

IMPACT ASSESSMENT

1. ASSESSMENT OF THE SIGNIFICANCE OF THE POTENTIAL IMPACTS

1.1 CRITERIA OF ASSIGNING SIGNIFICANCE TO POTENTIAL IMPACTS

The assessment of impacts was done according to a synthesis of the following assessment criteria:

- Nature of the impact
- Extent (spatial scale)
- Duration
- Magnitude or intensity of the impact (severity)
- Probability


Nature of the impact

This is an appraisal of the type of effect the impact (whether positive or negative and/or direct or indirect) activity is expected to have on each relevant environmental component.

Extent

Extent of impact	Explanation of extent
Site specific	Direct and indirect impacts limited to construction site and directly surrounding area
Local	Direct and indirect impacts affecting environmental elements within the Knysna/Rheenendal area
Regional	Direct and indirect impacts affecting environmental elements within the Western Cape Province
National	Direct and indirect impacts affecting environmental elements on a national level
Global	Direct and indirect impacts affecting environmental elements on a global level

Duration

Duration of impact	Explanation of duration
Very short	Less than 1 year
Short	1 to 2 years
Medium	2-5 years
Permanent	5 years 

Magnitude or intensity of the impact (severity)

Here it was established whether the impact would be destructive or benign and rated as:

Low – where the impact affects the environment in such a way that natural, social and cultural functions and processes are not affected;
Moderate – where the affected environment is altered, but natural, social and cultural functions and processes continue albeit in a modified way
Severe – where natural, social and cultural functions or processes are altered to the extent that it will temporarily or permanently cease.

Probability

Probability of impact occurrence	Explanation of probability
Very low	< 20% sure of particular fact or likelihood of impact occurring
Low	20 to 39% sure of particular fact or likelihood of impact occurring
Moderate	40 to 59% sure of particular fact or likelihood of impact occurring
High	60 to 79% sure of particular fact or likelihood of impact occurring
Very high	80 to 99% sure of particular fact or likelihood of impact occurring
Definite	100% sure of particular fact or likelihood of impact occurring

Impact significance

Impact significance	Explanation of significance
No impact	There would be no impact at all – not even a very low impact on the system or any of its parts
Very low	<p>Impact would be negligible</p> <ul style="list-style-type: none"> In the case of negative impacts, almost no mitigation and/or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple In the case of positive impacts, alternative means would almost all likely to be better, in one or a number of ways, than this means of achieving the benefit
Low	<p>Impact would be of a low order and with little real effect</p> <ul style="list-style-type: none"> In the case of negative impacts, mitigation and/or remedial activity would be either easily achieved or little would be required, or both In case of positive impacts, alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these
Moderate	<p>Impact would be real but not substantial within the bounds of those which could occur.</p> <ul style="list-style-type: none"> In the case of negative impacts, mitigation and/or remedial activity would be both feasible and fairly easily possible In the case of positive impacts, other means of achieving these benefits would be about equal in time, cost and effort

High	<p>Impacts of a substantial order</p> <ul style="list-style-type: none"> • In the case of negative impacts, mitigation and/or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. • In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these
Very high	<p>Of the highest order possible within the bounds of impacts which could occur</p> <ul style="list-style-type: none"> • In the case of negative impacts, there would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which it was predicted. • In the case of positive impacts, there is no real alternative to achieving the benefit.

1.2 POTENTIAL IMPACT OF EACH MAIN ACTIVITY IN EACH PHASE, AND CORRESPONDING SIGNIFICANCE ASSESSMENT

<i>Soils</i>	ASSESSMENT
Impact	<ol style="list-style-type: none"> 1. Concrete foundations for the pylons 2. Increased risk for soil erosion
Nature of impact	<ol style="list-style-type: none"> 1. Negative direct impact 2. Negative direct impact
Extent	<ol style="list-style-type: none"> 1. Site specific 2. Site specific
Duration	<ol style="list-style-type: none"> 1. Medium 2. Medium
Magnitude	<ol style="list-style-type: none"> 1. Moderate 2. Moderate
Probability	<ol style="list-style-type: none"> 1. Definite 2. Low
Significance	<ol style="list-style-type: none"> 1. Low 2. Low-Moderate
Phase where impact will occur	<ol style="list-style-type: none"> 1. Construction Phase 2. Construction and Operational Phase

<i>Fauna & Flora</i>	ASSESSMENT
Impact	Loss of natural vegetation and faunal habitat loss
Nature of impact	Negative direct impact
Extent	Local
Duration	Medium
Magnitude	Low
Probability	Very Low
Significance	Low
Phase where impact will occur	Construction

<i>Groundwater</i>	ASSESSMENT
Impact	Potential for groundwater pollution as a result of oil spills, etc.
Nature of impact	Negative and direct impact
Extent	Site specific
Duration	Short
Magnitude	Moderate
Probability	Low
Significance	Moderate
Phase where impact will occur	Construction Phase

<i>Cultural / Heritage</i>	ASSESSMENT
Impact	Heritage resources may be damaged / destroyed
Nature of impact	Negative and direct
Extent	Local
Duration	Permanent
Magnitude	Low
Probability	Very Low
Significance	Low
Phase where impact will occur	Construction Phase

<i>Community</i>	ASSESSMENT
Impact	An influx of workers could result in an increased risk for crime and safety.
Nature of impact	Negative indirect
Extent	Site specific and local
Duration	Short
Magnitude	Low
Probability	Low
Significance	Low
Phase where impact will occur	Construction Phase

<i>Noise</i>	ASSESSMENT
Impact	Labourers and machinery could result in noise pollution
Nature of impact	Negative direct impact
Extent	Site specific
Duration	Short
Magnitude	Low
Probability	Low
Significance	Low
Phase where impact will occur	Construction Phase

<i>Air quality</i>	ASSESSMENT
Impact	Dust created by construction vehicles
Nature of impact	Negative and direct impact
Extent	Site specific
Duration	Short
Magnitude	Low
Probability	Low
Significance	Low
Phase where impact will occur	Construction phase

1.3 ASSESSMENT OF POTENTIAL CUMULATIVE IMPACTS

The project is for a maximum length of 380m of power line for a bypass within close proximity to other infrastructure and no cumulative impact is foreseen.

ASSESSMENT OF THE NO GO ALTERNATIVE

The Gouda 135.2MW Windfarm was announced as a preferred bidder in 2012. The grid connection was going to be with a 132kV line from the LaBonne Substation to the Windmill Substation. As the condition and capacity of Eskom's existing 66kV lines was not favourable at that time, Eskom negotiated with the Independent Power Producer (IPP) to build a double circuit line: the 132kV line will be used by the IPP and the 66kV line will be operated by Eskom. Eskom also needed to refurbish the Gouda substation and had already initiated a project to rebuild it on an adjacent site called Nuwekloof. The windfarm's substation, LaBonne is ± 5 km from Gouda/Nuwekloof substation.

The full scope could not be implemented as the Nuwekloof Substation was not available in time for the commissioning of the LaBonne 132kV line for the IPP. The scope that was not completed was to connect one circuit of the new line into Dagbreek and Nuwekloof substations. The current construction contract does not include tying-in the new 66kV line into Gouda/Nuwekloof and Dagbreek. If the old Dagbreek-Gouda line is turned into Nuwekloof now, more work will be required in future to connect the new line. This is because 66kV feeder bay swops will be required due to the line crossing. Practically, this will require a full substation outage and likely cost at least R2m .

Carrying on using the old 66kV line could impact network performance due to line condition. It also limits the transfer capabilities on the 66kV network between Gouda, Moorreesburg, Romansrivier and Windmill under contingency. Costly rework at a later stage will be avoided if the Dagbreek Bypass which will connect the Dagbreek and Windmill – Labonne power lines are now constructed.

It is clear that if the status quo remains, Eskom will have to carry considerable costs to provide appropriate transfer capabilities on the 66kV network between Gouda, Moorreesburg, Romansrivier and Windmill. The maintaining of the status quo, in other words the application of the no-go option, is definitely not recommended for this project.

2. PROPOSED MITIGATION MEASURES TO MINIMISE ADVERSE IMPACTS

Environmental components that will be impacted on that require mitigation are

- Soils
- Groundwater
- Fauna & Flora
- Cultural-heritage
- Community
- Noise
- Air quality

Environmental Component	<i>Soils</i>
Environmental Management / Mitigation Measures / Action Plans / Commitments	
<p>Impact Description Concrete foundations will be made for each pylon along the powerline route. Vegetation will therefore be cleared and there may be an increase in surface water runoff which could lead to soil erosion, although the probability of this impact occurring is rated as low.</p> <p>Mitigation for erosion</p> <ul style="list-style-type: none"> • To cause the loss of soil by erosion is an offence under the Soil Conservation Act, Act No 76 of 1969. Access roads and site surfaces must be monitored for deterioration and possible erosion. Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion. • All cleared areas must be ripped and rehabilitated after construction. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m and replaced on the construction areas once the activities have been completed. The affected areas should be replanted with a grass mixture indigenous to the area. • All vehicle movement must be along existing roads or tracks as far as possible. • All stormwater runoff must be managed efficiently so as to avoid stormwater damage and erosion to adjacent properties. • The viability of undertaking construction during the dry months of the year should be investigated in order to overcome possible problems caused by excessive moisture. • Should any new temporary access roads be required, the following should apply in areas which are prone to erosion: <ul style="list-style-type: none"> ○ Where a cutting is made, subsoil drains should be installed wherever a perched water table occurs within 900m of the formation in all cuttings and below fills in the alluvial zones. ○ It is further critical to manage surface water. Drains should be provided along the top and bottom of all deep cuttings. This is to minimise the flow of surface water and erosion to the exposed cut faces and erosion along the toe of the cuttings. ○ Steep sections of the service road must be supplied of sufficient drainage areas to reduce flow velocity of run-off water. ○ Any eroded sections must be rehabilitated and part of the management plan must include regular inspections of the water run-off areas. • If any erosion occurs, rehabilitation must immediately be done. • All embankments (if any) must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape. • After construction, all temporary access roads should be rehabilitated. • The site must be rehabilitated and replanted with suitable, indigenous grass to prevent erosion. • Should any signs of erosion be evident along the access and maintenance roads during the operational phase of the project, remedial action should take place as soon as possible. 	

Environmental Component	<i>Fauna & Flora</i>
Environmental Management / Mitigation Measures / Action Plans / Commitments	
<p>Impact Disturbance to and/or destruction of habitat due to insensitive construction methods and illegal placement of snares could impact on the Fauna & Flora on site and within the macro study area. However, the ecologist confirmed the following:</p> <p><i>Flora</i> The project will not impact on any natural vegetation at all, being fully within cultivated or fallow lands. The likelihood of there being any plant Species of Conservation Concern within the study area is very low, and the botanical impact of the proposed project will be Negligible before and after mitigation.</p> <p><i>Fauna</i> The terrestrial fauna in the area is unremarkable and unlikely to be impacted by the proposed project. Overall terrestrial faunal impacts are likely to be Negligible before and after mitigation.</p> <p>Standard mitigation measures apply.</p> <p>Mitigation The following general recommendations are made to minimise the impacts of proposed powerline construction on the immediate environment and remaining fauna:</p> <ul style="list-style-type: none"> ● Close site supervision must be maintained during construction. ● Workers must be limited to areas under construction within the servitude and access to the undeveloped areas must be strictly regulated (“no-go” areas during construction activities). ● All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. All alien invasive plant should be removed from the site to prevent further invasion. ● Firearms or any other hunting weapons must be prohibited on site. ● Contract employees must be educated about the value of wild animals and the importance of their conservation. ● Educational programmes for the contractor’s staff must be implemented to ensure that project workers are alerted to the possibility of snakes being found during vegetation clearance. The construction team must be briefed about the management of snakes in such instances. In particular, construction workers are to go through ongoing refresher courses to ensure that protected snakes, such as Southern African Python, are not killed or persecuted when found. ● Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harm remaining faunal species. ● No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. 	

Environmental Component	<i>Groundwater</i>
Environmental Management / Mitigation Measures / Action Plans / Commitments	
<p>Impact description Extra care would be required to minimise the risk for potential groundwater pollution as a result of oil spills, etc. during the construction period.</p> <p>Mitigation</p> <ul style="list-style-type: none"> ○ In all cases, abstraction of water from watercourses for construction purposes will not be allowed. Arrangements must be made prior to construction with the landowners or municipal water must be carted in. ○ Under no circumstances must surface or groundwater be polluted. ○ Adequate oil containment precautions must be taken. ○ If a spill from a construction vehicle occurs it must be reported to ECO with immediate effect. A bio-remediation contractor must be appointed to rehabilitate large oil spills. Small oil spills must be cleaned immediately with an oil spill kit. ○ Minimise on-site storage of petroleum products. ○ Ensure proper maintenance procedures are in place for vehicles and equipment. ○ Servicing of vehicles to be done in designated areas with appropriate spill management procedures in place. ○ Ensure that measures to contain spills are readily available on site (spill kits). ○ All hazardous substance spills must be reported, recorded and investigated. ○ All stormwater runoff must be managed efficiently so as to avoid stormwater damage and erosion to adjacent properties. ○ During and after construction, stormwater control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. to avoid the export of soil into any watercourse. ○ Stormwater should not be discharged into the working areas and it should be ensured that stormwater leaving the footprint of the proposed development areas is not contaminated by any substance, whether that substance is solid, liquid, vapor or any combination thereof. ○ Stockpiling of construction material and soils should be such that pollution of water resources is prevented and that the materials will be retained in a storm event. ○ Drinking water and water for ablution facilities must be provided to all construction workers on the construction site. <p>○ <u>Waste Management</u></p> <p><i>General Waste</i></p> <ul style="list-style-type: none"> - Expected constructed waste (unused steel, conductor cables, cement or concrete) and general waste around the construction site (plastic, tins and paper) may degrade the environment if not disposed in the correct manner. - Littering or illegal dumping of any waste material is prohibited. - No waste disposal holes may be made on site. - Under no circumstances should waste be burnt on site. - Waste separation should be encouraged for recycling purposes. 	

- Provision must be made for the collection of all general waste materials. Rubbish bags and bins with lids must be provided at various points within the construction corridor and must be emptied on a regular basis.
- Deposit solid domestic waste in containers and dispose at registered municipal waste disposal sites regularly.
- For all waste that is disposed of, Eskom shall obtain waste manifests and disposal certificates, which shall be recorded and reported to the ECO on a monthly basis.
- Liquid waste (grey water) must be disposed with sewerage.

Construction Waste

- Ensure compliance with stringent daily clean up requirements of site camp inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc) and dispose at municipal waste disposal sites.
- Construction waste must be collected and sold for recycling purposes as far as possible.

Sewage

- Portable ablation facilities must be placed within the construction servitude and must be serviced by registered companies only and on a regular basis. There should be one toilet for every fifteen workers.
- No effluent to be dumped in the veld or any watercourse.
- The use of the open veld for ablation is prohibited.

Hazardous Waste

- Oil contaminated waste (soil, cloths used to clean small spills, spill kits, content of drip trays, etc.) must be disposed of at a facility that is registered as a hazardous landfill facility.
- All hazardous substances at the site must be adequately stored and accurately identified, recorded and labelled. All these hazardous substances should be disposed of at a H:H registered waste disposal facility.
- Hydrocarbon (oil, diesel, petrol) waste as well as hydrocarbon containing material must be regarded as hazardous waste and separated from general waste.
- Persons who remove hazardous waste must be appropriately qualified and authorised.

Environmental Component	<i>Cultural / Heritage / Palaeontological Impact</i>
Environmental Management / Mitigation Measures / Action Plans / Commitments	
<p>Impact No sites of heritage resources have been identified or are likely to be found within the proposed development area (the short powerline will cross a railway line and cultivated / fallow agricultural lands).</p>	

Mitigation

Should archaeological or other heritage relics be found during the construction phase, heritage authorities will be advised immediately and a heritage specialist will be called to attend.

Environmental Component*Community***Environmental Management / Mitigation Measures / Action Plans / Commitments**

- Construction workers must be extremely careful not to damage any property along the proposed route. Should any damage occur it should be reported to the ECO and repaired and to a state prior to the damage to the written satisfaction of the landowner and ECO.
- Removal of agricultural products is prohibited.
- No firewood may be collected.
- No open fires are to be made on private property.
- In order to prevent and/or minimise crime, it is required that all construction workers be supplied with controlled serviced accommodation or be supplied with daily transport to and from the site.
- No wandering on adjacent properties is allowed, unless written consent has been obtained from the relevant landowners.
- All adjacent landowners have to be informed of the blasting programme (if applicable) prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented. Blasting may only be undertaken by specialists in the field and should be limited to small localised areas. All relevant legislation must be adhered to.
- All contractors and construction workers will be issued with temporary permits to enter the property.
- All construction workers will be allowed only for specified day light hours. Transport should be made available by the contractor to remove labourers from the site after working hours.
- Secure accommodation facilities must be provided for guarding personnel.
- Supervision of labourers must at all times take place.
- Construction hours will be restricted to specific periods that exclude Sundays and public holidays.
- Sweeping of construction sites, clearing of building rubble and debris and watering of construction sites (storage areas, roads, etc.) must take place on a regular basis.
- All excavated areas must be clearly marked and barrier tape must be placed around them to prevent humans and animals from falling into them.

Environmental Component	<i>Noise</i>
Environmental Management / Mitigation Measures / Action Plans / Commitments	
<ul style="list-style-type: none"> • Should an onsite construction camp be necessary noise made by the workers (i.e. radios) must be limited to early evenings. • Plan campsites an appropriate distance from any facility where it can cause a nuisance. • Construction vehicles must be serviced on a regular basis to ensure unnecessary noise is not emitted due to poor vehicle performance. • Eskom shall provide all necessary equipment with standard silencers and maintain silencer units on vehicles where required. Equipment must always be in good working order to minimise unnecessary noise levels. 	

Environmental Component	<i>Air quality</i>
Environmental Management / Mitigation Measures / Action Plans / Commitments	
<ul style="list-style-type: none"> • Sweeping of construction sites, clearing of building rubble and debris and watering of construction sites (storage areas, roads, etc.) must take place on a regular basis. 	

REVIEW OF THE SIGNIFICANCE OF THE IDENTIFIED IMPACTS

<i>Environmental component</i>	<i>Significance before mitigation</i>	<i>Significance after mitigation</i>
Soil Erosion	Low - Moderate	Very Low
Fauna & Flora	Low	Very Low
Groundwater pollution	Low	Very Low
Cultural / Heritage	Low	Very Low
Increased crime and safety risk with increased labourers	Low	Very Low
Noise Pollution	Low	Very low
Air quality (Dust created by construction vehicles)	Low	Very Low