining and industrial activities, as well as residential areas. The preferred area proposed for development is located within an area that has been previously impacted by the development of the Sigma Mine. As such, it is not anticipated that the proposed PV development will have a negative cumulative impact on the broader landscape which is already dominated by mining infrastructure and agriculture. In terms of renewable development activities which can have an industrial feel, it is recommended that such infrastructure be grouped or clustered to avoid sprawl across natural landscapes.

Nature: Cumulative Impact to the sense of place and known archaeological resources		
	Cumulative impact of the project and other projects in the area	Cumulative impact of the project and other projects in the area

Extent	Low (1)	Low (1)
Duration	Medium-term (3)	Long-term (4)
Magnitude	Low (4)	Moderate (5)
Probability	Improbable (2)	Probable (3)
Significance	Low (16)	Low (30)
Status (positive or negative)	Neutral	Neutral
Reversibility	High	Low
Irreplaceable loss of resources?	Unlikely	Possible
Can impacts be mitigated?	N/A	
Mitigation: None		

3.3. Conclusion

There is no objection to the development of the proposed project, on condition that:

- » The Chance Fossil Finds Procedure must be implemented for the duration of construction activities.
- » Should any previously unrecorded archaeological or palaeontological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.

4. VISUAL IMPACT ASSESSMENT

The construction and operation of the proposed Becrux Two Solar PV Energy Facility and its associated infrastructure may have a visual impact on the study area, especially within a 1km radius (and potentially up to a radius of 3km) of the proposed facility. The visual impact will differ amongst places, depending on the distance from the facility. It should also be noted that the study area is not considered to be pristine, due to the presence of existing mining and industrial activities, and infrastructure within the region. The visual amenity of the study areas has therefore already been compromised to a large degree.

The PV facility will primarily be visible to observers living along the western perimeter of the Zamdela residential area. There are no additional farm residences within a 1km radius of the proposed PV facility and a generally limited number of homesteads within a 1–3km (and up to 6km) radius.

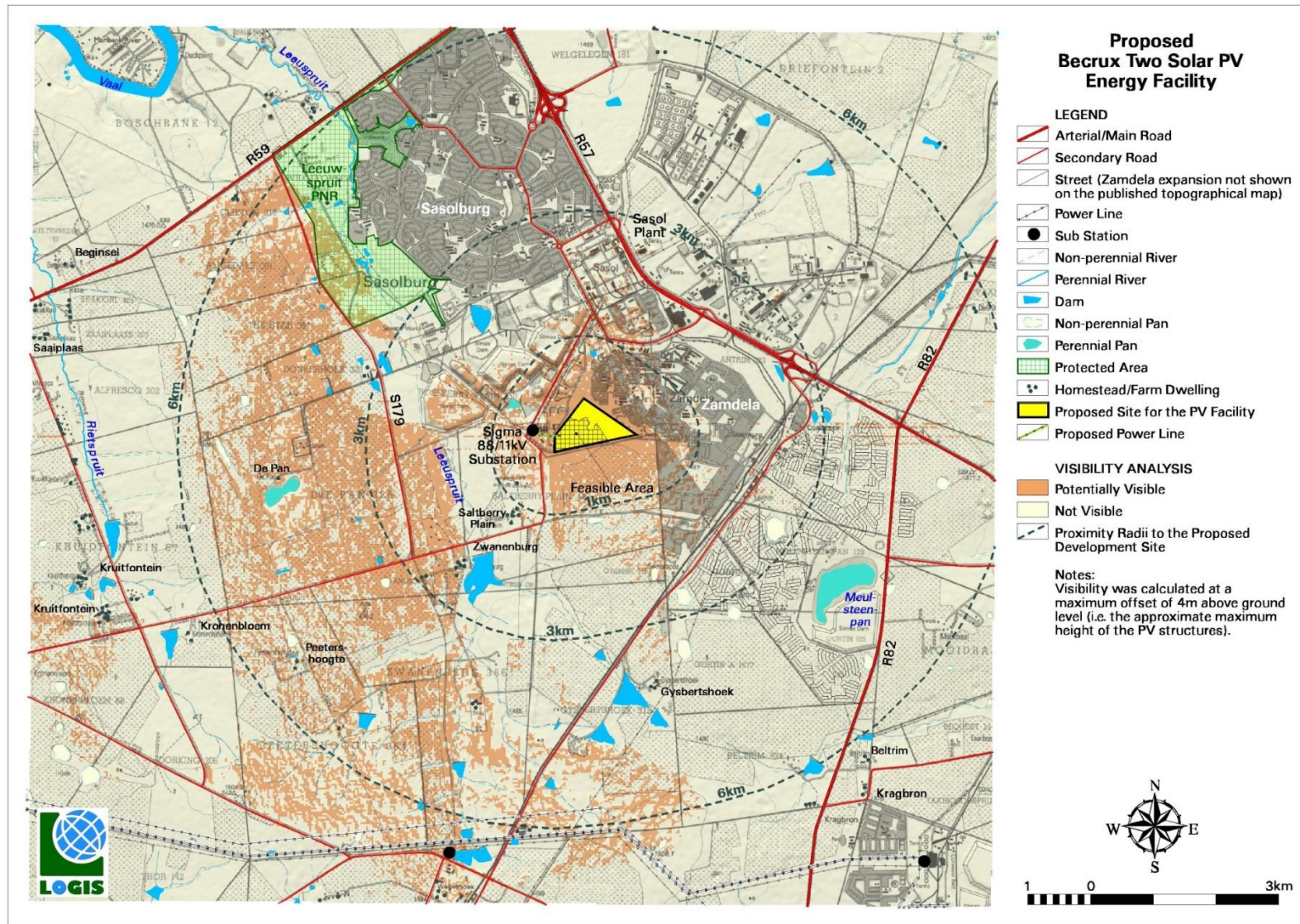


Figure 5: Viewshed analysis of the proposed Becrux Two PV Energy Facility

4.1. Impact Assessment Tables

Construction Phase

Nature: <u>Visual impact of construction activities on sensitive visual receptors in close proximity to the proposed PV facility.</u>		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (48)	Moderate (30)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
Planning:		
» Retain and maintain natural vegetation (if present) immediately adjacent to the development footprint.		
Construction:		
» Ensure that vegetation cover adjacent to the development footprint (if present) is not unnecessarily removed during the construction phase, where possible.		
» Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas), wherever possible.		
» Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.		
» Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed of regularly at licensed waste facilities.		
» Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).		
» Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts.		
» Rehabilitate all disturbed areas (if present/if required) immediately after the completion of construction works.		
Residual impacts:		
None, provided rehabilitation works are carried out as specified.		

Operation Phase

Nature of Impact:		
<u>Visual impact on residents at homesteads within a 1km radius of the PV facility structures</u>		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Moderate (6)
Probability	Highly Probable (4)	Probable (3)
Significance	High (64)	Moderate (42)
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation / Management:

Planning:

- » Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint, where possible.
- » Consult adjacent landowners (if present) in order to inform them of the development and to identify any (valid) visual impact concerns.

Operations:

- » Maintain the general appearance of the facility as a whole.

Decommissioning:

- » Remove infrastructure not required for the post-decommissioning use.
- » Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.

Residual impacts:

The visual impact will be removed after decommissioning, provided the PV facility infrastructure is removed. Failing this, the visual impact will remain.

Nature: Visual impact on observers travelling along the roads and residents at homesteads within a 1 – 3km radius of the PV facility structures

	Without mitigation	With mitigation
Extent	Short distance (3)	Short distance (3)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Moderate (45)	Moderate (39)
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Partially, best practice measures are recommended.	

Best Practise Mitigation/Management:

Planning:

- » Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint where possible.

Operations:

- » Maintain the general appearance of the facility as a whole.

Decommissioning:

- » Remove infrastructure not required for the post-decommissioning use.
- » Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.

Residual impacts:

The visual impact will be removed after decommissioning, provided the PV facility infrastructure is removed. Failing this, the visual impact will remain.

Nature: Visual impact of lighting at night on sensitive visual receptors in close proximity to the proposed PV facility.

	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Moderate (6)
Probability	Probable (3)	Improbable (2)
Significance	Moderate (48)	Low (28)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)

Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
Planning & operation:		
<ul style="list-style-type: none"> » Shield the sources of light by physical barriers (walls, vegetation, or the structure itself), where possible. » Limit mounting heights of lighting fixtures, or alternatively use foot-lights or bollard level lights. » Make use of minimum lumen or wattage in fixtures. » Make use of down-lighters, or shielded fixtures. » Make use of Low Pressure Sodium lighting or other types of low impact lighting. » Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness until the lighting is required for security or maintenance purposes. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the PV facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.		

Nature: The visual impact of solar glint and glare as a visual distraction and possible air/road travel hazard		
	Without mitigation	With mitigation
Extent	Very short distance (4)	N.A.
Duration	Long term (4)	N.A.
Magnitude	Low (4)	N.A.
Probability	Improbable (2)	N.A.
Significance	Low (24)	N.A.
Status (positive or negative)	Negative	N.A.
Reversibility	Reversible (1)	N.A.
Irreplaceable loss of resources?	No	N.A.
Can impacts be mitigated?	N.A.	
Mitigation:		
N.A.		
Residual impacts:		
N.A.		

Nature: The visual impact of solar glint and glare on residents of homesteads in closer proximity to the PV facility		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Improbable (2)
Significance	Moderate (42)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
Planning & operation:		
<ul style="list-style-type: none"> » If specific sensitive visual receptors are identified during operation, investigate screening at the receptor site, where possible. 		

Residual impacts:

The visual impact will be removed after decommissioning, provided the PV facility infrastructure is removed. Failing this, the visual impact will remain.

Nature: Visual impact of the ancillary infrastructure during the operation phase on observers in close proximity to the structures.

	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Improbable (2)	Improbable (2)
Significance	Low (24)	Low (24)
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practise measures can be implemented	

Generic best practise mitigation/management measures:

Planning:

- » Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint/power line servitude where possible.

Operations:

- » Maintain the general appearance of the infrastructure.

Decommissioning:

- » Remove infrastructure not required for the post-decommissioning use.
- » Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.

Residual impacts:

The visual impact will be removed after decommissioning, provided the ancillary infrastructure is removed. Failing this, the visual impact will remain.

Nature: The potential impact on the sense of place of the region.

	Without mitigation	With mitigation
Extent	Medium to longer distance (2)	Medium to longer distance (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Improbable (2)	Improbable (2)
Significance	Low (20)	Low (20)
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practice measures can be implemented	

Generic best practise mitigation/management measures:

Planning:

- » Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint/servitude, where possible.

Operations:

- » Maintain the general appearance of the facility as a whole.

Decommissioning:

- » Remove infrastructure not required for the post-decommissioning use.
- » Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.

Residual impacts:

The visual impact will be removed after decommissioning, provided the PV facility infrastructure is removed. Failing this, the visual impact will remain.

4.2. Cumulative Impact Assessment

There is only one authorised solar energy facility within the larger region. This is the proposed 75MW Solar PV facility at the Lethabo coal-fired power station, approximately 15km north-east of the proposed Becrux Two PV Solar facility. Given the constrained visual exposure of the proposed Becrux Two PV facility and the long distance between the facilities, no cumulative visual exposure (or combined visual impact) is expected.

Nature: The potential cumulative visual impact of the PV facility on the visual quality of the landscape.

	Overall impact of the proposed project considered in isolation (with mitigation)	Cumulative impact of the project and other projects within the area (with mitigation)
Extent	Very short distance (4)	Medium to longer distance (2)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Very improbable (1)
Significance	Moderate (42)	Low (10)
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practise measures can be implemented	

Generic best practise mitigation/management measures:

Planning:

- » Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint where possible.

Operations:

- » Maintain the general appearance of the facility as a whole.

Decommissioning:

- » Remove infrastructure not required for the post-decommissioning use.
- » Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.

Residual impacts:

The visual impact will be removed after decommissioning, provided the PV facility infrastructure is removed. Failing this, the visual impact will remain.

4.3. Conclusion

Overall, the post mitigation significance of the visual impacts is expected to range from moderate to low. An additional mitigating factor for the proposed PV facility is the fact that it utilises a renewable source of energy (considered as an international priority) to generate electricity and is therefore generally perceived in a more favourable light. The PV Facility does not emit any harmful by-products or pollutants and is therefore not negatively associated with possible health risks to observers.

A number of mitigation measures have been proposed to reduce the significance of anticipated visual impacts. Regardless of whether or not mitigation measures will reduce the significance of the anticipated visual impacts, they are considered to be good practice and should all be implemented and maintained throughout the construction, operation and decommissioning phases of the proposed facility.

If mitigation is undertaken as recommended, it is concluded that the significance of most of the anticipated visual impacts will remain at or be managed to acceptable levels. As such, the PV facility and associated infrastructure would be considered to be acceptable from a visual impact perspective and can therefore be authorised.

5. SOCIAL IMPACT ASSESSMENT

Impacts are expected to occur with the development of the Becrux Two Solar PV Energy Facility during the construction, operation and decommissioning phases. Both positive and negative impacts are identified and assessed.

Positive and negative impacts during construction include:

- » Direct employment and skills development.
- » Economic multiplier effects.
- » Safety and security risks.
- » Impacts on daily living and movement patterns.
- » Nuisance impact (noise and dust).

Positive and negative impacts during operation include:

- » Direct employment and skills development.
- » Development of clean, renewable energy infrastructure.
- » Visual and sense of place impacts.

5.1. Impact Assessment Tables

Construction Phase

Nature:			
Employment opportunities and skills development			
Impact description: The creation of employment opportunities and skills development opportunities during the construction phase for the country and local economy			
	Rating	Motivation	Significance
Prior to Enhancement			

Duration	Short-term (1)	The construction period will last for less than one year	Low Positive (30)
Extent	Local – Regional (5)	The impact will occur at a local, regional and national level	
Magnitude	Low (4)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Probable (3)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in skills development of communities in the area	

Enhancement measures:

To enhance the local employment, skills development and business opportunities associated with the construction phase, the following measures should be implemented:

- » It is recommended that a local employment policy be adopted to maximise the opportunities made available to the local labour force. Becrux Solar PV Project Two (Pty) Ltd should make it a requirement for contractors to implement a 'locals first' policy, especially for semi and low skilled job categories.
- » Enhance employment opportunities for the immediate local area, i.e., Metsimaholo Local Municipality. If this is not possible, then the broader focus areas should be considered for sourcing workers.
- » Consideration must be given to women during the recruitment process.
- » It is recommended that realistic local recruitment targets be set for the construction phase.
- » Training and skills development programmes should be initiated prior to the commencement of the construction phase.

Post Enhancement

Duration	Short-term (1)	The construction period will last for less than one year	Medium Positive (55)
Extent	Regional (4)	The impact will occur at a local, regional and national level	
Magnitude	Moderate(6)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
Probability	Definite (5)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in the skills development of communities in the area	

Residual Risks:

Improved pool of skills and experience in the local area

Nature:

Multiplier effects on the local economy

Impact description: Significance of the impact from the economic multiplier effects from the use of local goods and services			
	Rating	Motivation	Significance
Prior to Enhancement			
Duration	Long-term (4)	Will continue for the duration of the project due to legal obligation to pay taxes.	Medium Positive (36)
Extent	Local – Regional (4)	Will include mostly local and some regional impacts	
Magnitude	Low (4)	Will derive from increased cash flow from wages, local procurement, economic growth, taxes and LED and HRD initiatives.	
Probability	Probable (3)	Will depend on; proportion of local spending by employees, capacity of local enterprises to supply; effectiveness of LED and HRD initiatives, contributions to local government.	
Enhancement measures:			
<ul style="list-style-type: none"> » It is recommended that a local procurement policy be adopted by the developer to maximise the benefit to the local economy, where feasible (Metsimaholo Local Municipality). » Becrux Solar PV Project Two (Pty) Ltd should develop a database of local companies, specifically Historically Disadvantaged (HD) 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 contractors. These companies should be notified of the tender process and invited to bid for project-related work where applicable. » Engage with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers, where feasible. 			
Post Enhancement			
Duration	Long-term (4)	As for pre-enhancement	Medium Positive (60)
Extent	Local – Regional (4)	SMME capacity building will limit procurement from outside the local municipality	
Magnitude	Low (4)	Mitigation will likely increase intensity of multiplier effects as it will concentrate impact to local area, sustainability of initiatives will also be increased if aligned with other those of other institutions	
Probability	Definite (5)	Increased local employment and procurement as well as skilled SMME's skill enhance likelihood of benefits to local economy	
Residual Risks:			
Improved local service sector, growth in local business.			

Nature: Safety and security			
Impact description: Temporary increase in safety and security concerns associated with the influx of people during the construction phase			
	Rating	Motivation	Significance
Prior to Mitigation			
Duration	Short-term (2)	Will be limited to the construction phase which is less than one year.	Low Negative (27)
Extent	Local – Regional (3)	Safety concerns will affect nearby communities.	
Magnitude	Low (4)	Could place the lives of neighboring community members at risk.	
Probability	Probable (3)	Traffic would need to be considered in the area	
Mitigation:			
<ul style="list-style-type: none"> » Access in and out of the construction area should be strictly controlled by a security company. » The appointed EPC contractor must appoint a security company and appropriate security procedures are to be implemented to limit access to the site and surrounding areas. » The contractor must ensure that open fires on the site for heating, smoking or cooking are not allowed except in designated areas. » The contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff. » Have clear rules and regulations for access to the proposed site to control loitering. » A comprehensive employee induction programme would cover land access protocols, fire management and road safety must be prepared. A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process 			
Post Mitigation			
Duration	Short-term (2)	As for pre-mitigation	Low Negative (16)
Extent	Local (2)	Safety measures will likely restrict impacts on nearby communities	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	
Residual Risks: None anticipated.			

Nature: Disruption of daily living and movement patterns			
Impact description: Temporary increase in traffic disruptions and movement patterns during the construction phase			
	Rating	Motivation	Significance
Prior to Mitigation			
Duration	Short-term (2)	Will be limited to the construction phase which is less than one year	Medium Negative (40)

Extent	Local (2)	Will affect road users from nearby communities	
Magnitude	Moderate (6)	Will affect the quality of life of neighboring communities	
Probability	Highly probable (4)	Traffic would need to be considered in the area	
Mitigation:			
<ul style="list-style-type: none"> » All vehicles must be road worthy, and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential road safety issues. » Heavy vehicles should be inspected regularly to ensure their road safety worthiness. » Implement penalties for reckless driving for the drivers of heavy vehicles as a way to enforce compliance to traffic rules. » Avoid heavy vehicle activity during 'peak' hours (when people are driving to and from work). » The developer and engineering, procurement and construction (EPC) contractors must ensure that any damage / wear and tear caused by construction related traffic to the roads is repaired. » A comprehensive employee induction programme which covers land access protocols and road safety must be prepared. » A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process. 			
Post Mitigation			
Duration	Short-term (2)	As for pre-mitigation	Low Negative (16)
Extent	Local (2)	Safety measures will likely restrict impacts on road users	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	
Residual Risks:			
None anticipated.			

Nature:			
Increased pressure on local services/resources			
Impact description: Added pressure on economic and social infrastructure during construction as a result of in-migration of people			
	Rating	Motivation	Significance
Prior to Mitigation			
Duration	Short-term (2)	Influx related pressure on services will start during construction and continue during the operational phase	Medium Negative (30)
Extent	Local (2)	May affect resource management on local district municipal level	
Magnitude	Moderate (6)	Intensify existing service delivery and resource problems and backlogs, especially sewerage and road networks	

Probability	Probable (3)	Population influx will affect the ability of the local municipality to meet increased demand	
Mitigation:			
<ul style="list-style-type: none"> » A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process. » Becrux Solar PV Project Two (Pty) Ltd should liaise with the MLM to address potential impacts on local services. 			
Post Mitigation			
Duration	Short-term (2)	As for pre-mitigation	Low Negative (16)
Extent	Local (2)	Safety measures will likely restrict impacts on road users	
Magnitude	Low (4)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	
Residual Risks:			
Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure.			

Nature:			
Nuisance impacts (noise & dust)			
Impact description: Nuisance impacts in terms of temporary increase in noise and dust, and the wear and tear on private farm roads for access to the site			
	Rating	Motivation	Significance
Prior to Mitigation			
Duration	Short-term (2)	Nuisance impacts will only be limited to the construction phase.	Medium Negative (44)
Extent	Local (1)	This will remain within the project extent from construction activities.	
Magnitude	High (8)	Dust impacts and noise nuisance from construction activities.	
Probability	Highly Probable (4)	Movement of heavy construction vehicles during the construction phase has a potential to create noise, damage to roads and dust.	
Mitigation:			
<ul style="list-style-type: none"> » The movement of construction vehicles on the site should be confined to agreed access road/s. » The movement of heavy vehicles associated with the construction phase should be timed (where possible) to avoid times days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher. » Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and 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. 			

<p>» A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process</p>			
Post Mitigation			
Duration	Short-term (2)	As for pre-mitigation	Low Negative (18)
Extent	Local (1)	Mitigation measures will assist with increasing the impact.	
Magnitude	Moderate (6)	Appropriate mitigation will reduce the risk of this project	
Probability	Improbable (2)	As for pre-mitigation	
Residual Risks: None anticipated			

Operation Phase

Nature: Job creation during operation			
Impact description: The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy			
	Rating	Motivation	Significance
Prior to Enhancement			
Duration	Long term (4)	Project will be operational up to 30years	Medium Positive (33)
Extent	Regional (3)	Any new positions are likely to be filled by persons living in the local municipal area	
Magnitude	Low (4)	It is anticipated that ~10 jobs will be generated during the operation phase. A number of highly skilled personnel may need to be recruited from outside the local municipal area	
Probability	Probable (3)	Employment opportunities will be created during the operation phase	
Enhancement measures:			
<p>» It is recommended that a local employment policy is adopted by the developer to maximise the project opportunities being made available to the local community. Enhance employment opportunities for the immediate local area, Metsimaholo Local Municipality, if this is not possible, then the broader focus areas should be considered for sourcing employees.</p> <p>» The recruitment selection process should seek to promote gender equality and the employment of women wherever possible</p> <p>» The developer should establish vocational training programs for the local employees to promote the development of skills</p>			
Post Enhancement			
Duration	Long-term (4)	As for pre-enhancement	Medium Positive (44)
Extent	Local - regional (3)	As for pre-enhancement	
Magnitude	Low (4)	Mitigation will maximise local job creation	

Probability	High Probable (4)	Mitigation will maximise probability that any local recruitment targets are achieved and local benefits optimised	
Residual Risks: Improved pool of skills and experience in the local area			

Nature: Development of clean, renewable energy infrastructure			
Impact description: Development of clean, renewable energy infrastructure			
	Rating	Motivation	Significance
Prior to Enhancement			
Duration	Long term (4)	Adding a renewable energy sector to the Fezile Dabi economy may contribute to the diversification of the local economy and provide greater economic stability.	Medium Positive (48)
Extent	Local – Regional - National (4)	The generation of renewable energy will contribute to South Africa's electricity market. Since the off-taker of the power generated by the facility will be Sasol limited (which is currently dependent on Eskom for electricity supply), the proposed development will indirectly relieve the national grid	
Magnitude	Low (4)	The proposed facility will only generate up to 10MW _{ac}	
Probability	Highly Probable (4)	Facility will help contribute to the total carbon emissions associated with non-renewable energy generation	
Enhancement measures: None anticipated			
Post Enhancement			
Duration	Long term (4)	As for pre-enhancement	Medium Positive (48)
Extent	National (4)	As for pre-enhancement	
Magnitude	Low (4)	As for pre-enhancement	
Probability	Highly Probable (4)	As for pre-enhancement	
Residual Risks: Reduce carbon emissions through the use of renewable energy and contribute to reducing global warming			

Nature: Visual impacts and impacts on sense of place			
Impact description: Visual impacts and sense of place impacts associated with the operation phase of the project			
	Rating	Motivation	Significance
Prior to Mitigation			

Duration	Long term (4)	Impact on sense of place relates to the change in the landscape character and visual impact of the proposed solar energy facility	Low Negative (18)
Extent	Local (1)	Dependent on the demographics of the population that resides in the area and their perceptions	
Magnitude	Low (4)	There are industrial/mining operations and formal residential areas located in proximity to the site	
Probability	Improbable (2)	There are no tourist attractions located adjacent to the property and therefore the anticipated impact on the areas visual quality and sense of place is low.	
Mitigation: None anticipated			
Post Mitigation			
Duration	N.A. – Mitigation not possible.		N.A. – Mitigation not possible.
Extent	N.A. – Mitigation not possible.		
Magnitude	N.A. – Mitigation not possible.		
Probability	N.A. – Mitigation not possible.		
Residual Risks: None anticipated if the visual impact will be removed after decommissioning, provided the solar energy facility infrastructure is removed and the site is rehabilitated to its original (current) status			

5.2. Cumulative Impact Assessment

Cumulative impacts have been considered as part of this energy facility has the potential to result in significant positive cumulative impacts and relatively low cumulative impact; specifically with the establishment of a number of Solar energy facilities in the vicinity of the Local Municipality will create a number of socio-economic opportunities for the area, which in turn, will result in a positive social benefit. The positive cumulative impacts include creation of employment, skills development and training opportunities, and downstream business opportunities. Benefits to the local, regional and national economy through employment and procurement of services could be substantial should many renewable energy facilities proceed. This benefit will increase significantly should critical mass be reached that allows local companies to develop the necessary skills to support construction and maintenance activities and that allows for components of the renewable energy facilities to be manufactured in South Africa. Furthermore, at municipal level, the cumulative impact could be positive and could incentivize operation and maintenance companies to centralize and expand their activities towards education and training.

Nature:
An increase in employment opportunities, skills development and business opportunities with the establishment of more than one solar energy facility

	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local -regional (3)	Local-regional (3)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Medium (52)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impacts be mitigated?	Yes	Yes
Confidence in findings: High.		
Mitigation: The establishment of a number of solar energy facilities in the area does have the potential to have a positive cumulative impact on the area in the form of employment opportunities, skills development and business opportunities. The positive benefits will be enhanced if local employment policies are adopted and local services providers are utilised by the developers to maximise the project opportunities available to the local community.		

Nature: Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local-regional (3)
Duration	Long-term (4)	Long-term (4)
Magnitude	Minor (2)	Low (4)
Probability	Very improbable (1)	Improbable (2)
Significance	Low (7)	Low (22)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: <ul style="list-style-type: none"> » Develop a recruitment policy / process (to be implemented by contractors), which will ensure the sourcing of labour locally, where available. » Work together with government agencies to ensure that service provision is in line with the development needs of the local area. » Form joint ventures with community organisations, through Trusts, which can provide local communities with benefits, such as employment opportunities and services. » Develop and implement a recruitment protocol in consultation with the municipality and local community leaders. Ensure that the procedures for applications for employment are clearly communicated. 		

5.3. Conclusion

From a social perspective, it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws, and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning. Based on the social assessment, the following general conclusions and findings can be made:

- » The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focused on the construction of PV facilities and could be reduced with the implementation of the mitigation measures proposed.
- » Employment opportunities will be created in the construction and operation phases and the impact is rated as positive even if only a small number of individuals will benefit in this regard.
- » The proposed project could assist the local economy in creating entrepreneurial development, especially if local businesses could be involved in the provision of general material and services during the construction and operational phases.
- » Capacity building and skills training amongst employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other sectors.
- » The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society.

From a social perspective, it is concluded that the project could be developed subject to the implementation of the recommended mitigation measures, enhancement measures and management actions.

