



ENVIRONMENTAL ASSESSMENT FOR EA AMENDMENT

for

HOTAZEL SOLAR

on

Remaining Extent (Portion 0) of Farm York A 279 and Grid connection on Remaining Extent of Farm 280, Portion 3 of Farm York A 279 and Portion 11 of Farm York A 279

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations

Prepared for Applicant: ABO Wind Hotazel PV (Pty) Ltd.

Date: 15 July 2020

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PURPOSE OF THIS REPORT:

DEA Decision making

APPLICANT:

ABO Wind Hotazel PV (Pty) Ltd

CAPE EAPRAC REFERENCE NO:

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14/12/16/3/3/2/1086

SUBMISSION DATE:

15 July 2020

ENVIRONMENTAL ASSESSMENT FOR EA AMENDMENT

in terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended & Environmental Impact Regulations 2014

Hotazel Solar

Remaining Extent (Portion 0) of Farm York A 279 and Grid connection on Remaining Extent of Farm 280, Portion 3 of Farm York A 279 and Portion 11 of Farm York A 279.

Submitted for:

Departmental Review

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REPORT DETAILS

Title:	Environmental Assessment for EA Amendment for Hotazel Solar
Purpose of this report:	The purpose of this Environmental Assessment report is to provide the decision-making authority with sufficient information regarding the potential impacts associated with the proposed amendment of the Environmental Authorisation (EA) for Hotazel Solar.
Prepared for:	ABO Wind Hotazel PV (Pty) Ltd
Published by:	Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac)
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TECHNICAL CHECKLIST

The following technical checklist is included as a quick reference roadmap for the proposed project.

Company Details		
Company profile	Name and details of Applicant	ABO Wind Hotazel PV (Pty) Ltd is a renewable energy developer, proposing the development of the Hotazel Solar energy facility.
Site Details		
Size of the site	Description and Size in hectares of the affected property.	Remaining Extent (Portion 0) of Farm York A 279. Total Property Size: 636.7946ha Additional Properties for Grid Connection (Option 2): Remaining Extent of Farm 280, Portion 3 of Farm York A 279 and Portion 11 of Farm York A 279.
Development Footprint	This includes the total footprint of PV panels, auxiliary buildings, onsite substation, inverter stations and internal roads.	The total footprint of Hotazel Solar will not exceed 270ha.
Site access	Option 1	Existing access point from the R31, roughly in the centre of the development footprint.
	Option 2	Existing access point from the R31, approximately 200m SW of the of the farm house.
Technology Details		
Capacity of the facility	Export Capacity of facility (in MW)	100MW _{AC}
Solar Technology selection	Type of technology	PV (bi- or monofacial) with fixed, single or double axis tracking technology.
	Capacity and dimensions of the PV field	100 MW _{AC} yield. PV panel footprint of approximately 245ha.
	Structure height	PV Structures not more than 4m
	Surface area to be covered (including associated infrastructure such as roads)	Less than 270ha
	Structure orientation	Fixed-tilt in north-facing orientation, or mounted on horizontal axis tracking from east to west
	Laydown area dimensions	Approximately 2-5ha of laydown area will be required (the laydown areas will not exceed 5ha.)

Grid Connection Details		
Grid Connection	Number of overhead power lines required	1 x 132kV overhead line (OHL)
	On-site substation/ collector switching station	It is estimated that the maximum size of the on-site substation/ collector switching station will not exceed 2ha. The on-site substation/ collector switching station will collect the power from the solar energy facility (SEF) and transform it from low voltage level (up to 33kV) to 132 kV level. The collector switching station component would be used if Eskom requires another SEF (i.e. Hotazel 2) to connect to the national grid via the same grid connection point.
	Power line route options	<p>Option 1: (Preferred, as previously authorised): ±100m overhead 132kV powerline which will connect via a Loop in Loop out connection into the existing Hotazel/Eldoret 132kV line. The powerline will have a maximum height of 32m and maximum servitude width of 52m.</p> <p>Option 2: ±5.8km overhead 132kV powerline line from the on-site substation/ collector switching station to the Eskom Hotazel substation. To assess the route, the line is buffered by 150 m (i.e. a 300 m corridor) in order to allow for micro-siting. The powerline will have a maximum height of 32m and a servitude width of between 31m and 36m.</p> <p>Option 3: ±1km overhead 132kV powerline from the Hotazel Solar on-site substation/ collector switching station to the Hotazel 2 collector switching station (which is being proposed in a separate EIA process). The powerline will have a maximum height of 32m and a servitude width of between 31m and 36m.</p>
	Voltage of overhead power lines	132kV.
	Height of the Power Line	±32 m
	Servitude Width	Maximum of 31m – 52m.
Auxiliary Infrastructure		
Other infrastructure	Additional Infrastructure	<p>Auxiliary buildings of approximately 1 ha. The functions of these buildings include (but are not limited to) a gate house, ablutions, workshops, storage and warehousing area, site offices and control centre.</p> <p>Perimeter fencing not exceeding 5m in height.</p>
	Details of access roads	The main access road will not exceed 8m in width and the internal road will not exceed 5m in width.
	Extent of areas required for laydown of materials and equipment	Approximately 2-5ha of laydown areas will be required (laydown areas will not exceed 5ha).

LOCATION OF PREFERRED ALTERNATIVE

Two Layout Alternatives were originally assessed in the Final EIR for Hotazel Solar. Layout Alternative 2 and Grid Connection Alternative C were authorised. This amendment application proposes a repositioning of the authorised alternative to align with the co-ordinates below¹

	Latitude	Longitude
Amended Layout position		
North-West Corner	27°13'25.60"S	22°58'5.04"E
North-East Corner	27°12'56.52"S	22°59'45.98"E
South-West Corner	27°13'55.23"S	22°58'6.79"E
South-East Corner	27°13'15.80"S	22°59'45.94"E
On-site Substation / Collector Switching Station	27°13'26.63"S	22°59'20.87"E
Preferred powerline alternative		
Start	27°13'26.63"S	22°59'20.87"E
Middle	27°13'28.55"S	22°59'21.75"E
End	27°13'30.31"S	22°59'23.05"E

¹ These co-ordinates need to be read in conjunction with the layout plans attached in Annexure 1, as the proposed layout is not rectangular.

ORDER OF REPORT

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Environmental Assessment for EA Amendment – Main Report

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Annexure C	:	Site Photographs
Annexure D	:	Layout plans of proposed amendment
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Annexure F	:	Updated Avifaunal Impact Assessment (Todd, Herrmann, 2020)
Annexure G	:	Updated Agricultural Impact Assessment Report (Lubbe, 2020)
Annexure H	:	Updated Archaeology Impact Assessment Report (Webley, 2020)
Annexure I	:	Updated Palaeontology Statement (Almond, 2020)
Annexure J	:	Updated Freshwater Statement (Colloty, 2020)
Annexure K	:	Updated Social Impact Assessment (Savannah, 2020)
Annexure L	:	Updated Visual Impact Assessment (Stead, 2020)
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Annexure N	:	Updated Stormwater Management Plan (KP, 2020)
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ENVIRONMENTAL ASSESMENT REPORT

1 INTRODUCTION

Cape EAPrac has been appointed by ABO Wind Hotazel PV (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate an application for amendment of the Environmental Authorisation (EA) for Hotazel Solar in terms of the National Environmental Management Act (NEMA, Act 107 of 1998).

The Applicant has an option to lease a section of the Remaining Extent (Portion 0) of the Farm York A 279 from the landowner, the late JP Jansen (represented by the executor of the estate, Mr PAC Jansen) for the purposes of developing the proposed solar energy facility (SEF). A copy of the landowner consent for the proposed amendment is attached in Annexure Q.

The grid connection across the Remaining Extent of Farm 280, Portion 3 of Farm York A 279 and Portion 11 of Farm York A 279² is considered to constitute a linear activity and as such, landowner consent is not required in terms of these regulations. The applicant has secured the necessary land rights with these affected landowners. These landowners have also been automatically registered as I&APs and will be given an opportunity to provide input into this environmental process.

The net generation (contracted) capacity of Hotazel Solar will remain at 100MW_{AC}. The project will feed into the National Grid via the existing Eskom Hotazel Substation.

1.1 RECOMMENDATION OF THIS ASSESSMENT REPORT

Cape EAPrac is of the opinion that the information contained in this Impact Report, and the documentation attached hereto, is sufficient to allow the competent authority to apply their minds to the potential negative and/or positive impacts associated with the proposed amendment of the development footprint, in respect of the activities authorised.

This assessment process has not identified any fatal flaws with the proposed amendment and as such it is our reasoned view that the amendment can be considered for authorisation. All impacts range from high positive to medium negative. All highly negative impacts have been avoided in both the authorised project as well as this proposed amendment.

It is the recommendation of the EAP that the proposed amendment of Hotazel Solar be considered for approval.

2. LEGISLATIVE AND POLICY FRAMEWORK

The applicable legislation remains the same as what was considered in the Final EIR and is not re-described in this amendment assessment report. The table below lists the applicable legislation and describes whether any additional considerations are applicable to the amendment (i.e. that were not considered in the final EIR).

² These additional farm portions are only applicable to grid connection option 2 as described below.

Table 1: Legislation applicable to Hotazel Solar including any additional considerations applicable to the amendment of the EA.

Legislation	Additional considerations for Hotazel Solar Amendment.
NATIONAL LEGISLATION	
The Constitution of the Republic of South Africa	No additional considerations applicable to Hotazel Solar Amendment.
National Environmental Management Act (NEMA)	This application is being undertaken in terms of this legislation. No additional activities listed in terms of this legislation are applicable to the Hotazel Solar Amendment.
National Environmental Management: Biodiversity (Act 10 of 2004)	Amended footprint position remains on vegetation type classified as least threatened.
Conservation of Agricultural Resources Act – CARA (Act 43 of 1983):	No additional considerations applicable to Hotazel Solar Amendment.
The Subdivision of Agricultural Land, Act 70 Of 1970	No additional considerations applicable to Hotazel Solar Amendment.
National Water Act, No 36 of 1998	No additional considerations applicable to Hotazel Solar Amendment.
National Forests Act (No. 84 of 1998):	No additional considerations applicable to Hotazel Solar Amendment.
National Heritage Resources Act, 25 of 1998	An application to SAHRA has been lodged in respect of the changes to the footprint for Hotazel Solar.
National Energy Act (No. 34 of 2008)	No additional considerations applicable to Hotazel Solar Amendment.
PROVINCIAL LEGISLATION	
Northern Cape Nature Conservation Act, No. 9 of 2009	No additional considerations applicable to Hotazel Solar Amendment.
Nature and Environmental Conservation Ordinance, No 19 of 1974	No additional considerations applicable to Hotazel Solar Amendment.
Astronomy Geographic Advantage Act, 2007 (Act No 21 Of 2007)	No additional considerations applicable to Hotazel Solar Amendment.
Northern Cape Provincial Spatial Development Framework (PSDF) 2012	No additional considerations applicable to Hotazel Solar Amendment.
REGIONAL AND MUNICIPAL LEGISLATION	
John Taolo Gaetsewe District Municipality Spatial Development Framework (Phase 5, Draft SDF), 2017	No additional considerations applicable to Hotazel Solar Amendment.
Joe Morolong Local Municipality Integrated Development Plan (IDP), 2017-2018	No additional considerations applicable to Hotazel Solar Amendment.
GUIDELINES, POLICIES AND AUTHORITATIVE REPORTS	
National Protected Area Expansion Strategy (NPAES) for S.A. 2008 (2010)	No additional considerations applicable to Hotazel Solar Amendment. The project remains outside of any protected area expansion focus areas.
Critical Biodiversity Areas	No additional considerations applicable to Hotazel Solar Amendment. The project remains outside of any critical biodiversity areas.
White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)	No additional considerations applicable to Hotazel Solar Amendment.
White Paper on the Energy Policy of the Republic of South Africa (1998)	No additional considerations applicable to Hotazel Solar Amendment.
Integrated Energy Plan (IEP), 2015	No additional considerations applicable to Hotazel Solar Amendment.
Integrated Resource Plan for Electricity (2010-2030)	No additional considerations applicable to Hotazel Solar Amendment.
National Development Plan 2030 (2012)	No additional considerations applicable to Hotazel Solar Amendment.
Strategic Infrastructure Projects (SIPs)	No additional considerations applicable to Hotazel Solar Amendment.

Legislation	Additional considerations for Hotazel Solar Amendment.
The Convention on the Conservation of Migratory Species of Wild Animals	No additional considerations applicable to Hotazel Solar Amendment.
Guidelines to minimise the impacts on birds of Solar Facilities and Associated Infrastructure in South Africa	No additional considerations applicable to Hotazel Solar Amendment. The monitoring regime remains the same as was assessed.
Environmental Impact Assessment Guideline for Renewable Energy Projects	No additional considerations applicable to Hotazel Solar Amendment.
Sustainability Imperative	No additional considerations applicable to Hotazel Solar Amendment.

3. PLANNING CONTEXT

The planning requirements remain unchanged to that which were considered in the Final EIR for Hotazel Solar. The following key components will likely take place from a planning perspective.

- A **land use change application** for the rezoning of approximately 270ha, from **Agricultural Zone I to Special Zone**, will be lodged at the Joe Morolong Local Municipality, in accordance with the Northern Cape Planning and Development Act (Act 7 of 1998).
- If there are restrictive Title Deed conditions burdening the proposed development, an application for the removal thereof will be lodged at the Government of the Northern Cape Province, Department: Corporate Governance and Traditional Affairs, in accordance with the Removal of Title Deed Restriction Act (Act 84 of 1967).
- Parallel to the rezoning application, a **long term lease application will be lodged at the National Department of Agriculture**, in accordance with the Subdivision of Agricultural Land Act (Act 70 of 1970).
- Relevant planning documents, on all spheres of Government, will be evaluated before any land use change application is launched. These documents include, but are not limited to the following: **NSDP** (National Spatial Development Perspective); **PGDS NC** (Provincial Growth and Development Strategy, Northern Cape Province); **IDP** (Integrated Development Plan); **SDF** (Spatial Development Framework).

4. SITE DESCRIPTION AND ATTRIBUTES

The site description and attributes (including the socio-economic context) remains unchanged from what was considered and reported on in the Final EIR and as such is not reiterated in this report.

4.1 ECOLOGICAL SENSITIVITY OF THE STUDY SITE

The approved and the proposed amended PV footprint areas in relation to the ecological sensitivity of the site, are illustrated in the figure below. The shift of the PV field to the west of the site will result in an increase in areas classified as “Moderately Sensitive” falling within the new development footprint. The newly affected area is largely similar to the areas within the existing footprint, but has a higher density of protected trees, mostly *Vachellia erioloba* and *Vachellia haematoxylon*. The density of *V.haematoxylon* within the proposed new footprint area is approximately 30 trees per hectare, which is higher than the average density of 26 trees per hectare within the current development footprint. As a result, the total number of protected trees within the development footprint is likely to increase by approximately 1000 trees. This is not considered to represent a significant loss to the local population of either *V.erioloba* or *V.haematoxylon* as the density and number of these trees in the local area is very high and probably numbers in the millions. The original assessment found that “Although relatively large

numbers of *Acacia haematoxylon* (2000-6000) would potentially be lost as a result of the development, the extent of habitat loss (275 ha) is not seen as being highly significant for this species and is of local relevance only and as such, is not seen as sufficient to warrant an offset or other similar off-site mitigation measure.” The increase in the number of affected trees is approximately 15% and this is not considered to represent a significant increase that would invalidate the original findings of the EIA. As such, the original conclusion of that study as quoted above is considered to be consistent with the amended layout.

Overall, the amended layout would slightly increase the impacts of the development on protected trees. However, the increase is not considered sufficient to increase the original post-mitigation significance from Medium to High. As such, the original Medium negative post-mitigation impact on vegetation and protected tree species would remain unchanged.

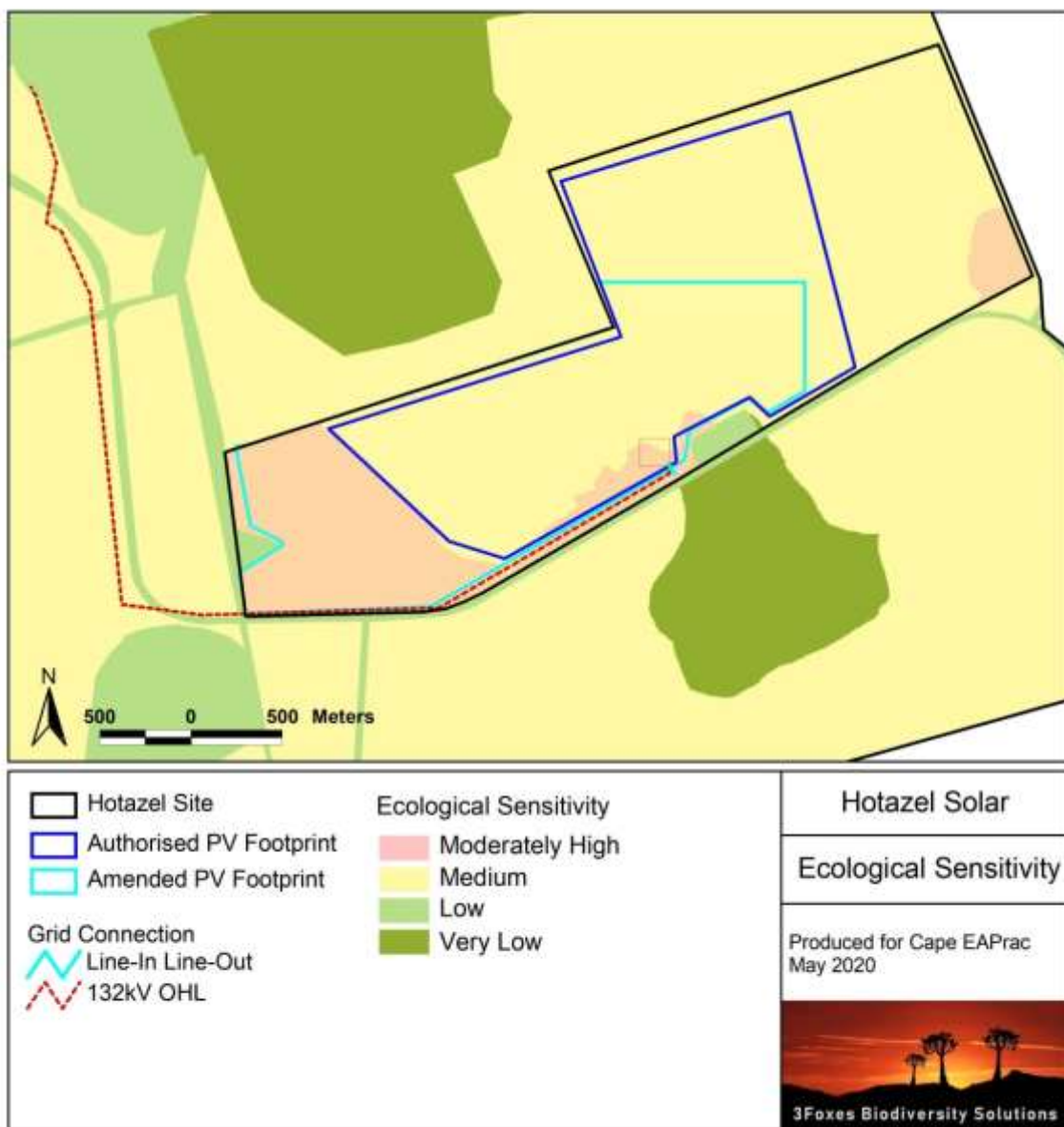


Figure 1: Ecological sensitivity map of the study area, showing the approved and the proposed amended footprint of the PV field.

5. IMPACT ASSESSMENT

This section of the report was completed with input from the following specialists:

- Ecology (Todd, 2020)
- Avifauna (Todd, Herrmann 2020)
- Agricultural (Lubbe, 2020)
- Archaeology (Webley, 2020)
- Palaeontology (Almond, 2020)
- Visual (Stead, 2020)
- Freshwater (Colloty, 2020)
- Socio Economic (Savannah, 2020)

The sections below provide the concluding statements from the above specialists as well as an indication of any changes to the impact ratings and mitigations defined by these specialists. This section must be read in conjunction with the specialist reports attached in Annexure E – Annexure L.

5.1 ECOLOGICAL IMPACTS

The ecology specialist confirmed the following regarding the proposed changes to the layout of Hotazel Solar:

- The PV footprint would be shifted west within the site into an area classified as Moderately High Sensitivity. This area is characterised by higher protected tree density than the rest of the site and therefore the amendment would result in an increase in impact on protected trees by approximately 15%. The original post-mitigation impacts on vegetation and protected tree species were assessed as being of Medium Significance. The increase associated with the proposed amendment is not considered sufficient to increase the assessed impact from Medium to High. As such, the Medium significance as originally assessed is considered consistent with the amended layout.
- The Hotazel Solar amendment is therefore supported in terms of terrestrial ecology impacts. The impact of the amended layout on fauna and flora would be similar to the authorised layout and no changes to the assessed impacts are considered warranted.
- No additional mitigation or avoidance measures are recommended as a result of the amendment. The original mitigation and avoidance measures as included in the EIA should still be applied to the current study.

The following assessment of impacts are applicable to the proposed amendment.

Table 2: Impacts on vegetation and listed or protected plant species resulting from construction activities

Nature of impact	Impacts on vegetation and listed or protected plant species resulting from construction activities							
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Amended Layout	Local	Long-Term	Medium	Definite	Low	Medium Negative	Medium Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> • Preconstruction walk-through of the facility in order to locate species of conservation concern that can be translocated (such as aloes) as well as comply with the Northern Cape Nature Conservation Act and DENC/DAFF permit conditions. 								

- Vegetation clearing to commence only after walk through has been conducted and necessary permits obtained.
- Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc.
- Environmental Control Officer (ECO) to provide supervision and oversight of vegetation clearing activities within sensitive areas.
- Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.
- All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the construction area.
- Temporary lay-down areas should be located within previously transformed areas or areas that have been identified as being of low sensitivity. These areas should be rehabilitated after use.

Table 3: Direct faunal impacts due to construction activities

Nature of impact	Direct Faunal Impacts During Construction							
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Amended Layout	Local	Short-Term	Medium	High	High	Medium	Medium-Low Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> • All personnel should undergo environmental induction with regards to fauna and, in particular, awareness about not harming or collecting species such as snakes, tortoises and owls, which are often persecuted out of superstition. • Any fauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer. • All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • If trenches need to be dug for water pipelines or electrical cabling, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are standing open should have places where there are soil ramps allowing fauna to escape the trench. 								

Table 4: Faunal impacts during the operational phase

Nature of Impact	Faunal Impacts due to operational activities								
	Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
							Without Mitigation	With Mitigation	
Amended Layout	Local	Long-term	Medium-Low	Moderate	High	Medium-Low Negative	Low-Negative	High	
Mitigation/Management Actions									
<ul style="list-style-type: none"> • Any potentially dangerous fauna such as snakes or fauna threatened by the maintenance and operational activities should be removed to a safe location. • If the site must be lit at night for security purposes, this should be done with downward-directed low-UV type lights (such as most LEDs), which do not attract insects. 									

- All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
- All vehicles accessing the site should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises.
- If the facility is to be fenced, then no electrified strands should be placed within 30cm of the ground as some species such as tortoises are susceptible to electrocution from electric fences because they do not move away when electrocuted but rather adopt defensive behaviour and are killed by repeated shocks. Alternatively, the electrified strands should be placed on the inside of the fence and not the outside as is the case on the majority of already constructed PV plants.

Table 5: Impacts on vegetation and listed or protected plant species resulting from power line construction activities

Impact Nature	Impacts on vegetation and listed or protected plant species resulting from power line construction activities							
Nature of impact	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Grid Connection	Local	Long-Term	Moderate	High	Low	Medium-Low Negative	Low Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> • Preconstruction walk-through of the power line route in order to locate species of conservation concern that can be translocated as well as comply with the Northern Cape Nature Conservation Act and DENC/DAFF permit conditions. • Construction and vegetation clearing to commence only after walk through has been conducted and necessary permits obtained. • No large woody species should be unnecessarily cleared from the power line servitude. It may be necessary to remove some individuals from the directly beneath the power line due to safety and operational concerns, however, within the servitude the presence of large woody species does not increase the fire risk and there are no valid reasons to remove such trees. If these are too tall and cause safety problems, they can be cut to a lower height rather than removed and as growth rate in arid areas is slow. It would take many years before such trees would need to be trimmed again. Such trees can be trimmed to 1m height if necessary although this would almost certainly result in the mortality of large <i>Acacia erioloba</i> individuals. DAFF has a guideline available for tree clearing and trimming within power line servitudes which should serve as a guide. • Preconstruction environmental induction for all construction staff to ensure that basic environmental principles are adhered to. This includes awareness as to no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc. • Vegetation clearing along the power line corridor should only be conducted where necessary and should not be cleared using herbicides or with a bulldozer. Vegetation can be cleared manually with bush cutters to 0.5m height where necessary. • Temporary lay-down areas should be located within previously transformed areas or areas that have been identified as being of low sensitivity. 								

Table 6: Faunal impacts due to power line construction activities.

Impact Nature	Direct Faunal Impacts During Construction							
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Grid Connection	Local	Short-Term	Medium-Low	High	High	Medium-Low Negative	Low Negative	High
Mitigation/Management Actions								

- All personnel should undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition.
- Any fauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.
- All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.
- All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
- If holes or trenches need to be dug, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Holes should only be dug when they are required and should be used and filled shortly thereafter.

5.2 AVIFAUNAL IMPACTS

The Avifaunal specialist has concluded the following with regards to the proposed amendment of the Hotazel Solar Footprint:

- The area into which the amended PV footprint would expand is considered medium avifaunal sensitivity and represents habitat of similar sensitivity to that within the authorised footprint. There is however an increase in the density of woody plant vegetation as one moves towards the western margin of the site. The amended PV footprint would therefore impact a slightly different bird community from the original authorised PV footprint. This shift in affected bird community composition would however not increase the impacts associated with the development to any noticeable degree.
- The Hotazel Solar amendment is therefore supported in terms of avifaunal impacts. The impact of the amended layout on avifauna would be similar to the authorised layout and no changes to the assessed impacts are considered warranted.
- No additional mitigation or avoidance measures are recommended as a result of the amendment. The original mitigation and avoidance measures as included in the EIA should still be applied to the current study.

The following assessment of impacts is therefore applicable to the proposed amendments:

Table 7: Direct avifaunal impacts during construction of Hotazel Solar – habitat loss and disturbance

Nature of impact	Direct Avifaunal Impacts During Construction – habitat loss and disturbance							
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Amended Layout	Local	Short-Term	Medium	High	High	Medium Negative	Medium-Low Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> • The destruction of habitat during construction should also be strictly contained within the development footprint. • The use of lay-down areas within the footprint of the development should be used where feasible, to avoid habitat loss and disturbance to adjoining areas. • All building waste produced during the construction phase should be removed from the development site and be disposed of at a designated waste management facility. Similarly, all liquid wastes should be contained in appropriately sealed vessels/ponds within the footprint of the development, and be disposed of at a designated waste management facility after use. Any liquid and chemical spills should be dealt with accordingly to avoid contamination of the environment. 								

- Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to, and awareness about not harming or hunting ground-dwelling species (e.g. bustards, korhaans, thick-knees and coursers), and owls, which are often persecuted out of superstition.
- This induction should also include awareness as to no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc.
- All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such nocturnal and crepuscular species (e.g. nightjars, thick-knees and owls) which sometimes forage or rest along roads.
- Sensitive microhabitats should be avoided, such as nesting sites during the breeding season of large terrestrial birds (generally summer; Hockey *et al.*, 2005).
- Any avifauna threatened by the construction activities should be relocated.
- If holes or trenches need to be dug, these should not be left open for extended periods of time as ground-dwelling avifauna or their flightless young may fall in and become trapped in them. Holes should only be dug when they are required and should be used and filled shortly thereafter.
- No construction activity should occur near to active raptor nests should these be discovered prior to or during the construction phase. If there are active nests near construction areas, these should be reported to ECO and should be monitored until the birds have finished nesting and the fledglings left the nest.

Table 8: Avifaunal impacts due to operation of Hotazel Solar – disturbance and collisions with PV panels

Nature of Impact	Avifaunal Impacts due to operational activities – disturbance and collisions with PV panels							
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Amended Layout	Local	Long-term	Medium-Low	Moderate	High	Medium-Low Negative	Low-Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> • If the site must be lit at night for security purposes, this should be done with downward-directed low-UV type lights (such as most LEDs), which do not attract insects. The use of lighting at night should be kept to a minimum, so as not to unnecessarily attract invertebrates to the solar facility and possibly their avian predators, and to minimise disturbance to birds flying over the facility at night. • All incidents of collision with panels should be recorded as meticulously as possible, including data related to the species involved, the exact location of collisions within the facility, and suspected cause of death. • If birds are nesting on the infrastructure of the facility and cannot be tolerated due to operational risks of fire, electrical shorts, soiling of panels or other concerns, birds should be prevented from accessing nesting sites by using mesh or other manner of excluding them. Birds should not be shot, poisoned or harmed as this is not an effective control method and has negative ecological consequences. Birds that already have eggs or nestlings should be allowed to fledge their young before nests are removed. If there are any persistent problems with avifauna, then an avifaunal specialist should be consulted for advice on further mitigation. • All food waste and litter at the site should be placed in bins with lids and removed from the site on a regular basis. • All vehicles accessing the site should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such nocturnal and crepuscular species (e.g. nightjars, thick-knees and owls) which sometimes forage or rest on roads at night. 								

Table 9: Direct avifaunal impacts during construction of the grid connection

Impact Nature	Direct Avifaunal Impacts During Construction							
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without	With	

						Mitigation	Mitigation	
Preferred LILO	Local	Short-Term	Low	Medium	High	Low Negative	Very Low Negative	High
Mitigation/Management Actions								
<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 ground-dwelling species (e.g. bustards, korhaans, thick-knees and coursers), and owls, which are often persecuted out of superstition. Any avifauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer. All vehicles (construction or other) accessing the site should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as nocturnal and crepuscular species (e.g. nightjars, thick-knees and owls) which sometimes forage or rest on roads, especially at night. If holes or trenches need to be dug, these should not be left open for extended periods of time as ground-dwelling avifauna or their flightless young may fall in and become trapped in them. Holes should only be dug when they are required and should be used and filled shortly thereafter. The design and layout of any proposed power lines must be endorsed by members of the Eskom-EWT Strategic Partnership, taking into account the mitigation guidelines recommended by Birdlife South Africa (Smit, 2012; Jenkins et al., 2017). The route that the power line will follow should be the shortest distance possible across an area where collisions are expected to be minimal, or follow existing power lines, and be marked with bird diverters to make the lines as visible as possible to collision-susceptible species. Recommended bird diverters such as brightly coloured 'aviation' balls, thickened wire spirals, or flapping devices that increase the visibility of the lines should be fitted where considered necessary. Regular monitoring of power lines should be undertaken to detect bird carcasses, to enable the identification of any areas of high impact to be marked with bird diverters. Only power lines structures that are considered safe for birds should be erected to avoid the electrocutions of birds (particularly large raptors) perching or attempting to perch. Where necessary, deterrent devices such as bird guards should be mounted on relevant parts of the pylons to further reduce the possibility of electrocutions. 								

Table 10: Operational phase power line electrocution and collision risk of large terrestrial birds and raptors.

Impact Nature	Operational phase power line electrocution and collision risk of large terrestrial birds and raptors							
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Preferred LILO	Local	Long-Term	Low	Low	High	Low Negative	Very Low Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> Regular monitoring of the power line should be undertaken to detect bird carcasses, to enable the identification of any areas of high impact where additional mitigation such as fitting bird diverters may be required. This should occur at least monthly for the first year after construction. Any raptors or other birds nesting on the power line structures should not be disturbed while the birds are breeding. If species such as sociable weavers are present, which are making the line unsafe, then these nests should be regularly removed before breeding can commence. Measures should also be put in place to prevent birds persistently nesting in problem areas by using artificial nesting platforms and perches positioned away from live components. 								

5.3 AGRICULTURAL IMPACTS

The agricultural specialist concluded that changing the footprint location, access road and transmission routings does not add any additional possible impacts or change mitigation measures as set out in the approved environmental authorisation for Hotazel Solar. All mitigation measures identified in the original

Agricultural Assessment are still valid for the amendment. The following impacts on agricultural resources are thus applicable to the amendment of Hotazel Solar.

Table 11: Impacts of potential soil pollution on long term agricultural potential

Nature of Impact	Soil pollution with contaminants during the construction phase may take place, including spillages of hydrocarbon (fuel oil) and cement. This is possible during the construction of all facets of the facility: laydown area, concrete foundations of the auxiliary buildings, inverter stations subterranean cabling, main access and internal service roads.	
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Medium Term (2)	Very short (1)
Magnitude	Low (4)	Minor(2)
Probability	Probable (3)	Probable(3)
Significance	Low(21)	Low (12)
Status (Positive or negative)	Negative	Negative
Reversibility	Partly reversible	Fully reversible
Irreplaceable loss of Resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation:		
Refuelling normally takes place in the laydown area. Proactive measures must be taken which include constructing a designated area where refuelling can take place. This area must have an impervious floor with low wall that will keep the spillage inside. This area should be cleaned with absorbent material on a regular basis. The use of cut-off drains must be incorporated to divert upslope clean storm water around the site into a natural drainage system. On the down slope, polluted water must be collected via a cut-off drain into a leachate collection and recovery system. When spillage accidentally takes place, it should be removed and replaced with unpolluted soil. The clean soil can be sourced from excavations nearby. The polluted soil must be piled at a temporary storage facility with a firm waterproof base and is protected from inflow of storm water. It must have an effective drainage system to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.		
Cumulative impacts:	None, site only	
Residual Risks:	Yes, potential pollution would be difficult to clear entirely.	

Table 12: Impact of loss of agricultural land.

Nature of Impact	The establishment of the PV Solar facility will be done at the expense of agricultural land. The area to be lost for agricultural development would be 270ha in size. This includes the area under PV panels, internal service roads and temporary laydown area.	
	Without mitigation	With mitigation
Extent	Local – Regional (3)	Local (2)
Duration	Long-term (4)	Long-term (4)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Improbable (2)
Significance	Medium (39)	Low (20)
Status (Positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of Resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation:		
The general objective is to position the PV facilities on the lowest potential soil and not in places that may have impact on agricultural activities, drainage lines and places with a sensitive nature, such as protected tree species. Where possible, existing road alignments are followed and roads upgraded for use during the lifespan of the facility.		
Cumulative impacts:		
Impact is low due to low agricultural potential of the region		
Residual Risks:		
None, after decommissioning this impact will be reversed when rehabilitation has been completed.		

Table 13: Impact on impairment of land capability

Nature of Impact	The construction of a PV Solar facility will cause impairment of the land capability with the potential risk of erosion	
	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium(30)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation:		
Clear trees and bushes selectively, leaving grass undisturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.		
Cumulative impacts:		
No cumulative impacts are expected to occur, as all impacts will be site bounded.		
Residual Risks:		
None. Affected areas will be rehabilitated, as the impact will only be applicable during construction phase.		

Table 14: Impact of changes to drainage patterns.

Nature of Impact	The establishment of the PV Solar facility may alter drainage patterns with construction and cause erosion	
	Without mitigation	With mitigation
Extent	Local (2)	Local (1)
Duration	Long term (2)	Long term (2)
Magnitude	Low (2)	Low (2)
Probability	Probable (2)	Probable (2)
Significance	Low(12)	Low (10)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation:		
Establish structures on the contour. Use grass strips to regulate flow speed		
Cumulative impacts:		
No, all impacts will be site bounded.		
Residual Risks:		
None. Affected areas will be rehabilitated when operation has ceased.		

Table 15: Impacts of potential soil during the operational phase.

Nature of Impact	Soil pollution with contaminants during the operational phase may take place, including spillages of hydrocarbon (fuel oil) and cement. This is possible during the maintenance of the facility	
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Long Term (4)	Long Term (4)
Magnitude	Low (2)	Minor(2)
Probability	Probable (2)	Probable(2)
Significance	Low (14)	Low (14)
Status (Positive or negative)	Negative	Negative
Reversibility	Partly reversible	Fully reversible
Irreplaceable loss of Resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation:		
Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil		

	must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced waste contractor.
Cumulative impacts:	None
Residual Risks:	Yes, Potential soil pollution difficult to completely clear

Table 16: Impacts of potential soil pollution during decommissioning.

Nature of Impact	Soil pollution with contaminants during the decommissioning phase may take place, including spillages of hydrocarbon (fuel oil) and cement. This is possible during the decommissioning of all facets of the facility: laydown area, demolished concrete foundations of the auxiliary buildings, inverter stations subterranean cabling, main access and internal service roads.	
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Medium Term (2)	Very short (1)
Magnitude	Low (4)	Minor(2)
Probability	Probable (3)	Probable(3)
Significance	Low(21)	Low (12)
Status (Positive or negative)	Negative	Negative
Reversibility	Partly reversible	Fully reversible
Irreplaceable loss of Resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation:	Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced landfill contractor.	
Cumulative impacts:	No, site-bound.	
Residual Risks:	Yes, It is impossible to clear the affected area completely.	

5.4 ARCHAEOLOGICAL IMPACTS

The Archaeology specialist concluded that in terms of archaeological heritage, impacts associated with the amendment are expected to be negligible as the entire study area study area is considered to be of very low heritage significance.

The following impacts on the Archaeological resources are therefore still applicable to the amended footprint position.

Table 17: Impacts on archaeology resources.

Nature of Impact:	Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.	
	Without Mitigation	With Mitigation
Nature/Type	Negative & Direct	Positive
Extent	Local (2)	On-site (1)
Duration	Permanent (5)	Long-term (4)
Magnitude	Low (3)	Low (2)
Probability/likelihood	Improbable (2)	Improbable (2)
Significance	Minor (20)	Minor (14)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:	If during ground clearance or construction, any graves or dense accumulations of stone tools are uncovered then the ECO should report this to SAHRA (Tel: 021 462 4502)	
Operational Phase:	None	
Decommissioning Phase:	None	

Cumulative impacts:	None
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5.5 PALAEOLOGICAL IMPACTS

Dr John Almond from Natura confirmed that there are no changes to palaeontological impacts as a result of the proposed amendments.

The overall palaeontological sensitivity of the entire property is assessed as LOW. Pockets of locally HIGH sensitivity along drainage lines and around pans are not expected here, although their presence cannot be entirely discounted. Plio-Pleistocene calcretised gravels and finer-grained alluvium in such settings might contain mammalian remains such as bones, teeth and horn cores in addition to abundant, low-diversity trace fossil assemblages.

5.6 VISUAL IMPACTS

The Visual specialist confirmed that the amendment of the footprint position for Hotazel Solar will not result in any additional impacts on Visual resources. The following Visual Impacts are therefore expected to be applicable to the proposed amendment.

Table 18: Visual Impacts Proposed PV Array

Impact Activity	Phase	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
Amended PV Footprint	Construction	W/Out	negative	Local	Short	Med	P	Med	
		With	negative	Local	Short	Low	P		Low
	Operation	W/Out	negative	Local	Long	Med	P	Med	
		With	negative	Local	Long	Low	P		Low
	Closure	W/Out	negative	Local	Short	Med	P	Med	
		With	negative	Local	Short	Low	P		Low
Cumulative	W/Out	negative	Local	Long	Med	P	Low		
	With	negative	Local	Long	Med	P		Low	

Table 19: Visual Impacts of Hotazel Solar Access Road

Impact Activity	Phase	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
Road access (both options)	Construction	W/Out	negative	Site	Short	Medium - Low	P	Medium - Low	
		With	negative	Site	Short	Low	P		Low
	Operation	W/Out	negative	Site	Long	Medium - Low	P	Medium - Low	
		With	negative	Site	Long	Very Low	P		Very low
	Closure	W/Out	negative	Site	Short	Medium - Low	P	Medium - Low	
		With	negative	Site	Short	Low	P		Very low
Cumulative	W/Out	negative	Site	Long	Medium	I	Medium		
	With	positive	Site	Short	Very Low	P		Low	

Table 20: Visual Impacts of Preferred Grid Connection

Impact Activity	Phase	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
Grid connection – preferred LILO	Cons.	W/Out	-ve	Local	Short	L	P	L	
		With	-ve	Local	Short	L	P		VL
	Ops.	W/Out	-ve	Local	Long	L	P	L	
		With	-ve	Local	Long	L	P		VL
	Close	W/Out	-ve	Local	Short	L	P	L	
		With	-ve	Local	Short	VL	P		VL
	Cuml.	W/Out	-ve	Reg.	Long	H	P	M	
		With	-ve	Local	Short	L	P		L

5.7 FRESHWATER IMPACTS

Dr Brian Colloty has confirmed that there will be no additional impacts on freshwater resources as a result of the proposed amendments.

It was determined that the site and associated infrastructure, regardless of the alternatives or options, would not have any direct impact on local or regional aquatic waterbodies. This included, rivers, springs, depressions and floodplain wetlands.

6. SOCIAL IMPACTS

The social specialist confirmed that no additional social impacts would occur as a result in the change in footprint. The following impacts associated with the construction and planning phases of the development were identified and assessed by the specialist and these remain applicable to the amended footprint position.

Table 21: Impact assessment on direct and indirect employment opportunities

Nature:		
The creation of direct and indirect employment opportunities during the construction phase of the project.		
	Without enhancement	With enhancement
Extent	Local-Regional (3)	Local-Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Minor (2)	Moderate (6)
Probability	Highly probable(4)	Definite (5)
Significance	Low (28)	Medium (55)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Enhancement:		
<ul style="list-style-type: none"> A local employment policy should be adopted to maximise opportunities made available to the local labour force. Labour should be sourced from the local labour pool, and only if the necessary skills are unavailable should labour be sourced from (in order of preference) the greater LM, John Taolo Gaetsewe DM, Northern Cape Province, South Africa, or elsewhere. 		

<ul style="list-style-type: none"> • Where feasible, training and skills development programmes should be initiated prior to the commencement of the construction phase. • As with the labour force, suppliers should also as far as possible be sourced locally. • As far as possible local contractors that are compliant with Broad-Based Black Economic Empowerment (B-BBEE) criteria should be used. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
Cumulative impacts:
<ul style="list-style-type: none"> • Opportunity to decrease the local unemployment levels and increase the levels of income and spending power within the region. • Opportunity to upgrade and improve skills levels in the area. • Opportunity for local entrepreneurs to develop their businesses (which could result in the creation of additional employment opportunities, levels of income and spending power through sustainable growth).
Residual impacts:
<ul style="list-style-type: none"> • Improved pool of skills and experience in the local area. • Economic growth for small-scale entrepreneurs. • Temporary employment during the construction phase will result in job losses and struggles for construction workers to find new employment opportunities.

Table 22: Economic multiplier effects impact assessment

Nature:		
Significance of the impact from the economic multiplier effects from the use of local goods and services.		
	Without enhancement	With enhancement
Extent	Local-Regional (3)	Local-Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Moderate (6)
Probability	Highly probable (4)	Definite (5)
Significance	Medium (36)	Medium (55)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Enhancement:		
<ul style="list-style-type: none"> • It is recommended that a local procurement policy is adopted to maximise the benefit to the local economy. • A database of local companies, specifically Historically Disadvantaged Individuals (HDIs) which qualify as potential service providers (e.g. construction companies, security companies, catering companies, waste collection companies, transportation companies etc.) should be created and companies listed thereon should be invited to bid for project-related work where applicable. • Local procurement is encouraged along with engagement with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers where feasible. 		
Cumulative impacts:		
Opportunity for local capital expenditure, potential for the local service sector.		
Residual impacts:		
Improved local service sector, growth in local business.		

Table 23: Assessment of impacts from an influx of jobseekers and change in population in the study area

Nature:
In-migration of labourers in search of employment opportunities, and a resultant change in population, and increase in pressure on local resources and social networks, or existing services and infrastructure.

	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Short-term (2)	Short-term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Improbable (2)	Improbable (2)
Significance	Low (18)	Low (14)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> • Develop and implement a local procurement policy which prioritises “locals first” to prevent the movement of people into the area in search of work. • Engage with local community representatives prior to construction to facilitate the adoption of the locals first procurement policy. • Provide transportation for workers (from Hotazel and surrounds) to ensure workers can easily access their place of employment and do not need to move closer to the project site. • Working hours should be kept between daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities. • Compile and implement a grievance mechanism. • Appoint a Community Liaison Officer (CLO) to assist with the procurement of local labour. • Prevent the recruitment of workers at the project site. • Implement a method of communication whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process. • Establish clear rules and regulations for access to the proposed site. • Appoint a security company and implement appropriate security procedures to ensure that workers do not remain onsite after working hours. • Inform local community organisations and policing forums of construction times and the duration of the construction phase. • Establish procedures for the control and removal of loiterers from the construction site. 		
Cumulative impacts		
Additional pressure on natural resources, services, infrastructure and social dynamics in the area due to an increase in people and change in population. Possible increase in criminal activities and economic losses in area for property owners.		
Residual impacts:		
Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure, resources and services.		

Table 24: Assessment of safety and security impacts

Nature:		
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.		
	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	High (8)	Moderate (6)
Probability	Probable (3)	Improbable (2)
Significance	Medium (36)	Low (20)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> • Working hours should be kept within daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities. • Provide transportation for workers to prevent loitering within or near the project site outside of working hours. • The perimeter of the construction site should be appropriately secured to prevent any unauthorised access to the site. The fencing of the site should be maintained throughout the construction period. 		

<ul style="list-style-type: none"> • The appointed EPC Contractor must appoint a security company to ensure appropriate security procedures and measures are implemented. • Access in and out of the construction site should be strictly controlled by a security company appointed to the project. • A CLO should be appointed as a grievance mechanism. 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. • The EPC Contractor should implement a stakeholder management plan to address neighbouring farmer concerns regarding safety and security. • The project proposed must prepare and implement a Fire Management Plan; this must be done in conjunction with surrounding landowners. • The EPC Contractor must prepare a Method Statement which deals with fire prevention and management.
Cumulative impacts:
<ul style="list-style-type: none"> • Possible increase in crime levels (with influx of people) with subsequent possible economic losses. • Increased risk of veld fires if vegetation clearing is not appropriately implemented, monitored and maintained.
Residual impacts:
None anticipated.

Table 25: Assessment of impacts on daily living and movement patterns.

Nature:		
Temporary increase in traffic disruptions and movement patterns during the construction phase.		
	Without mitigation	With mitigation
Extent	Local-Regional (3)	Local-Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	High (8)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Medium (39)	Medium (33)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
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 worthiness. • Provision of adequate and strategically placed traffic warning signs and control measures at gravel farm access roads to warn road users of the construction activities taking place for the duration of the construction phase. Warning signs must be visible at all times, and especially at night. • Implement penalties for reckless driving as a way to enforce compliance to traffic rules. • Avoid heavy vehicle activity during “peak” hours (when children are taken to school, or people are driving to work). • The developer and EPC Contractor must ensure that all fencing along access roads is maintained in the present condition or repaired if disturbed due to construction activities. • The developer and EPC Contractor must ensure that the roads utilised for construction activities are either maintained in the present condition or upgraded if disturbed due to construction activities. • The EPC Contractor must ensure that damage / wear and tear caused by construction related traffic to the access roads is repaired before the completion of the construction phase. • A method of communication must 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. 		
Cumulative impacts:		
Possible increased traffic and traffic disruptions impacting local communities.		
Residual impacts:		
None anticipated.		

Table 26: Assessment of nuisance impacts (noise and dust)

Nature:		
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site.		
	Without mitigation	With mitigation

Extent	Local (1)	Local (1)
Duration	Short-term (2)	Short-term (2)
Magnitude	High (8)	Moderate (6)
Probability	Highly probable (4)	Probable (3)
Significance	Medium (44)	Low (27)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods where feasible. Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. Ensure all vehicles are road worthy, drivers are qualified and are made aware of the potential noise and dust issues. A CLO 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. 		
Cumulative impacts:		
<ul style="list-style-type: none"> If damage to roads is not repaired then this will affect other road users and result in higher maintenance costs for vehicles of road users. Other construction activities in the area will heighten the nuisance impacts, such as noise, dust and wear and tear on roads. 		
Residual impacts:		
Only damage to roads that is not fixed could affect road users.		

Table 27: Assessment of impacts on the sense of place

Nature:		
Intrusion impacts from construction activities will have an impact on the area's "sense of place".		
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Short-term (2)	Short-term (2)
Magnitude	Low (4)	Low (4)
Probability	Highly probable (4)	Probable (3)
Significance	Low (28)	Low (21)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> Implement mitigation measures identified in the Visual Impact Assessment (VIA) prepared for the project. Limit noise generating activities to normal daylight working hours and avoid weekends and public holidays. The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods where feasible. Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads 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 road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. Communication, complaints and grievance channels must be implemented and contact details of the CLO must be provided to the local community in the study area. 		
Cumulative impacts:		
Other construction activities in the area will heighten the intrusion impacts, such as noise, dust and aesthetic pollution and further negatively impact the area's 'sense of place'.		
Residual impacts:		
None anticipated.		

Table 28: Employment opportunities and skills development

Nature:		
The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy.		
	Without mitigation	With mitigation
Extent	Local-Regional (3)	Local-Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly probable(4)	Definite (5)
Significance	Medium (44)	Medium (55)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> It is recommended that local employment policy is adopted to maximise the opportunities made available to the local community. The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. Vocational training programs should be established to promote the development of skills. 		
Cumulative impacts:		
Opportunity to reduce unemployment rates.		
Residual impacts:		
Improved pool of skills and experience in the local area.		

Table 29: Assessment of the development of non-polluting, renewable energy infrastructure

Nature:		
Development of non-polluting, renewable energy infrastructure.		
	Without mitigation	With mitigation
Extent	Local-Regional-National (4)	Local-Regional-National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Definite (5)	Definite (5)
Significance	Medium (50)	Medium (50)
Status (positive or negative)	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	Yes (impact of climate change)	
Can impacts be mitigated?	No	
Mitigation:		
None identified.		
Cumulative impacts		
Reduce carbon emissions through the use of renewable energy and contribute to reducing global warming.		
Residual impacts		
Reduce carbon emissions through the use of renewable energy and contribute to reducing global warming.		

Table 30: Assessment of the contribution to Local Economic Development (LED) and social upliftment

Nature:

Contribution to LED and social upliftment during the operation of the project.		
	Without mitigation	With mitigation
Extent	Local-Regional-National (4)	Local-Regional-National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	High (8)
Probability	Highly probable (4)	Highly probable (4)
Significance	Medium (56)	High (64)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> • A Community Needs Assessment (can) must be conducted to ensure that the LED and social upliftment programmes proposed by the project are meaningful. • Ongoing communication and reporting is required to ensure that maximum benefit is obtained from the programmes identified, and to prevent the possibility for such programmes to be misused. • The programmes should be reviewed on an ongoing basis to ensure that they are best suited to the needs of the community at the time (bearing in mind that these are likely to change over time). 		
Cumulative impacts:		
Significant LED and social upliftment of the local communities as a result of other IPP projects within the area.		
Residual impacts:		
Social upliftment of the local communities through the development and operation of the project.		

Table 31: Assessment of the visual impact and impacts on sense of place

Nature:		
Visual impacts and sense of place impacts associated with the operation phase of Hotazel Solar.		
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Minor (2)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (36)	Low (21)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
Implement mitigation measures identified in the VIA report prepared for the project.		
Cumulative impacts:		
Potential impact on the current sense of place in the area due to other solar power developments within the area.		
Residual impacts:		
The visual impact of Hotazel Solar will remain if the facility is not decommissioned and dismantled after the end of its operational life.		

Table 32: Assessment on the loss of agricultural land and overall productivity

Nature:	
Loss of agricultural land and overall productivity as a result of the operation of the proposed project on an agricultural property.	

	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Low (4)
Probability	Not probable (2)	Improbable (1)
Significance	Low (22)	Low (9)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> Implement the mitigation measures detailed in the Agricultural Impact Assessment 		
Cumulative impacts:		
Loss of agricultural land as a result of the number of solar energy facilities proposed within the area. Decrease in overall productivity as a result of the loss of grazing land.		
Residual impacts:		
Economically unviable portions of agricultural land which may reduce overall productivity.		

6.1 IMPACT STATEMENT

None of the participating specialists identified any impacts that remain high after mitigation.

As can be seen in the table below, the participating specialists did not identify any changes to the nature of the impacts, nor are there any increases in the level of significance of the impacts associated with the amendment of the EA.

Furthermore, it must be noted that none of the specialists identified any additional mitigations needed to achieve the significance ratings detailed above.

Table 33: The table below provides a comparative summary of the nature and post mitigation level of impacts between the authorised Hotazel Solar and this amendment.

Nature of Impact	Level and Status of Impact – Hotazel Solar as Authorised	Level and Status of Impact – Hotazel Solar as Amended
Terrestrial Ecology		
Impact on vegetation and faunal habitat	Medium (negative)	Medium (negative)
Impact on protected species (<i>v. erioloba</i> and <i>v. haematoxylon</i>)	Medium (negative)	Medium (negative)
Impact on Critical Biodiversity Areas (CBA's)	Negligible	Negligible
Impact on National Protected Area Expansion focus areas (NPAES)	Negligible	Negligible
Avifauna		
Construction phase impacts on Avifauna	Medium - Low (negative)	Medium – Low (negative)
Operational phase impacts on Avifauna	Low (negative)	Low (negative)
Agriculture		

Nature of Impact	Level and Status of Impact – Hotazel Solar as Authorised	Level and Status of Impact – Hotazel Solar as Amended
Soil pollution with contaminants during the construction phase may take place, including spillages of hydrocarbon (fuel oil) and cement.	Low (negative)	Low (negative)
The establishment of the PV Solar facility will be done at the expense of agricultural land.	Low (negative)	Low (negative)
The construction of a PV Solar facility will cause impairment of the land capability with the potential risk of erosion	Low (negative)	Low (negative)
The establishment of the PV Solar facility may alter drainage patterns with construction and cause erosion	Low (negative)	Low (negative)
Soil pollution with contaminants during the operational phase may take place, including spillages of hydrocarbon (fuel oil) and cement. This is possible during the maintenance of the facility.	Low (negative)	Low (negative)
Soil pollution with contaminants during the decommissioning phase may take place, including spillages of hydrocarbon (fuel oil) and cement	Low (negative)	Low (negative)
Heritage		
Impact on Archaeology due to construction of PV facility and infrastructure (Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.)	Low (negative)	Low (negative)
Visual		
Visual Impact of Visual PV Array and Structures during construction	Low (negative)	Low (negative)
Visual Impact of Visual PV Array and Structures during operation	Low (negative)	Low (negative)
Visual Impact of Visual PV Array and Structures during decommissioning	Low (negative)	Low (negative)
Cumulative visual Impact	Medium (negative)	Medium (negative)
Visual Impact of preferred Grid Connection and Substation	Very Low (negative)	Very Low (negative)
Freshwater		
Direct impact on local or regional aquatic waterbodies (including, rivers, springs, depressions and floodplain wetlands)	None (negative)	None (negative)
Palaeontology		
Impact on Palaeontological Resources	Very Low (negative)	Very Low (negative)
Cumulative Impact on Palaeontological Resources	Low (negative)	Low (negative)

Nature of Impact	Level and Status of Impact – Hotazel Solar as Authorised	Level and Status of Impact – Hotazel Solar as Amended
Social		
The creation of direct and indirect employment opportunities during the construction phase of the project	Medium (positive)	Medium (positive)
Significance of the impact from the economic multiplier effects from the use of local goods and services.	Medium (positive)	Medium (positive)
In-migration of labourers in search of employment opportunities, and a resultant change in population, and increase in pressure on local resources and social networks, or existing services and infrastructure.	Low (negative)	Low (negative)
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.	Low (negative)	Low (negative)
Temporary increase in traffic disruptions and movement patterns during the construction phase	Medium (negative)	Medium (negative)
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site.	Low (negative)	Low (negative)
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Low (negative)	Low (negative)
Contribution to Local Economic Development and social upliftment during the operation of the project.	High (positive)	High (positive)

7. MITIGATION MEASURES

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac and are equally applicable to the Hotazel Solar as authorised as well as the proposed amendment.

Table 34: Mitigation measures required for the construction, operation and decommissioning of the Hotazel Solar development.

Mitigation	Condition of Approval	Included in EMPr
ECOLOGY		
Undertake preconstruction walk-through of the facility in order to locate species of conservation concern that can be translocated (such as aloes) as well as comply with the Northern Cape Nature Conservation Act and DENC/DAFF permit conditions.	X	
Vegetation clearing to commence only after walk through has been conducted and necessary permits obtained.	X	
Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc.		X
Environmental Control Officer (ECO) to provide supervision and oversight of vegetation clearing activities within sensitive areas such as near high density Acacia erioloba.	X	

Mitigation	Condition of Approval	Included in EMPr
Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.		X
All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the construction area.		X
All personnel should undergo environmental induction with regards to fauna and, in particular, awareness about not harming or collecting species such as snakes, tortoises and owls, which are often persecuted out of superstition.		X
Any fauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.		X
All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.		X
All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.		X
If trenches need to be dug for water pipelines or electrical cabling, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are standing open should have places where there are soil ramps allowing fauna to escape the trench.		X
Temporary lay-down areas should be located within previously transformed areas or areas that have been identified as being of low sensitivity. These areas should be rehabilitated after use.	X	
All personnel should undergo environmental induction with regards to fauna and, in particular, awareness about not harming or collecting species such as snakes, tortoises and owls, which are often persecuted out of superstition.		X
Any fauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.		X
The development footprint should be kept to a minimum and natural vegetation should be encouraged to return to disturbed areas		X
An open space management plan should be developed for the site, which should include management of biodiversity within the fenced area, as well as that in the adjacent rangeland.		X
AVIFAUNAL		
The use of lay-down areas within the footprint of the development should be used where feasible, to avoid habitat loss and disturbance to adjoining areas.		X
All building waste produced during the construction phase should be removed from the development site and be disposed of at a designated waste management facility. Similarly, all liquid wastes should be contained in appropriately sealed vessels/ponds within the footprint of the development, and be disposed of at a designated waste management facility after use. Any liquid and chemical spills should be dealt with accordingly to avoid contamination of the environment.		X
Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to, and awareness about not harming or hunting ground-dwelling species (e.g. bustards, korhaans, thick-knees and coursers), and owls, which are often persecuted out of superstition.		X
This induction should also include awareness as to no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc.		X
All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such nocturnal and crepuscular species (e.g. nightjars, thick-knees and owls) which sometimes forage or rest along roads.		X
Sensitive microhabitats should be avoided, such as nesting sites during the breeding season of large terrestrial birds (generally summer; Hockey et al., 2005).		X
Any avifauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer		X
If holes or trenches need to be dug, these should not be left open for extended periods of time as ground-dwelling avifauna or their flightless young may fall in and		X

Mitigation	Condition of Approval	Included in EMPr
become trapped in them. Holes should only be dug when they are required and should be used and filled shortly thereafter.		
No construction activity should occur near to active raptor nests should these be discovered prior to or during the construction phase. If there are active nests near construction areas, these should be reported to ECO and should be monitored until the birds have finished nesting and the fledglings left the nest.		X
If the site must be lit at night for security purposes, this should be done with downward-directed low-UV type lights (such as most LEDs), which do not attract insects. The use of lighting at night should be kept to a minimum, so as not to unnecessarily attract invertebrates to the solar facility and possibly their avian predators, and to minimise disturbance to birds flying over the facility at night.		X
All incidents of collision with panels should be recorded as meticulously as possible, including data related to the species involved, the exact location of collisions within the facility, and suspected cause of death. Post-construction monitoring with the aid of video surveillance should be considered, as this will contribute towards understanding bird interactions with solar panels.		X
If birds are nesting on the infrastructure of the facility and cannot be tolerated due to operational risks of fire, electrical shorts, soiling of panels or other concerns, birds should be prevented from accessing nesting sites by using mesh or other manner of excluding them. Birds should not be shot, poisoned or harmed as this is not an effective control method and has negative ecological consequences. Birds that already have eggs or nestlings should be allowed to fledge their young before nests are removed. If there are any persistent problems with avifauna, then an avifaunal specialist should be consulted for advice on further mitigation.		X
All food waste and litter at the site should be placed in bins with lids and removed from the site on a regular basis.		X
During decommissioning, all above-ground infrastructure should be removed from the site. Below-ground infrastructure such as cabling can be left in place if it does not pose a risk, as removal of such cables may generate additional disturbance and impact, however, this should be in accordance with the facilities' decommissioning and recycling plan, and as per the agreements with the land owners concerned.		X
During decommissioning, rehabilitation and revegetation of the site in accordance with a site-specific revegetation and rehabilitation plan, with follow-up monitoring to ensure compliance and adequate achievement of revegetation targets.		X
The design and layout of any proposed power lines must be endorsed by members of the Eskom-EWT Strategic Partnership, taking into account the mitigation guidelines recommended by Birdlife South Africa (Smit, 2012; Jenkins et al., 2017).	X	
The route that the power line will follow should be the shortest distance possible across an area where collisions are expected to be minimal, or follow existing power lines, and be marked with bird diverters to make the lines as visible as possible to collision-susceptible species. Recommended bird diverters such as brightly coloured 'aviation' balls, thickened wire spirals, or flapping devices that increase the visibility of the lines should be fitted where considered necessary.		X
Regular monitoring of power lines should be undertaken to detect bird carcasses, to enable the identification of any areas of high impact to be marked with bird diverters.		X
Only power lines structures that are considered safe for birds should be erected to avoid the electrocutions of birds (particularly large raptors) perching or attempting to perch. Where necessary, deterrent devices such as bird guards should be mounted on relevant parts of the pylons to further reduce the possibility of electrocutions.	X	
Any raptors or other birds nesting on the power line structures should not be disturbed while the birds are breeding. If species such as sociable weavers are present, which are making the line unsafe, then these nests should be regularly removed before breeding can commence. Measures should also be put in place to prevent birds persistently nesting in problem areas by using artificial nesting platforms and perches positioned away from live components.		X
The facility should be fenced off in a manner which allows small fauna to pass through the facility, but that does not result in ground-dwelling avifauna (e.g. bustards,		X

Mitigation	Condition of Approval	Included in EMPr
korhaan, francolin, thick-knees) being trapped and electrocuted along the boundary fences (Visser, 2016). In practical terms this means that the facility should be fenced-off to include only the developed areas and should include as little undeveloped ground or natural veld as possible. In addition, there should not be electrified ground-strands present within 30cm of the ground and the electrified strands should be located on the inside of the fence and not the outside. Furthermore, the fence should be a single layer fence and not a double fence with a large gap between. Images of suitable fencing types from existing PV facilities are available on request.		
AGRICULTURE		
If possible the O&M contractor must investigate the use of livestock grazing via an electrified camp system to reduce biomass under the panels. This should be done at the sole discretion of the O&M contractor with approval from the lenders.		
The EPC contractor to investigate the establishment of high density feeding outside of the PV footprint. In other words, if there are larger open space areas within the fenced off PV footprint, the O&M contractor must consider utilising these for grazing of livestock.		X
Refuelling normally takes place in the laydown area. Proactive measures must be taken which include constructing a designated area where refuelling can take place. This area must have an impervious floor with low wall that will keep the spillage inside. This area should be cleaned with absorbent material on a regular basis. The use of cut-off drains must be incorporated to divert upslope clean storm water around the site into a natural drainage system. On the down slope, polluted water must be collected via a cut-off drain into a leachate collection and recovery system. When spillage accidentally takes place, it should be removed and replaced with unpolluted soil. The clean soil can be sourced from excavations nearby. The polluted soil must be piled at a temporary storage facility with a firm waterproof base and is protected from inflow of storm water. It must have an effective drainage system to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.		X
Brush cut only to clear bush leaving topsoil un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Where possible construct on alternate strips to combat possible erosion.		X
Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced landfill contractor.		X
The general objective is to position the PV facilities on the lowest potential soil and not in places that may have impact on agricultural activities, drainage lines and places with a sensitive nature. Where possible, existing road alignments are followed and roads upgraded for use during the live span of facility.		X
ARCHAEOLOGY		
Archaeological resources identified during this study do not require further recording/studies, and because they are considered to be of low heritage value and have been adequately recorded through this assessment, it is suggested that they can be disturbed or damaged without a permit from SAHRA.		X
In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately.	X	
If exposed during development, archaeological resources must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer.	X	
In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency and will require a professional archaeologist to undertake mitigation if needed. Such work will also be at the expense of the developer	X	

Mitigation	Condition of Approval	Included in EMPr
PALAEONTOLOGY		
The ECO and / or the Site Engineer responsible for the development must remain aware that all sedimentary deposits have the potential to contain fossils and he / she should thus monitor all substantial excavations into sedimentary bedrock for fossil remains. If any substantial fossil remains (e.g. vertebrate bones, teeth, horn cores) are found during construction SAHRA should be notified immediately (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented, at the developer's expense	X	
A chance-find procedure should be implemented so that, in the event of fossils being uncovered, the ECO / Site Engineer will take the appropriate action, which includes: <ul style="list-style-type: none"> - Stopping work in the immediate vicinity and fencing off the area with tape to prevent further access; - Reporting the discovery to the provincial heritage agency and/or SAHRA; - Appointing a palaeontological specialist to inspect, record and (if warranted) sample or collect the fossil remains; - Implementing any further mitigation measures proposed by the palaeontologist; and - Allowing work to resume only once clearance is given in writing by the relevant authorities. 		X
SAHRA		
The Final EIA and EMPr must be submitted to SAHRA for record purposes;		X
If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 35(3) and 36(6) of the NHRA. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;		X
The decision regarding the EA Amendment Application must be communicated to SAHRA and uploaded to the SAHRIS Case application.		X
VISUAL		
Bushveld trees surrounding the proposed PV sites should be retained for visual screening where possible.	X	
The laydown area should be sited away from the public road.		X
Topsoil from the footprints of the road and structures should be dealt with in accordance with EMP.		X
The buildings should be painted a grey-brown colour or similar.		X
Fencing should be simple, diamond shaped (to catch wind-blown litter) and appear transparent from a distance. The fences should be checked on a monthly basis for the collection of litter caught on the fence.		X
It is recommended that mitigations be implemented to reduce light spillage in night-time (refer to appendix for general guidelines).		X
Control of lights at night to allow only local disturbance to the current dark sky night landscape (refer to appendix for general guidelines).		X
Continued erosion control and management of dust.		X
All structures should be removed and where possible, recycled		X
Building structures should be broken down (including foundations) unless they can be repurposed.		X

Mitigation	Condition of Approval	Included in EMPr
The rubble should be managed according to NEMWA and deposited at a registered landfill if it cannot be recycled or reused.		X
All compacted areas should be rehabilitated according to a rehabilitation specialist		X
Monitoring for soil erosion should be undertaken on a routine basis		X
FRESHWATER		
Any stormwater within the site must be handled in a suitable manner, i.e. separate clean and dirty water streams around the plant, and install stilling basins to capture large volumes of run-off, trap sediments and reduce flow velocities.		X
SOCIAL		
A local employment policy should be adopted to maximise opportunities made available to the local labour force.		X
Labour should be sourced from the local labour pool, and only if the necessary skills are unavailable should labour be sourced from (in order of preference) the greater Joe Morolong LM, John Taolo Gaetsewe DM, Northern Cape Province, South Africa, or elsewhere.		X
Where feasible, training and skills development programmes should be initiated prior to the commencement of the construction phase.		X
As far as possible local contractors that are compliant with Broad-Based Black Economic Empowerment (B-BBEE) criteria should be used.		X
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		X
A database of local companies, specifically Historically Disadvantaged Individuals (HDIs) which qualify as potential service providers (e.g. construction companies, security companies, catering companies, waste collection companies, transportation companies etc.) should be created and companies listed thereon should be invited to bid for project-related work where applicable.		X
Local procurement is encouraged along with engagement with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers where feasible.		X
Develop and implement a local procurement policy which prioritises "locals first" to prevent the movement of people into the area in search of work.		X
Engage with local community representatives prior to construction to facilitate the adoption of the locals first procurement policy.		X
Provide transportation for workers (from Kathu and surrounds) to ensure workers can easily access their place of employment and do not need to move closer to the project site.		X
Working hours should be kept between daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities.		X
Compile and implement a grievance mechanism.		X
Appoint a Community Liaison Officer (CLO) to assist with the procurement of local labour.		X
Prevent the recruitment of workers at the project site.		X
Implement a method of communication whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.		X
Establish clear rules and regulations for access to the proposed site.		X
Appoint a security company and implement appropriate security procedures to ensure that workers do not remain onsite after working hours.		X
Inform local community organisations and policing forums of construction times and the duration of the construction phase.		X
Establish procedures for the control and removal of loiterers from the construction site.		X
Working hours should be kept within daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities.		X
Provide transportation for workers to prevent loitering within or near the project site outside of working hours.		X

Mitigation	Condition of Approval	Included in EMPr
The perimeter of the construction site should be appropriately secured to prevent any unauthorised access to the site. The fencing of the site should be maintained throughout the construction period.		X
The appointed EPC Contractor must appoint a security company to ensure appropriate security procedures and measures are implemented.		X
Access in and out of the construction site should be strictly controlled by a security company appointed to the project.		X
A CLO should be appointed as a grievance mechanism. 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.		X
The EPC Contractor should implement a stakeholder management plan to address neighbouring farmer concerns regarding safety and security.		X
The project proposed must prepare and implement a Fire Management Plan; this must be done in conjunction with surrounding landowners.		X
Communication, complaints and grievance channels must be implemented and contact details of the CLO must be provided to the local community in the study area.		X
The EPC Contractor must prepare a Method Statement which deals with fire prevention and management.		X
The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods where feasible.		X
It is recommended that local employment policy is adopted to maximise the opportunities made available to the local community.		X
A Community Needs Assessment must be conducted to ensure that the Local Economic Development and social upliftment programmes proposed by the project are meaningful. Ongoing communication and reporting is required to ensure that maximum benefit is obtained from the programmes identified, and to prevent the possibility for such programmes to be misused. The programmes should be reviewed on an ongoing basis to ensure that they are best suited to the needs of the community at the time (bearing in mind that these are likely to change over time).		X

8. CONCLUSION AND RECOMMENDATIONS

Cape EAPrac is of the opinion that the information contained in this Impact Report and the documentation attached hereto is sufficient to allow the competent authority to apply their minds to the potential negative and/or positive impacts associated with the proposed amendment of the development footprint, in respect of the activities authorised.

This assessment process has not identified any fatal flaws with the proposed amendment and as such it is our reasoned view that the amendment can be considered for authorisation. All impacts range from high positive to medium negative and all highly negative impacts have been avoided in both the authorised project as well as this proposed amendment.

It is the recommendation of the EAP that the proposed amendment of Hotazel Solar be considered for approval.

9. ABBREVIATIONS

AIA	Archaeological Impact Assessment
BGIS LUDS	Biodiversity Geographic Information System Land Use Decision Support
CBA	Critical Biodiversity Area
CDSM	Chief Directorate Surveys and Mapping
CEMPr	Construction Environmental Management Programme
DEA	Department of Environmental Affairs
DEA&NC	Department of Environmental Affairs and Nature Conservation
DME	Department of Minerals and Energy
DSR	Draft Scoping Report
EAP	Environmental Impact Practitioner
EHS	Environmental, Health & Safety
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GPS	Global Positioning System
GWh	Giga Watt hour
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
kV	Kilo Volt
LUDS	Land Use Decision Support
LUPO	Land Use Planning Ordinance
MW	Mega Watt

NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
PM	Post Meridiem; “Afternoon”
PSDF	Provincial Spatial Development Framework
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
S.A.	South Africa
SACAA / CAA	South African Civil Aviation Authority
SAHRA	South African National Heritage Resources Agency
SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards
SDF	Spatial Development Framework
TOPS	Threatened and Protected Species

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³ This reference list excludes specialist studies that form part of this environmental process and which are contained in Appendix E1 – E12

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