



# DRAFT ENVIRONMENTAL IMPACT REPORT

for  
**HOTAZEL 2**  
on

The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.

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

Prepared for Applicant: Hotazel Solar Facility 2 (Pty) Ltd

Date: 1 March 2021

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Report Reference: JMO637/04

Department Reference: 14/12/16/3/3/2/2017

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# DOCUMENT TRACKING

## DOCUMENT HISTORY

REVISION	DATE	AUTHOR
Draft Scoping Report	14 October 2020	Dale Holder
Final Scoping Report	25 November 2020	Dale Holder
Draft Environmental Impact Report	01 March 2021	Dale Holder

## APPROVAL FOR RELEASE

NAME	TITLE	SIGNATURE
Dale Holder	Senior Environmental Practitioner	

## DISTRIBUTION

DISTRIBUTION LIST
Registered Interested and Affected Parties
Department of Environment, Forestry and Fisheries
Hotazel Solar Facility 2 (Pty) Ltd

## SUBMISSION AND CORRESPONDENCE

SUBMISSION / CORRESPONDENCE	DATE
Application form Submitted	14 October 2020
Application form Acknowledged	16 October 2020
Draft Scoping Report Submitted	14 October 2020
Draft Scoping Report Acknowledged	16 October 2020
Comment on Draft Scoping Report	11 November 2020
Final Scoping Report Submitted	25 November 2020
Final Scoping Report Acknowledged	30 November 2020
Final Scoping Report Accepted	01 February 2021
Draft Environmental Impact Report Submitted	01 March 2021
Draft Environmental Impact Report Acknowledged	Pending
Final Environmental Impact Report Submitted	Pending

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**PURPOSE OF THIS REPORT:**

I&AP Review and Comment

**APPLICANT:**

Hotazel Solar Facility 2 (Pty) Ltd

**CAPE EAPRAC REFERENCE NO:**

JMR637/04

**DEPARTMENT REFERENCE:**

14/12/16/3/3/2/2017

**SUBMISSION DATE:**

01 March 2021

# DRAFT ENVIRONMENTAL IMPACT REPORT

in terms of the

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

## Hotazel Solar 2

**The Remaining Extent (Portion 0) of the Farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.**

Submitted for:

### Stakeholder Review & Comment

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## REPORT DETAILS

Title:	Draft Environmental Impact Report for Hotazel 2
<b>Purpose of this report:</b>	<p>This Draft Environmental Impact Report inclusive of an Draft Environmental Management Programme is herewith provided to registered Interested and Affected Parties for review and comment.</p> <p>This Report forms part of a series of reports and information sources that are being provided during the Environmental Impact Assessment (EIA) for the proposed Hotazel 2 Solar Photovoltaic (PV) Facility near Hotazel in the Northern Cape Province.</p> <p>This is the third report in the series that that forms part of the environmental process. Registered I&amp;APs will be given an opportunity to comment on the following reports as part of this environmental process:</p> <ul style="list-style-type: none"> <li>- Draft Scoping Report (complete),</li> <li>- Draft Environmental Impact Assessment Report (this report) , and</li> <li>- Draft Environmental Management Programme (appended to this report).</li> </ul> <p>In accordance with the regulations, the objectives of an environmental impact assessment process are to, through a consultative process:</p> <ul style="list-style-type: none"> <li>(a) identify the relevant policies and legislation relevant to the activity;</li> <li>(b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;</li> <li>(c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;</li> <li>(d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;</li> <li>(e) identify the key issues to be addressed in the assessment phase;</li> <li>(f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and</li> <li>(g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.</li> </ul> <p>This Draft Environmental Impact Assessment Report is available for a further 30 day review and comment period extending from <u>01 March 2021</u> to <u>06 April 2021</u>.</p>
<b>Prepared for:</b>	Hotazel Solar Facility 2 (Pty) Ltd
<b>Published by:</b>	Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac)
<b>Authors:</b>	Mr Dale Holder
<b>Cape EAPrac Ref:</b>	JMR637/04
<b>DEA Case officer &amp; Ref. No:</b>	Mathlodi Mogorosi (14/12/16/3/3/2/2017)
<b>Date:</b>	01 March 2021
<b>To be cited as:</b>	<i>Cape EAPrac</i> , 2021. Draft Environmental Impact Report for the proposed Hotazel 2. Report Reference: JMR637/04. George.

# TECHNICAL CHECKLIST

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

Company Details		
Company profile	Name and details of Applicant	Hotazel Solar Facility 2 (Pty) Ltd is a special purpose vehicle, proposing the development of the Hotazel 2 solar energy facility.
Site Details		
Size of the site	Description and Size in hectares of the affected property.	Remainder Farm York A 279 (portion 0)  Total Property Size: 636.7946ha.  Additional properties affected by Grid Connection: <ul style="list-style-type: none"> <li>• Portion 11 of Farm York A 279;</li> <li>• Remaining Extent of Portion 3 of the Farm York 279; and</li> <li>• The Remaining Extent (Portion 0) of the Farm Hotazel 280.</li> </ul>
Development Footprint	This includes the total footprint of PV panels, auxiliary buildings, onsite substation, inverter stations and internal roads.	The total footprint of Hotazel 2 solar energy facility will not exceed 230ha
Technology Details		
Capacity of the facility	Capacity of facility (in MW)	Export Capacity (AC) of 100MW
Solar Technology selection	Type of technology	PV (including mono or bifacial) with fixed, single, or double axis tracking technology.
	Capacity and dimensions of the PV field	100MW (AC) yield. PV Panel Footprint of approximately 210ha with a total project Footprint of not more than 230ha
	Structure height	PV Structures not more than 4m
	Surface area to be covered (including associated infrastructure such as roads)	Approximately 230ha
	Structure orientation	Fixed-tilt in north-facing orientation, or mounted single or double axis tracking mounting structures
	Laydown area dimensions	Up to 7ha of temporary laydown area will be required. A permanent laydown area of less than 1ha will remain in place for operations
Grid Connection Details		
Grid connection	Substation to which project will connect.	The project intends connecting to the National Grid via the existing Eskom Hotazel Substation,
	Capacity of substation to connect facility	The Eskom Hotazel Substation currently has in excess of 200 MW capacity to evacuate generated power.
Power line/s	Number of overhead power lines required	1x132kV powerline will be required to connect the facility to the national grid. There are three initial alternatives being considered: <ol style="list-style-type: none"> <li>1. Overhead 132kV powerline from the Hotazel 2 on-site substation/ collector switching station to the Eskom Hotazel substation.</li> <li>2. Via a loop in loop out (LILO) into the Hotazel-Eldoret 132kV line.</li> </ol>

		<p>3. Overhead 132kV powerline from the Hotazel 2 on-site substation/ collector switching station to the Hotazel Solar collector switching station.</p> <p>These alternative Grid connection options will be investigated (from both an environmental and technically feasible perspective) as part of the EIA process</p>
	Route/s of power lines	Alternative grid connection options are under investigation. Please refer to the layout plans and report attached in Appendix D and the discussion of alternatives in section 7 of this report
	Voltage of overhead power lines	132kV.
	Height of the Power Line	±32 m
	Servitude Width	Maximum of 31m – 52m.
<b>Auxiliary Infrastructure</b>		
Other infrastructure	Additional Infrastructure	<p>Auxiliary buildings of approximately 2 ha.</p> <p>The functions within these buildings include (but are not limited to) a gate house, ablutions, workshops, storage and warehousing area, site offices, substation, and control centre.</p> <p>Perimeter Fencing not exceeding 5m in height.</p>
	Details of access roads	<p>Access to the site will be via a new access point from the R31</p> <ul style="list-style-type: none"> <li>• Main access road - width: 8m, length: ±100m</li> <li>• Secondary internal roads – width: 5m, length: ±17 km</li> </ul>

## LOCATION OF PREFERRED ALTERNATIVE

The preferred alternative for the facility and associated infrastructure is situated at:

	Latitude	Longitude
<b>PV Facility<sup>1</sup></b>		
North-West Corner	27°12'36.73"S	22°59'0.83"E
North-East Corner	27°12'14.59"S	23° 0'9.84"E
South-West Corner	27°13'15.81"S	22°59'45.94"E
South-East Corner	27°12'52.61"S	23° 0'25.18"E
<b>On site Substation</b>	27°13'10.62"S	22°59'48.59"E
<b>Powerline Alternative 1 Preferred</b>	<b>Latitude</b>	<b>Longitude</b>
<b>Start (Subs A)</b>	27°13'11.69"S	22°59'46.00"E
<b>Middle</b>	27°13'53.72"S	22°57'45.37"E
<b>End (Eskom Hotazel sub)</b>	27°12'22.02"S	22°57'28.61"E

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<sup>1</sup> Note that the proposed footprint is not rectangular in shape and as such the co-ordinate points reflected here indicate the most northern and southern bend points.



# CONTENTS OF AN ENVIRONMENTAL IMPACT REPORT

Appendix 3 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Impact Report. The checklist below serves as a summary of how these requirements were incorporated into this Impact Report.

Requirement	Details
(1) An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include -	
(a) details of - The EAP who prepared the report; and The expertise of the EAP, including, a curriculum vitae.	The details of the EAP are included at the beginning of this Final EIR (overleaf from the cover page). The EAP's declaration and CV is also included in Annexure G3.
(b) the location of the activity, including – The 21 digit Surveyor General code of each cadastral land parcel; Where available, the physical address and farm name; Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	The proposed activity (preferred alternative) is to be situated south of Hotazel on the Remainder of Farm York A 279 with the proposed Grid Connection on Remainder of Portion 3 of the Farm York 279, Remainder of Farm 280 and Portion 11 of Farm York A 279  21 digit Surveyor General code: C0410000000027900000
(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Detailed layout plans are attached in Appendix D
(d) a description of the scope of the proposed activity, including - All listed and specified activities triggered and being applied for; and A description of the associated structures and infrastructure related to the development.	Sections 1.4 and 1.5 of this EIR.
(e) A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy content.	Section 2 of this EIR.
(f) A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.	Section 4 of this EIR.
(g) A motivation for the preferred development footprint within the approved site.	Section 3.4 of this Final EIR.
(h) A full description of the process followed to reach the proposed development footprint within the approved site, including - Details of the development footprint alternatives considered; Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; The impacts and risks identified, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts - (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated. The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected	Section 3.2 of this EIR.  Section 3.4 of this EIR. Section 9 of this EIR. Section 9 of this EIR and Appendix F Appendix F of this EIR. Section 8 of this EIR. Please refer to the plan of study for Environmental Impact Assessment (EIA) that formed part of the Final Scoping Report. The methodology for the specialist impact assessments are included in their respective studies. Section 7.1 of this EIR. Section 12 of this EIR. Alternatives were investigated. Please refer to sections 4,5 and 4.4 of this EIR.

Requirement	Details
<p>focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>The possible mitigation measures that could be applied and level of residual risk;</p> <p>If no alternative development locations for the activity were investigated, the motivation for not considering such: and</p> <p>A concluding statement indicating the preferred alternative development location within the approved site.</p>	
<p>(i) A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including -</p> <p>A description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.</p>	<p>Please refer to the Plan of Study For EIA that Formed part of the Final Scoping Report. Also refer to section 9 of this EIR.</p>
<p>(j) An assessment of each identified potentially significant impact and risk, including -</p> <p>Cumulative impacts;</p> <p>The nature, significance and consequences of the impact and risk;</p> <p>The extent and duration of the impact and risk;</p> <p>The probability of the impact and risk occurring;</p> <p>The degree to which the impact and risk can be reversed;</p> <p>The degree to which the impact and risk may cause irreplaceable loss of resources; and</p> <p>The degree to which the impact and risk can be mitigated.</p>	<p>Section 9 of this EIR</p>
<p>(k) Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report.</p>	<p>Not Applicable.</p>
<p>(l) An environmental impact statement which contains –</p> <p>A summary of the key findings of the environmental impact assessment;</p> <p>A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and</p> <p>A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.</p>	<p>Section 9.11 of this Draft EIR.</p>
<p>(m) Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.</p>	<p>Appendix H and section 10 of this EIR.</p>
<p>(n) The final proposed alternatives which respond to the impact management measures, avoidance and mitigation measures identified through the assessment.</p>	<p>The currently proposed alternatives are provided throughout this report. Should the outcome of the EIA phase require any deviations to these preferred alternatives, the Final EIR submitted for decision making will reflect these.</p>
<p>(o) Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.</p>	<p>Section 10 of this EIR.</p>
<p>(p) A description of assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.</p>	<p>Section 1.3 of this EIR.</p>
<p>(q) A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.</p>	<p>Section 1.1 and section 12 of this Draft EIR.</p>
<p>(r) Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised.</p>	<p>The project in this regard does include operational aspects.</p>
<p>(s) An undertaking under oath or affirmation by the EAP in relation to:</p>	<p>Annexure G3.</p>

Requirement	Details
The correctness of the information provided in the reports; The inclusion of comments and inputs from stakeholders and I&APs; The inclusion of inputs and recommendations from the specialist reports where relevant; and Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	
(t) Where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts;	Not applicable.
(u) An indication of any deviation from the approved scoping report, including the plan of study, including – Any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and A motivation for the deviation.	No deviation from the plan of study for EIA has occurred
(v) Any specific information that may be required by the competent authority.	Refer to table below.
(w) Any other matters required in terms of section 24(4)(a) and (b) of the Act.	None.

## DEFF ACCEPTANCE OF FINAL SCOPING REPORT

The DEA accepted the final scoping report on 01 February 2021. The conditions of this acceptance as well as the responses thereto are included in the table below.

Comment	Response
(a) Listed Activities	
(i) The EIAr must provide an assessment of the impacts and mitigation measures for each of the listed activities applied for.	Please refer to section 9 of this EIR
(ii) The listed activities represented in the EIAr and the application form must be the same and correct.	The activities listed in section 2.1.2 and those in the application form are the same.
(iii) The EIAr must assess the correct sub-listed activity for each listed activity applied for.	Please refer to section 2.1.2
(b) Public Participation	
(i) Please ensure that comments from all relevant stakeholders are submitted to the Department with the EIAr. This includes but is not limited to neighbouring property owners, the Northern Cape Department of Environment and Nature Conservation, Department of Water and Sanitation, Joe Morolong Municipality, John Taolo Gaetsewe District Municipality, South African National Roads Agency Limited (SANRAL), South African Heritage Resources Agency (SAHRA), Department of Transport and Public Works, The South African Square Kilometre Array, Northern Cape Heritage Resources Authority, Department of Agriculture, Forestry and Fisheries: Biodiversity & Conservation Directorate, Department of Mineral Resources and Energy, the Department of Agriculture, Land Reform and Rural Development, Provincial Department of Agriculture, Eskom, Endangered Wildlife Trust (EWT) and Birdlife Africa.	These entities were provided an opportunity to comment on the draft scoping report and will be provided with a further opportunity to comment on this Draft Environmental Impact Report.
(ii) Proof of correspondence with the various stakeholders must be included in the final EIAr. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments.	Please refer to annexures F4 – F7
(iii) A Comments and Response trail report (C&R) must be submitted with the final EIAr. The C&R report must incorporate all comments for this development. The C&R report must be a separate document from the main report. Please ensure that all issues raised and comments received during the circulation of the draft SR and draft EIAr from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the C&R. Please note that a response such as "noted" is not regarded as an adequate response to I&AP's comments.	Please refer to Annexure F2

Comment	Response
(iv) Comments from I&APs must not be split and arranged into themes / categories. Comments from each I&AP submission must be responded to individually.	Please refer to Annexure F2
(v) The Public Participation Process must be conducted in terms of Regulation 39, 40, 41, 42, 43 & 44 of the EIA Regulations, 2014, as amended.	Please refer to Section 11 for a checklist showing compliance with these regulations
(c) Alternatives	
(i) Please provide a description of each of the preferred alternative types and provide detailed motivation on why it is preferred.	Please refer to section 7
(ii) If no alternative locations for the activity were investigated, please motivate for not considering such.	Alternatives for the activity, mainly layout alternatives for the grid connection were investigated. Please refer to section 7.
(d) Layout and sensitivity Maps	
(i) The EIAr must provide the four corner coordinate points for the proposed development site, as well as the start, middle and end point of all linear activities (note that if the site has numerous bend points, at each bend point coordinates must be provided).	Please refer to the co-ordinate table at the beginning of the report.
(ii) The EIAr must provide the following: <ul style="list-style-type: none"> <li>• A clear indication of the envisioned area for the proposed solar energy facility; i.e. the photovoltaic (PV) modules and all associated infrastructure should be mapped at an appropriate scale.</li> </ul>	Please refer to the Facility Layout Plans attached in Appendix D.
<ul style="list-style-type: none"> <li>• A clear description of all associated infrastructure. This description must include, but is not limited to the following: <ul style="list-style-type: none"> <li>○ Powerlines;</li> <li>○ Internal roads infrastructure; and;</li> <li>○ All supporting onsite infrastructure such as laydown area and auxiliary buildings etc.</li> </ul> </li> </ul>	Please refer to the Facility Layout Plans attached in Appendix D.
<ul style="list-style-type: none"> <li>• All necessary details regarding all possible locations and sizes of the proposed solar PV infrastructure.</li> </ul>	Please refer to the Facility Layout Plans attached in Appendix D.
<ul style="list-style-type: none"> <li>• A copy of the final preferred layout map. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g. roads. The layout map must indicate the following: <ul style="list-style-type: none"> <li>○ Permanent laydown area footprint;</li> <li>○ Internal roads indicating width (construction period width and operation period width) and with numbered sections between the other site elements which they serve (to make commenting on sections possible);</li> <li>○ Wetlands, drainage lines, rivers, streams and water crossings of roads and cables indicating the type of bridging structures that will be used;</li> <li>○ The location of sensitive environmental features on site e.g. CBAs, heritage sites, wetlands, drainage lines etc. that will be affected by the facility and its associated infrastructure;</li> <li>○ Substation(s) and/or transformer(s) sites, including their entire footprint;</li> <li>○ Location of access and service roads;</li> <li>○ Connection routes (including pylon positions) to the distribution/transmission network;</li> <li>○ All existing infrastructure on the site, especially railway lines and roads;</li> <li>○ Buffer areas;</li> <li>○ Buildings, including accommodation; and</li> <li>○ All "no-go" areas.</li> </ul> </li> </ul>	Please refer to the Facility Layout Plans attached in Appendix D. These plans were updated to comply with the requirements listed by the Department
	Please Refer to Appendix B

Comment	Response
<ul style="list-style-type: none"> <li>An environmental sensitivity map indicating environmental sensitive areas and features identified during the assessment process.</li> </ul>	
<ul style="list-style-type: none"> <li>A map combining the final layout map superimposed (overlain) on the environmental sensitivity map.</li> </ul>	Please Refer to Appendix B
(e) Specialist Assessments	
<p>(i) The EAP must ensure that the terms of reference for all the identified specialist studies includes the following:</p> <ul style="list-style-type: none"> <li>A detailed description of the study's methodology; an indication of the locations and descriptions of the development footprint, and all other associated infrastructures that they have assessed and are recommending for authorisation.</li> </ul>	Please refer to Annexure G8
<ul style="list-style-type: none"> <li>Provide a detailed description of all limitations to the studies. All specialist studies must be conducted in the right season and providing that as a limitation will not be allowed.</li> </ul>	Included in the Individual Specialist Studies in annexures E1 – E14
<ul style="list-style-type: none"> <li>Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas.</li> </ul>	Noted. The EAP shares this interpretation.
<ul style="list-style-type: none"> <li>Should the specialist definition of 'no-go' area differ from the Departments definition, this must be clearly indicated. The specialist must also indicate the 'no-go' area's buffer if applicable.</li> </ul>	This interpretation is shared by all participating specialists.
<ul style="list-style-type: none"> <li>All specialist studies must be final, and provide detailed/practical mitigation measures for the preferred alternative and recommendations, and must not recommend further studies to be completed post EA.</li> </ul>	The specialist studies in Annexures E1 – E14 include all management and minigation measures applicable to the project. These are also included in sections 9.2 – 9.8 and summarised in section 10
<ul style="list-style-type: none"> <li>Should a specialist recommend specific mitigation measures, these must be clearly indicated.</li> </ul>	These are included in sections 9.2 – 9.8 and summarised in section 10
<ul style="list-style-type: none"> <li>Regarding cumulative impacts: <ul style="list-style-type: none"> <li>Clearly defined cumulative impacts and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land.</li> <li>A detailed process flow to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.</li> <li>Identified cumulative impacts associated with the proposed development must be rated with the significance rating methodology used in the process.</li> <li>The significance rating must also inform the need and desirability of the proposed development.</li> <li>A cumulative impact environmental statement on whether the proposed development must proceed.</li> </ul> </li> </ul>	Please refer to 9.9
<p>(ii) Should the appointed specialists specify contradicting recommendations, the EAP must clearly indicate the most reasonable recommendation and substantiate this with defensible reasons; and were necessary, include further expertise advice.</p>	No contradicting mitigation measures were provided by any of the participating specialists.
	All specialists were appointed prior to 09 May 2020. Proof of these appointments are included in Annexure G8.

Comment	Response																				
<p>(iii) It is further brought to your attention that the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5) (a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation (i.e. "the Protocols"), which were promulgated in Government Notice No. 320 of 20 March 2020, came into effect on 09 May 2020. Please note that specialist assessments must be conducted in accordance with these protocols, except where the applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned before 9 May 2020, in which case Appendix 6 of the Environmental impact Assessment Regulations, 2014, as amended, will apply to such applications.</p>																					
(f) Environmental Management Programme																					
<p>(i) It is drawn to your attention that for <u>substation and overhead electricity transmission and distribution infrastructure</u>, when such facilities trigger activity 11 or 47 of the EIA Regulations Listing Notice 1 of 2014, as amended, and any other listed and specified activities necessary for the realisation of such facilities, the generic Environmental Management Programmes (EMPr), contemplated in Regulations 19(4) must be used over and above the EMPr for the PV facility. Accordingly, there needs to be a generic EMPr for the on-site substation, a generic EMPr for the overhead powerline and a third, separate EMPr for the PV facility.</p>	<p>The Draft EMPr for the Facility is attached in Annexure H1. The Draft EMPr for the Overhead Powerline is attached in Annexure H2 The Draft EMPr for the Substation is attached in Annexure H3.</p>																				
<p>(ii) Please ensure that any specific mitigation measures identified in the EIAr and specialist reports for the on-site substation and powerline are incorporated into the site specific section of the generic EMPrs.</p>	<p>All mitigation measures have been incorporated into Section c of the Departments Generic EMPr's</p>																				
<p>(iii) Please ensure that the mitigation measures specified in the EIAr and specialist reports for the PV facility are also incorporated into the EMPr for the PV facility. In addition, ensure that the EMPr complies with the content of the EMPr in terms of Appendix 4 of the EIA Regulations, 2014, as amended.</p>	<p>These are incorporated in Section 7 of the Facility EMPr in Annexure H1.</p>																				
(g) Validity period and audit frequency																					
<p>(i) Please ensure that the final EIAr includes the period for which the Environmental Authorisation (EA) is required, the date on which the activity will be concluded and the post construction monitoring requirements finalised, as per Appendix 3(3)(1)(r) of the NEMA EIA Regulations, 2014, as amended.</p>	<p>It is requested that the Environmental Authorisation be granted for the full 10 year period contemplated in the Regulations. All activities must be concluded within 5 years from commencement of the activity.</p>																				
<p>(ii) Please also recommended a frequency for the auditing of compliance with the conditions of the EA and EMPr (for the construction and post-construction monitoring phases), and for the submission of such compliance reports to the competent authority.</p>	<p>It is recommended that these take place annually.</p>																				
(h) General																					
<p>(i) The EIAr must provide the technical details for the proposed facility, as well as their description and/or dimensions, in the following table format.</p> <p>Sample of minimum technical details required for the proposed facility</p> <table border="1"> <thead> <tr> <th>Component</th> <th>Description / dimensions</th> </tr> </thead> <tbody> <tr> <td>Height of PV structures</td> <td></td> </tr> <tr> <td>Surface area to be covered (including associated infrastructure such as roads)</td> <td></td> </tr> <tr> <td>Number of overhead power lines required</td> <td></td> </tr> <tr> <td>Voltage of overhead power lines</td> <td></td> </tr> <tr> <td>Height of the Power Line</td> <td></td> </tr> <tr> <td>Capacity of the facility</td> <td></td> </tr> <tr> <td>Area occupied by both permanent and construction laydown areas</td> <td></td> </tr> <tr> <td>Additional Infrastructure</td> <td></td> </tr> <tr> <td>Access roads</td> <td></td> </tr> </tbody> </table>	Component	Description / dimensions	Height of PV structures		Surface area to be covered (including associated infrastructure such as roads)		Number of overhead power lines required		Voltage of overhead power lines		Height of the Power Line		Capacity of the facility		Area occupied by both permanent and construction laydown areas		Additional Infrastructure		Access roads		<p>The technical checklist table is included at the beginning of this report.</p>
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<p>(ii) Details of the future plans for the site and infrastructure after decommissioning in 20-30 years and the possibility of upgrading the proposed infrastructure to more advanced technologies must be indicated.</p>	<p>These are detailed in the EMPr in Annexure H1</p>																				

Comment	Response
(iii) Should a Water Use License be required, proof of application for a license needs to be submitted.	No water use licence is required in respect of this activity.

## DEFF COMMENT ON DRAFT ENVIRONMENTAL IMPACT REPORT

This section will be updated on completion of the current comment period.

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# DRAFT ENVIRONMENTAL IMPACT REPORT - OVERVIEW

## 1. PROJECT OVERVIEW

Cape EAPrac has been appointed by Hotazel Solar Facility 2 (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate the Scoping & Environmental Impact Reporting (S&EIR) process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed development of the 'Hotazel 2' solar energy facility near Hotazel in the Northern Cape Province of South Africa.

The final Scoping Report for Hotazel 2 was accepted by the Department of Environment, Forestry and Fisheries (DEFF) on 01 February 2021. A copy of this acceptance is attached in **Annexure G1**. This Draft Environmental Impact Report (EIR) has been prepared in compliance with the approved plan of study for environmental impact assessment.

Hotazel Solar Facility 2 (Pty) Ltd have an option to lease a portion 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 P.A.C Jansen) for the purposes of developing the proposed solar facility. A copy of a letter from the executor of the estate providing consent for the EIA is attached in **Annexure G2**.

The Grid connection, across Portion 11 of Farm York A 279, the Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280, is considered to constitute a linear activity and as such, does not require landowner consent in terms of these regulations. The applicant is currently in the process of securing the necessary servitude option agreements with these affected landowners, who have also been automatically registered as interested and affected parties and will be given an opportunity to provide input into this environmental process.

The total generation capacity of the solar facility will not exceed 100MW<sub>AC</sub> for input into the national Eskom grid. The project will feed into the National Grid via the existing Eskom Hotazel Substation.

The Draft EIR is available to all registered and potential Interested and Affected Parties (I&AP's) for a 30-day review and comment period extending from 01 March 2021 – 06 April 2021. All comments received during this period will be considered, responded to and included in the Final Environmental Impact Report that will be submitted to the DEFF for consideration and decision making.

### 1.1 RECOMMENDATION OF THIS EIR

The proposal by the Applicant is to develop the Remaining Extent (Portion 0) of the Farm York A 279 as a renewable energy generation facility. The proposal includes a grid connection on the Remaining Extent (Portion 0) of the farm York A 279, Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280.

The project has received general support throughout the ongoing environmental application, with no major issues identified by any of the participating I&APs nor the appointed specialists.

The EIA process, through various investigations, has found that the proposal can be supported and that the potential negative impacts that may arise from this development can be effectively mitigated with no impacts remaining high after mitigation.

It is thus Cape EAPrac's considered opinion that the Hotazel 2 PV facility and Grid Connection Alternative 1 can be considered for approval.

## 2. NEED AND DESIRABILITY

Need and desirability for this project has been considered in detail in this environmental process. The overall need and desirability in terms developing renewable energy generation in South Africa and globally is considered in section 1, while the project specific need and desirability is considered in section 5.

### 3. ENVIRONMENTAL LEGISLATIVE REQUIREMENTS

The current assessment is being undertaken in terms of the **National Environmental Management Act (NEMA, Act 107 of 1998)**. This Act makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority based on the findings of an Environmental Assessment.

The EIA Regulations (2014 and subsequent 2017 amendments) allow for a basic assessment process for activities with limited environmental impact (listed in GN R 983 & 985, 2014, as amended) and a more rigorous two-tiered approach to activities with potentially greater environmental impact (listed in GN R 984, 2014, as amended). This two-tiered approach includes both a Scoping and EIA process. This report constitutes the second report in this process.

In terms of the EIA regulations of 2014 (and subsequent 2017 amendments), Hotazel 2 requires Environmental Authorisation, from the Department of Environmental Affairs (DEA). The triggered activities are listed under Listing Notices 1 and 2 (published in Government Notices No. R 983 and R 984 respectively), and as such, the full Scoping and Environmental Assessment Report (S&EIR) Process needs to be followed.

The listed activities that have been applied for are provided in the Table below.

Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Portion of the proposed project to which the applicable listed activity relates.
GN R983 Activity 11:	The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	Hotazel 2 is located outside an urban area and will connect to the national electricity via the Eskom Hotazel substation. The proposed distribution infrastructure includes the construction of an on-site substation/ collector switching station and a 132kV overhead power line.
GN R983 Activity 28:	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	The proposed site is currently utilised for agricultural purposes. The Hotazel 2 facility is considered as a commercial use and will have a total footprint of approximately 230 ha.
GN R983 Activity 24:	The Development of a road – (ii) with a reserve wider than 13.5m or where no road reserve exists where the road is wider than 8m.	A new road will be constructed to access Hotazel 2. The access road will have a width of 8m but with the inclusion of side drains will exceed a total width of more than 8m.
GN R983 Activity 56:	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre – (ii) where no reserve exists, where the existing road is wider than 8 metres	The existing roads will be widened by more than 6m in certain sections.
Activity No(s):	Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended	Portion of the proposed project to which the applicable listed activity relates.
GN R984 Activity 1:	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs- within an urban area; or On existing infrastructure.	The proposed Hotazel 2 facility comprises a renewable energy generation facility, which will utilise PV technology, and will have a net generation capacity of up to 100MW. The facility does not occur within an urban area or on existing infrastructure.

Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Portion of the proposed project to which the applicable listed activity relates.
GN R984 Activity 15:	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Hotazel 2 will have a maximum footprint of 230ha and as such exceeds the threshold defined in this activity.
Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended	Portion of the proposed project to which the applicable listed activity relates.
	NO Activities in terms of Regulation 986.	

**NOTE:** Basic Assessment as well as Scoping and Environmental Impact Reporting Activities are being triggered by the proposed development and as such, the Environmental Process will follow a Scoping and Environmental Impact Reporting process.

Before any of the above-mentioned listed activities can be undertaken, authorisation must be obtained from the relevant authority, in this case the National Department of Environment, Forestry and Fisheries. Should the Department approve the proposed activity, the Environmental Authorisation does not exclude the need for obtaining relevant approvals from other Authorities who have a legal mandate.

## 4. DEVELOPMENT PROPOSAL

The proposed Hotazel 2 solar photovoltaic (PV) facility will have a net generating capacity of 100 MW<sub>AC</sub> with an estimated maximum footprint of ± 230 ha.

The technology under consideration is photovoltaic (PV) modules<sup>2</sup> mounted on either single or double axis tracking structures. Other infrastructure includes inverter stations, internal electrical reticulation, access road, internal roads, an on-site switching station / substation, a 132 kV overhead line (OHL), auxiliary buildings, construction laydown areas and perimeter fencing and security infrastructure. The on-site switching station / substation will locate the main power transformer/s that will step up the generated electricity to a suitable voltage level for distribution into the national electricity grid, via the OHL. Auxiliary buildings include, *inter alia*, a control building, offices, warehouses, a canteen and visitors centre, staff lockers and ablution facilities, a gate house and security offices.

## 5. PROFESSIONAL INPUT

The following professionals<sup>3</sup> have provided input into this environmental process:

- |                           |   |   |
|---------------------------|---|---|
| 1. Ecology                | - | Mr Simon Todd (3Foxes Biodiversity Solutions)                 |
| 2. Avifaunal              | - | Mr Simon Todd & Eric Herrmann (3Foxes biodiversity Solutions) |
| 3. Archaeology            | - | Dr Lita Webley (ACO Associates)                               |
| 4. Palaeontology          | - | Dr John Almond (Natura Viva)                                  |
| 5. Agricultural Potential | - | Mr Christo Lubbe  |
| 6. Visual                 | - | Mr Stephen Stead (Visual Resource Management Africa)          |
| 7. Freshwater             | - | Dr Brian Colloty (Scherman Colloty & Associates)              |
| 8. Social                 | - | Ms Lisa Opperman (Savannah Environmental)                     |

<sup>2</sup> The reference to PV modules in this report includes both monofacial and bifacial modules.

<sup>3</sup> Note that not all of these professionals are considered specialists as contemplated in chapter 3 of Regulation 326. Studies such as Engineering, Stormwater, Traffic, water consumption and planning constitute “technical” studies, rather than specialist studies and as such, the requirements in appendix 6 of R326 do not apply to all these professionals.

9. Engineering aspects	-	Hotazel Solar Facility 2
10. Stormwater	-	Amory Le Roux – Arries (Knight Piesold)
11. Traffic and Transportation	-	Amory Le Roux – Arries (Knight Piesold)
12. Water Consumption	-	Hotazel Solar Facility 2
13. Planning	-	Macroplan.

## 6. PLANNING CONTEXT

A Planning specialist will be appointed in order to consider the planning implications of the proposed facility and to submit the following required applications:

- Application for land use change in terms of the Spatial Planning and Land Use Management Act, Act 16 of 2013, submitted to the Joe Morolong Local Municipality in terms of their Land Use Management Scheme and relevant and approved SPLUMA by-laws.
- Notification of the intended process of land use change submitted to the Department of Agriculture Forestry and Fisheries (DAFF) in terms of the Subdivision of Agricultural Land Act, Act 70 of 1970.

## 7. ASSESSMENT OF IMPACTS

The potential impacts of the proposed PV facility were identified and assessed by the various specialists in compliance with the approved Plan of Study for EIR (further details on the significance and ratings of these impacts are provided below and in the attached specialist reports).

### 7.1 IMPACTS ASSESSED

The following impacts were assessed by the specialists listed in section 5 above.

#### 7.1.1 Ecological impacts assessed

##### *Construction Phase*

- Vegetation clearing for construction could impact indigenous species and terrestrial plant communities. Vegetation clearing will also lead to **habitat loss** for fauna and potentially the loss of sensitive faunal species, habitats and ecosystems within the remaining natural areas.
- Presence and operation of construction machinery on site. This will create a physical impact as well as generate noise, pollution and other forms of disturbance at the site. Disturbance could affect faunal species.
- Increased human presence can lead to faunal conflict.

##### *Operational Phase*

- The presence of the development could disrupt the connectivity of the landscape.
- Human-animal conflict can occur as a result of resident baboon troops in the area.
- Alien clearing will improve the ecology and habitat of the area.

##### *Cumulative Impacts*

- Transformation of intact habitat could disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations.

#### 7.1.2 Avifaunal Impacts Assessed

##### *Construction Phase*

- Habitat loss and disturbance of small passerines;
- Habitat loss, disturbance and collision risk of medium terrestrial birds and raptors; and
- Habitat loss, disturbance and collision risk of large terrestrial birds and raptors.

#### *Operational Phase*

- Habitat loss and disturbance of small passerines;
- Habitat loss, disturbance and collision risk of medium terrestrial birds and raptors; and
- Habitat loss, disturbance and collision risk of large terrestrial birds and raptors.

#### *Decommissioning Phase*

- Habitat loss and disturbance of small passerines;
- Habitat loss, disturbance and collision risk of medium terrestrial birds and raptors; and
- Habitat loss, disturbance and collision risk of large terrestrial birds and raptors.

### **7.1.3 Agricultural Impacts Assessed**

#### *Construction Phase*

- Soil pollution.
- Loss of agricultural land.
- Risk of erosion.
- Change in drainage patterns.

#### *Operational phase*

- Soil pollution.
- Loss of agricultural land.

#### *Decommissioning phase*

- Soil pollution.

#### *Cumulative Impacts*

- Loss of agricultural land.
- Altering drainage patterns.
- Changing agricultural character to industrial.

### **7.1.4 Freshwater impacts assessed**

- No surface water resources were identified on or in proximity to the site and as such no impacts on surface water resources are envisioned.

### **7.1.5 Heritage Impacts Assessed**

#### *Construction Phase*

- Impact on scenic routes during construction.

#### *Operational Phase*

- Impacts on the heritage resources.
- Impact on scenic routes.
- Impact of new structures on cultural landscape and character.

#### *Cumulative impacts*

- Change to the rural character.
- Socio-economic upliftment.

### **7.1.6 Archaeological Impacts Assessed**

#### *Construction Phase*

- Disturbance to surface and sub-surface sediments.

#### *Operational Phase*

- No significant archaeological resources were identified during this assessment.

#### *Cumulative Impacts*

- No cumulative impacts will arise.

### **7.1.7 Visual Impacts Assessed**

#### *Construction Phase*

- Visual scarring as a result of new development, clearing vegetation and construction works.

#### *Operational Phase*

- Change in the rural visual character of the site.
- Visual impact on key visual receptors and secondary visual receptors.
- Visibility from sensitive receptors.
- Visual intrusion of lighting at night.

### **7.1.8 Socio-Economic Impacts Assessed**

#### *Construction Phase*

- Creation of business and employment opportunities.
- Impacts associated with the presence of construction workers on site.
- Security and safety impacts associated with the presence of construction workers.
- Noise, dust and safety impacts associated with construction related activities and the movement of heavy vehicles.

#### *Operational Phase*

- Creation of employment and business opportunities.
- Impact on rural sense of place and character of the area.
- Crime levels and pressure on local services.

## **7.2 IMPACT STATEMENT**

None of the participating specialists identified any impacts that remain high after mitigation. All impacts assessed range from very high positive to medium negative after mitigation.

The interconnection powerline has also been aligned along existing servitudes and does not traverse any highly sensitive features.

From an ecological perspective the development footprint of Hotazel 2 will not result in major fragmentation of the landscape. The affected area is considered suitable for development and there are no impacts associated with Hotazel 2 that cannot be mitigated to a medium or low level. As such there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. Based on the layout provided for the assessment, the Hotazel 2 can be supported from a terrestrial and avifaunal ecology point of view. The proposed grid connection with associated infrastructure is likely to generate low impacts on fauna and flora after mitigation. No high impacts that cannot be avoided were observed and from a flora and terrestrial fauna perspective, there are no reasons to oppose the facility (including the grid connection and associated infrastructure).

From a heritage point of view, all impacts on heritage resources are deemed to be low to negligible. Social impact range from very high positive to medium negative.

A map showing the proposed activity in relation to the key sensitive features is in attached in Appendix D. All sensitive features along with their appropriate buffers are shown in this plan. As required by the EMP, all areas outside of the proposed development footprint are to be demarcated as no go areas.

## **7.3 IMPACT SUMMARY**

The table below summarises the significance (with mitigation) of all impacts assessed in the sections above<sup>4</sup>.

---

<sup>4</sup> To attain these outcomes, the mitigation measures reflected in section 7 of the report need to be implemented.

For ease of easy references, impacts are visually reflected using the following colour scheme<sup>5</sup>.

All positive impacts (regardless of their significance)  
 Neutral or Negligible negative impacts  
 Very Low and Low negative impacts  
 Medium negative impacts  
 Medium – High, High and Very High negative impacts



Impact	Significance (Post Mitigation) and Status
<b>Agricultural Impacts</b>	
<b>Construction Phase Agricultural Impacts</b>	
Soil pollution	Low Negative
Loss of agricultural land	Low Negative
Risk of erosion	Low Negative
Change in drainage patterns	Low Negative
<b>Operational Phase Agricultural Impacts</b>	
Soil pollution	Low Negative
Loss of agricultural land.	Low Negative
<b>Decommissioning Phase Agricultural Impacts</b>	
Soil pollution	Low Negative
<b>Cumulative Agricultural Impacts</b>	
Loss of agricultural land	Low Negative
Altering drainage patterns	Low Negative
Changing agricultural character to industrial	Very Low Negative
<b>Terrestrial Ecology Impacts</b>	
<b>Construction Phase Terrestrial Ecology Impacts</b>	
Impacts on vegetation and listed or protected plant species resulting from construction activities	Medium Negative
Direct Faunal Impacts During Construction	Medium – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 1 construction activities	Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 2 construction activities	Very – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 3 construction activities	Low Negative
Direct Faunal Impacts During Construction for grid connection option 1	Low Negative
Direct Faunal Impacts During Construction for grid connection option 2	Very Low Negative
Direct Faunal Impacts During Construction for grid connection option 3	Low Negative
<b>Operational Phase Terrestrial Ecology Impacts</b>	
Faunal Impacts due to operational activities	Low Negative
<b>Decommissioning Phase Terrestrial Ecology Impacts</b>	
Impacts on vegetation and listed or protected plant species resulting from decommissioning activities	Medium Negative
Direct Faunal Impacts during decommissioning	Medium – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 1 decommissioning activities	Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 2 decommissioning activities	Very – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 3 decommissioning activities	Low Negative
Direct Faunal Impacts during decommissioning of grid connection option 1	Low Negative

<sup>5</sup> Where specialist ratings fall across 2 of the groups, the worst case is reflected in the quick reference.

Impact	Significance (Post Mitigation) and Status
Direct Faunal Impacts during decommissioning of grid connection option 2	Very Low Negative
Direct Faunal Impacts during decommissioning of grid connection option 3	Low Negative
<b>Cumulative Terrestrial Ecology Impacts</b>	
Reduced ability to meet conservation obligations & targets due to cumulative habitat loss.	Low Negative
Impact on broad-scale ecological processes due to cumulative loss and fragmentation of habitat	Low negative
<b>Avifaunal Impacts</b>	
<b>Construction Phase Avifaunal Impacts</b>	
Avifaunal Impacts During Construction – habitat loss and disturbance	Medium - Low
Direct Avifaunal Impacts During Construction Grid connection option 1	Low Negative
Direct Avifaunal Impacts During Construction Grid connection option 2	Very Low Negative
Direct Avifaunal Impacts During Construction Grid connection option 3	Low Negative
<b>Operational Phase Avifaunal Impacts</b>	
Avifaunal Impacts due to operational activities – disturbance and collisions with PV panels	Low Negative
Avifaunal Impacts due to operational activities – disturbance and collisions with PV panels	Low Negative
Operational phase power line electrocution and collision risk of large terrestrial birds and raptors – Powerline Option 1	Low Negative
Operational phase power line electrocution and collision risk of large terrestrial birds and raptors – Powerline Option 2	Very Low Negative
Operational phase power line electrocution and collision risk of large terrestrial birds and raptors – Powerline Option 3	Low Negative
<b>Decommissioning Phase Avifaunal Impacts</b>	
Avifaunal Impacts during decommissioning – habitat loss and disturbance	Medium - Low
Direct Avifaunal Impacts during decommissioning Grid connection option 1	Low Negative
Direct Avifaunal Impacts during decommissioning Grid connection option 2	Very Low Negative
Direct Avifaunal Impacts during decommissioning Grid connection option 3	Low Negative
Cumulative Avifaunal Impacts	
Broad-scale avifaunal impacts due to cumulative loss and fragmentation of habitat	Medium – Low Negative
<b>Freshwater Aquatic Impacts</b>	
Impact on surface water resources	None
<b>Visual Impacts</b>	
<b>Construction Phase Visual Impacts</b>	
Visual exposure of Hotazel 2	Low Negative
Visual exposure of Grid connection option 1	Very Low Negative
Visual exposure of Grid connection option 2	Very Low Negative
Visual exposure of Grid connection option 3	Very Low Negative
<b>Operational Phase Visual Impacts</b>	
Operational Visual Impact of PV sites and structures	Low Negative
Operational Visual exposure of Grid connection option 1	Very Low Negative
Operational Visual exposure of Grid connection option 2	Very Low Negative
Operational Visual exposure of Grid connection option 3	Very Low Negative
<b>Decommissioning Phase Visual Impacts</b>	
Decommissioning Phase Visual Impact of PV sites and structures	Low Negative
Decommissioning Phase Visual Impact of Grid connection option 1	Very Low Negative
Decommissioning Phase Visual Impact of Grid connection option 2	Very Low Negative
Decommissioning Phase Visual Impact of Grid connection option 3	Very Low Negative
<b>Cumulative Visual Impacts</b>	
Cumulative Visual Impact of PV sites and structures	Medium Negative
Cumulative Visual Impact of Grid connection option 1	Low Negative
Cumulative Visual Impact of Grid connection option 2	Low Negative
Cumulative Visual Impact of Grid connection option 3	Medium Negative
<b>Archaeological Impacts</b>	
<b>Construction Phase Archaeological Impacts</b>	
Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.	Low Negative
<b>Operational Phase Archaeological Impacts</b>	



Impact	Significance (Post Mitigation) and Status
No Impacts on Archeology resources are expected during operations	None
<b>Decommissioning Phase Archaeology Impacts</b>	
No Impacts on Archeology resources are expected during decommissioning	None
<b>Cumulative Archaeology Impacts</b>	
Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.	Low Negative
<b>Social Impacts</b>	
<b>Construction Phase Social Impacts</b>	
The creation of direct and indirect employment opportunities during the construction phase of the project.	Medium Positive
Significance of the impact from the economic multiplier effects from the use of local goods and services.	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
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.	Low Negative
Temporary increase in traffic disruptions and movement patterns during the construction phase.	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
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Low Negative
<b>Operational Phase Social Impacts</b>	
The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy.	Medium Positive
Development of non-polluting, renewable energy infrastructure	Medium Positive
Contribution to LED and social upliftment during the operation of the project.	High Positive
Visual impacts and sense of place impacts associated with the operation phase of Hotazel 2.	Low Negative
Loss of agricultural land and overall productivity as a result of the operation of the proposed project on an agricultural property.	Low Negative
<b>Decommissioning Phase Social Impacts</b>	
The creation of direct and indirect employment opportunities during the decommissioning phase of the project.	Medium Positive
Significance of the impact from the economic multiplier effects from the use of local goods and services.	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
Temporary increase in safety and security concerns associated with the influx of people during the decommissioning phase.	Low Negative
Temporary increase in traffic disruptions and movement patterns during the decommissioning phase.	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
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Low Negative
<b>Cumulative Social Impacts</b>	
An increase in employment opportunities, skills development and business opportunities with the establishment of more than one SEF.	Medium Negative
Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area.	Medium Negative
<b>Traffic Impacts</b>	
<b>Construction Phase Traffic Impacts</b>	
Impacts on existing traffic levels as a result of construction traffic	Negligible
<b>Operational Phase Traffic Impacts</b>	

Impact	Significance (Post Mitigation) and Status
Impacts on existing traffic levels as a result of operational traffic	Negligable
<b>Decommissioning Phase Traffic Impacts</b>	
Impacts on existing traffic levels as a result of Decommissioning traffic	Negligable

## 8. CONCLUSIONS & RECOMMENDATIONS

This environmental process is currently being undertaken to present proposals to the public and potential Interested and Affected Parties (I&APs) and to identify and assess environmental impacts, issues and concerns raised as a result of the proposed development alternatives.

This will allow I&APs, authorities, the project team, as well as specialists to provide input and raise issues and concerns, based on studies undertaken. Hotazel 2 has been analysed from Ecological, Avifaunal, Agricultural, Heritage (including Archaeology and Palaeontology), Freshwater, Social and Visual perspectives, and site constraints and potential impacts identified and assessed.

Cape EAPrac is of the opinion that the information contained in this Draft EIR and the documentation attached hereto is sufficient to allow I&AP's and the competent authority to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for. This environmental process has not identified any fatal flaws with the proposal and as such it is our reasoned view that the project should be considered for authorisation. All specialists concur that the development as proposed can be considered for approval and that there are no reasons why the development should not be implemented. All impacts range from high positive to medium - low negative and all high negative impacts have been avoided or effectively mitigated.

All stakeholders are requested to review the Draft Environmental Impact Report and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified 30-day comment period.

It is Cape EAPrac's considered opinion that the Hotazel 2 PV facility and Grid Connection Alternative 1 can be considered for approval.

### 8.1 REMAINDER OF ENVIRONMENTAL PROCESS.

The following process is to be followed for the remainder of the environmental process:

- The Draft EIR is herewith available to all registered I&AP's for review and comment;
- All comments received will be considered, responded to and incorporated into the Final EIR;
- The Final EIR will be submitted to the DEA for consideration and decision-making; and
- The DEA's decision on the Final EIR will be communicated with all registered I&APs.

# DRAFT ENVIRONMENTAL IMPACT - MAIN REPORT

## 1. INTRODUCTION

*Cape EAPrac* has been appointed by Hotazel Solar Facility 2 (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate the Scoping & Environmental Impact Reporting (S&EIR) process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed development of the 'Hotazel 2' solar energy facility near Hotazel in the Northern Cape Province of South Africa.

The final Scoping Report for Hotazel 2 was accepted by the Department of Environment, Forestry and Fisheries (DEFF) on 01 February 2021. A copy of this acceptance is attached in **Annexure G1**. This Draft Environmental Impact Report (EIR) has been prepared in compliance with the approved plan of study for environmental impact assessment.

Hotazel Solar Facility 2 (Pty) Ltd have an option to lease a portion 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 P.A.C Jansen) for the purposes of developing the proposed solar facility. A copy of a letter from the executor of the estate providing consent for the EIA is attached in **Annexure G2**.

The Grid connection, across Portion 11 of Farm York A 279, the Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280, is considered to constitute a linear activity and as such, does not require landowner consent in terms of these regulations. The applicant is currently in the process of securing the necessary servitude option agreements with these affected landowners, who have also been automatically registered as interested and affected parties and will be given an opportunity to provide input into this environmental process.

The total generation capacity of the solar facility will not exceed 100MW<sub>AC</sub> for input into the national Eskom grid. The project will feed into the National Grid via the existing Eskom Hotazel Substation.

The Draft EIR is available to all registered and potential Interested and Affected Parties (I&AP's) for a 30-day review and comment period extending from 01 March 2021 – 06 April 2021. All comments received during this period will be considered, responded to and included in the Final Environmental Impact Report that will be submitted to the DEFF for consideration and decision making.

### 1.1 RECOMMENDATION OF THIS EIR

The proposal by the Applicant is to develop the Remaining Extent (Portion 0) of the Farm York A 279 as a renewable energy generation facility. The proposal includes a grid connection on the Remaining Extent (Portion 0) of the farm York A 279, Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280.

The project has received general support throughout the ongoing environmental application, with no major issues identified by any of the participating I&APs nor the appointed specialists.

The EIA process, through various investigations, has found that the proposal can be supported and that the potential negative impacts that may arise from this development can be effectively mitigated with no impacts remaining high after mitigation.

It is thus Cape EAPrac's considered opinion that the Hotazel 2 PV facility and Grid Connection Alternative 1 can be considered for approval.

## 1.2 OVERVIEW OF ALTERNATIVE ENERGY IN SOUTH AFRICA AND THE NORTHERN CAPE

### 1.2.1 South Africa

South Africa's generation capacity is dominated by coal-fired generation stations with a net output of 35.6 GWp, which represents over 85% of the country's total installed capacity of over 44 GW.

Globally, renewable energy (RE) has gained momentum, with a significant rise in the uptake of various RE technologies such as solar photovoltaics (PV), wind energy, biogas and other biofuels, hydroelectricity, landfill gas, geothermal energy, and concentrated solar power (CSP).

Ministerial determinations by the South African government to procure RE — such as the Integrated Resource Plan (IRP) for Electricity 2010-2030, which lays out the country's electricity future — have given growth in the renewable energy sector a significant boost.

South Africa's green economy, partly driven by the country's utility-scale Renewable Energy Independent Power Production Procurement Programme (REIPPPP), reflects these trends and is leading the way in some areas. According to Moody's, South Africa had the fastest growing green economy in the world in 2015. The REIPPPP, a key factor in this growth, is in its sixth year and has achieved remarkable successes. To date, the programme has:

- Procured over 6 300 MWp of RE generation capacity, of which over 2 500 MWp was connected and has been feeding electricity into the national grid since June 2016.
- Selected 102 preferred bidders to develop utility-scale projects across the country – with projects in every province across South Africa.
- Received a ministerial determination to procure a further 6 300 MWp of generation capacity. This is the second time capacity to the programme has been doubled – a testimony to its success.
- Attracted over R195 billion of investment into South Africa, with over 25% from foreign investors. In doing so, the programme, through local content requirements, has successfully stimulated the development of a local RE technology components manufacturing sector. Given the additional 6 300 MWp still to be procured, this sector is set to grow further.
- Achieved significant technology price reductions, with South Africa boasting some of the world's lowest clean energy costs.

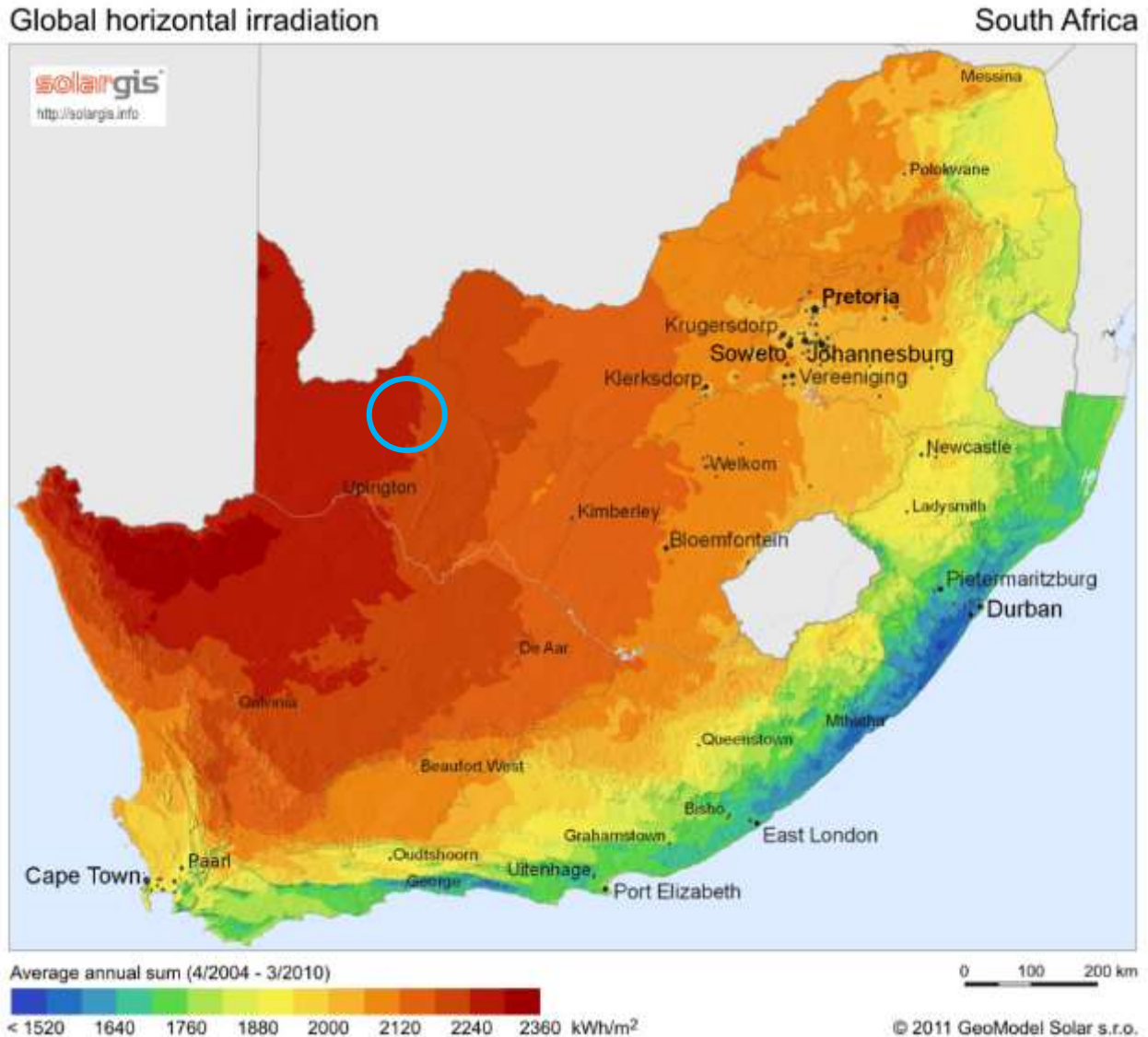
Beyond these successes, the programme and, consequently, the utility-scale RE industry, is well positioned to continue contributing to South Africa's national development, as enshrined in the government's Strategic Infrastructure Projects (SIP) and the National Development Plan (NDP). The programme's socio-economic development (SED) and enterprise development (ED) mechanisms give successful project developers a unique opportunity to be competitive in their bidding strategy, while contributing meaningfully to the local and national economy. Project developers have fully embraced the SED/ED component of the REIPPPP, resulting in numerous inspiring contributions to priority areas on the government's developmental agenda. Among other areas, these contributions span community development, local economic development, skills development, and early childhood development.

The recent uncertainties involving the state-owned utility, Eskom, highlight the need for reforms in an evolving energy sector, where electricity generation, transmission and distribution systems require unbundling. The interest from local municipalities in procuring RE generation capacity from independent power producers (IPPs) contributes further to the shift in the structure of the country's power sector.

#### 1.2.1.1 Northern Cape

Regionally, the Northern Cape is suggested by many to be the ideal location for various forms of alternative energy; this has resulted in a number of feasibility studies being conducted, not least of which, an investigation by the Industrial Development Corporation in 2010 into potential for photovoltaic, thermal, solar and wind power (Northern Cape Business website, 2010).

The northern area of the Northern Cape and Namibia boasts the highest solar radiation intensity anywhere in Southern Africa. Solar energy is therefore likely to be the most viable alternative energy source for the Northern Cape, although wind power potential is generally good along the coast (State of the Environment, S.A, 2014).



**Figure 1:** Global Horizontal radiation map for South Africa (Source: <http://solargis.info>, 2015) showing the approximate area proposed for Hotazel 2.

The Northern Cape area is considered to have extremely favourable solar radiation levels over most of the year, making it ideal for the production of solar power via photovoltaic (fixed and tracking panels) and concentrated (solar thermal) solar technology systems. Several solar irradiation maps have been produced for South Africa, all of which indicate that the Northern Cape area has **high solar irradiation**.

The Northern Cape is not too dusty, the land is flat and sparsely populated, and there are little to no geological or climate risks, meaning that the sun can be used year-round (BuaNews online, 2014). An advantage that the Northern Cape has over the Sahara Desert is the relatively wind-free environment that prevails in large portions of the province. A Clinton Climate Initiative (CCI) pre-feasibility study has found that South Africa has one of the best solar resources on the planet (Northern Cape Business website – solar power, 2015).

The introduction of private sector generation offers multiple benefits; it will contribute greatly to the diversification of both the supply and nature of energy production, assist in the introduction of new skills and new investment into the industry, and enable the benchmarking of performance and pricing. The Department of Energy (DoE), National Treasury (NT) and the Development Bank of Southern Africa (DBSA) established the IPPPP Unit for the specific purpose of delivering on the IPP procurement objectives. The REIPPPP is a competitive bidding process used by national government to procure renewable energy generation capacity in line with the national Integrated Resource Plan (IRP) for Electricity 2010-2030.

**NOTE:** It is the intention that Hotazel 2 will submit a bid under this REIPPPP or any other relevant procurement programmes.

### 1.3 ASSUMPTIONS & LIMITATIONS

The following assumptions and limitations are relevant to this environmental application process:

- It is assumed that the information on which this report is based (specialist studies and project information, as well as existing information) is **correct, factual and truthful**.
- The proposed development is **in line** with the statutory planning vision for the area (namely the local Spatial Development Plan), and thus it is assumed that issues such as the cumulative impact of development in terms of character of the area and its resources, have been taken into account during the strategic planning for the area.
- It is assumed that all the relevant **mitigation measures** and agreements specified in this report will be implemented in order to ensure minimal negative impacts and maximum environmental benefits.
- It is assumed that due consideration will be given to the **discrepancies in the digital mapping** (PV panel array layouts against possible constraints), caused by differing software programs, and that it is understood that the ultimate/final positioning of solar array will only be confirmed on-site with the relevant specialist/s.
- It is assumed that Stakeholders and I&AP's notified during the initial public participation process will submit all relevant **comments within the designated 30-day** review and comment period, so that these can be included in the Final Environmental Impact Report and can be timeously submitted to the competent Authority (the Department Environment, Forestry and Fisheries) for consideration.

The assumptions and limitations of the various specialist studies are included in their respective reports attached in **Appendix E**.

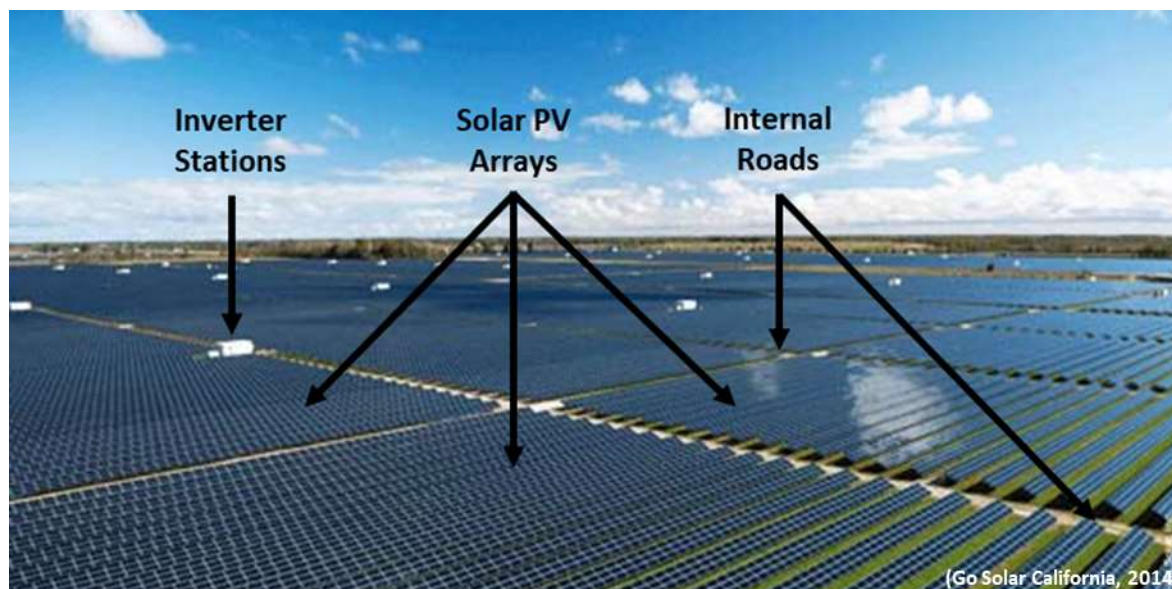
### 1.4 PROPOSED ACTIVITY

A technical design report was compiled by Hotazel Solar Facility 2 (Pty) Ltd and is appended to this Draft Environmental Impact Report in **Annexure E9**. The following summary of the proposed activity is provided from the technical design report.

Hotazel Solar Facility 2 (Pty) Ltd is proposing the establishment of a commercial photovoltaic (PV) solar energy facility (SEF), namely Hotazel 2, on the Remaining Extent (Portion 0) of Farm York A 279, situated approximately 3 km south-east of Hotazel, in the Northern Cape Province.

The technology under consideration are photovoltaic (PV) modules mounted on either fixed-tilt or tracking structures. Other infrastructure includes inverter stations, internal electrical reticulation, internal roads, a facility substation / collector switching station, a 132 kV overhead distribution line (OHL), auxiliary buildings, a construction laydown area, perimeter fencing, and security infrastructure. The facility substation / collector switching station will locate the main power transformer/s that will step up

the generated electricity to a suitable voltage level for transmission into the national electricity grid, via the OHL. Auxiliary buildings include, inter alia, a control building, offices, warehouses, a canteen and visitors centre, staff lockers and ablution facilities, a gate house and security offices. The figure below depicts the typical layout of a solar PV energy facility.



**Figure 2:** Typical configuration of a PV Energy Facility (Hotazel Solar Facility 2 (Pty) Ltd, 2020).

Hotazel 2 will have a net output of 100 MW<sub>AC</sub> with an estimated maximum footprint of  $\pm 230$  ha. The approximate area that each component of the Hotazel 2 will occupy is summarised below.

**Table 1:** Approximate area of each component

SEF Component	Estimated Area	% of Total Area ( $\pm 230$ ha)	% of Farm Area (636.7946 ha)
PV structures/modules	$\pm 210$ ha	91.30 %	32.98 %
Internal roads	$\pm 9$ ha	3.91 %	1.41 %
Auxiliary buildings	$\pm 1$ ha	0.43 %	0.16 %
Substation	$\pm 2$ ha	0.87 %	0.31 %
Other	$\pm 8$ ha	3.47 %	1.26 %

## 1.5 TECHNICAL OVERVIEW

The following section presents an overview of the main components of the solar energy facility layout as described in the Technical Design report. Please refer to the report attached in **Annexure E9** for further information regarding the Technical components of the proposed facility.

### 1.5.1 Solar Array

Solar PV modules are connected in series to form a string. A number of strings are then wired in parallel to form an array of modules. PV modules are mounted on structures that are either fixed, north-facing at a defined angle, or mounted to a single or double axis tracker to optimise electricity yield.

### 1.5.2 Mounting Structures

According to the technical design report, various options exist for mounting structure foundations, which include cast / pre-cast concrete, driven / rammed piles, or ground / earth screws mounting systems.



**Figure 3:** Mounting Structures. A) Cast Concrete Foundation. B) Driven/ Rammed Steel Pile. C) Ground / Earth Screw.

The impact on agricultural resources and production of these options are considered to be the same, however concrete is least preferred due the effort required at a decommissioning phase in order to remove the concrete from the soil, and therefore its impact on the environment. Hotazel 2 will therefore aim to make the most use of either driven / rammed piles, or ground / earth screws mounting systems, and only in certain instances resort to concrete foundations should geotechnical studies necessitate this.

### 1.5.3 Auxiliary Infrastructure

The auxiliary infrastructure will comprise of the following as a minimum:

- Control Building / Centre;
- Office;
- 2 x Warehouses;
- Canteen & Visitors Centre;
- Staff Lockers & Ablution; and
- Gate house / security offices.



The total area occupied by auxiliary infrastructure is approximately 1 ha, excluding the facility substation / collector switching station.

#### 1.5.4 Grid Connection

It is proposed to connect Hotazel 2 directly to Eskom's Hotazel Substation located  $\pm$  3km to the north west of the property. The Hotazel 2 substation / collector switching station will be approximately 2 ha in size and feature a step-up transformer/s to transmit electricity via a 132 kV OHL directly to the Hotazel Substation. There are three alternatives proposed to connect Hotazel 2 to the Eskom Hotazel Substation and these are discussed in more detail in section 7 of this report.

### 1.6 PROJECT PROGRAMME AND TIMELINES

As mentioned previously Hotazel 2 is intended to be bid under the REIPPPP. The programme has definite and stringent timelines, which the project should meet. Note that the DoE has not yet released the exact dates of the bidding schedules, so the implementation schedule below is based on the best available information we have available at this time and is subject to change.

**Table 2:** Preliminary implementation schedule.

	Description	Timeline
1	Expected IPPPP submission date (5th round)	Second quarter of 2021
2	Preferred bidders selected	Third Quarter 2021
3	Finalisation of agreements	Fourth Quarter 2021
4	Procurement of infrastructure	Second Quarter 2022
5	Construction	2022 - 2023
6	Commissioning	2023

The table above clearly depicts the dependence of the project on the IPP procurement programme's timelines. Any delay or acceleration within the IPP procurement programme will have a corresponding effect on the timelines of the project. Also, as mentioned, no official submission dates for Round 5 have been communicated by the DoE.

**NOTE:** Hotazel 2 intends submitting their bid during the 5<sup>th</sup> bidding window or thereafter if unsuccessful in immediate bidding rounds.

## 2. LEGISLATIVE AND POLICY FRAMEWORK

The legislation that is relevant to this study is briefly outlined below. These environmental requirements are not intended to be definitive or exhaustive but serve to highlight key environmental legislation and responsibilities only.

### 2.1 NATIONAL LEGISLATION

This section deals with nationally promulgated or nationally applicable legislation associated with the proposed Hotazel 2.

#### 2.1.1 The Constitution of the Republic of South Africa

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

The Constitution and Bill of Rights provides that:

Everyone has the right:

- to an environment that is not harmful to their health or well-being; and
- to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures:
  - prevent pollution and ecological degradation
  - promote conservation; and
  - secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.

The National Environmental Management Act (discussed below) is the enabling legislation to ensure this primary right is achieved.

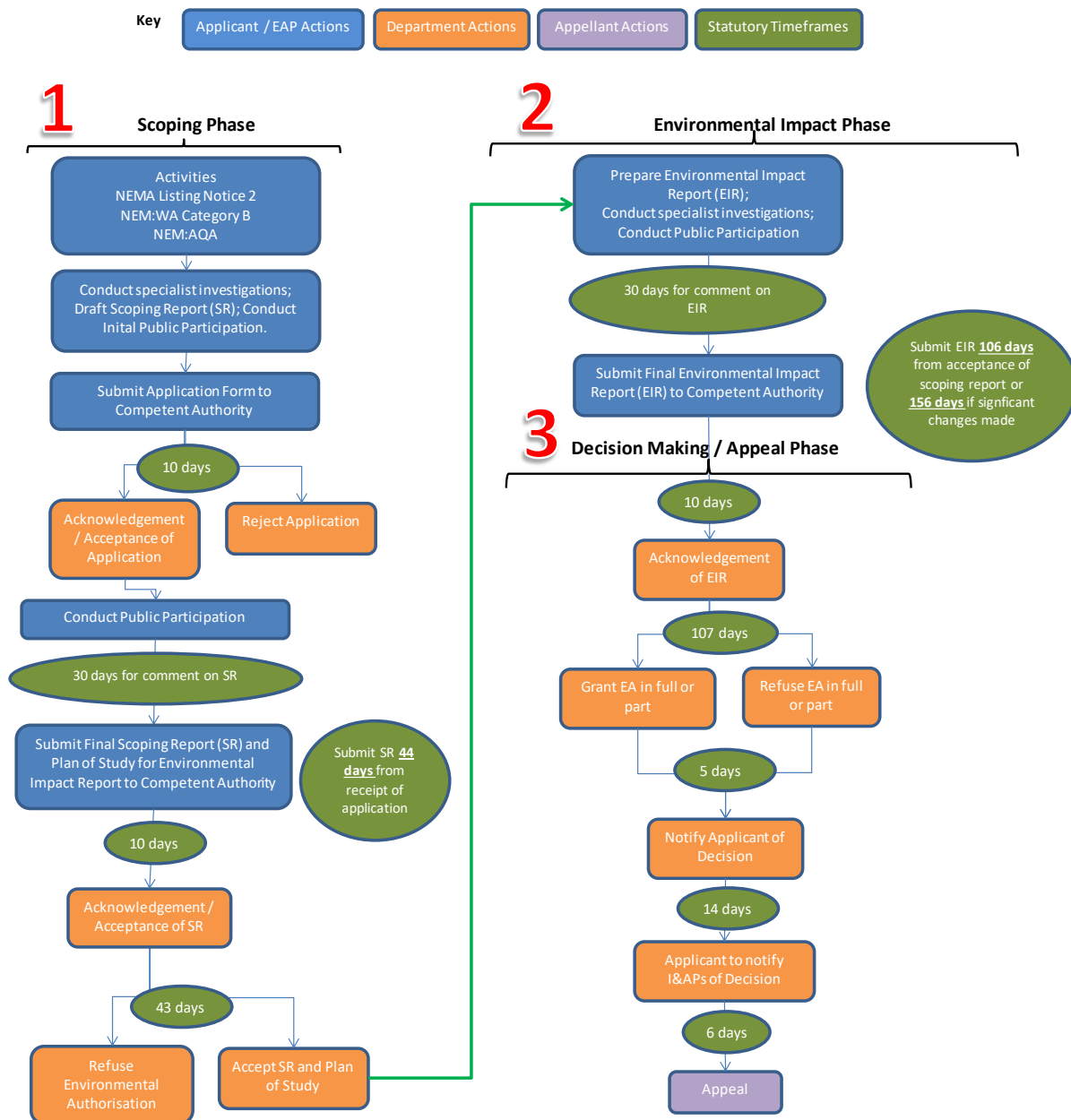
### **2.1.2 National Environmental Management Act (NEMA)**

The current assessment is being undertaken in terms of the **National Environmental Management Act** (NEMA, Act 107 of 1998)<sup>6</sup>. This Act makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the national Department of Environment, Forestry and Fisheries, DEFF) based on the findings of an Environmental Assessment.

The proposed development entails several listed activities, which require a **Scoping & Environmental Impact Reporting (S&EIR) process** that must be conducted by an independent environmental assessment practitioner (EAP). Cape EAPrac has been appointed to undertake this process. Figure 4 below depicts a summary of the S&EIR process.

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<sup>6</sup> The Minister of Water and Environmental Affairs promulgated new regulations in terms of Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998), viz, the Environmental Impact Assessment (EIA) Regulations 2014 (as amended in April 2017). These regulations came into effect on 08 December 2014 (amended on 07 April 2017) and replace the EIA regulations promulgated in 2006 and 2010.



**Figure 4:** Summary of Scoping & EIR Process in terms of the 2014 Regulations.

The listed activities associated with the proposed development, as stipulation under 2014 Regulations 983, 984 and 985 are as follows:

**Table 3:** NEMA 2014 (as amended in April 2017) listed activities applicable to Hotazel 2.

Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Portion of the proposed project to which the applicable listed activity relates.
GN R983 Activity 11:	The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	Hotazel 2 is located outside an urban area and will connect to the national electricity via the Eskom Hotazel substation. The proposed distribution infrastructure includes the construction of an on-site substation/ collector switching station and a 132kV overhead power line.
GN R984 Activity 28:	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development:	The proposed site is currently utilised for agricultural purposes. The Hotazel 2 facility is considered as a commercial use and will have a total footprint of approximately 230 ha.

<b>Activity No(s):</b>	<b>Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended</b>	<b>Portion of the proposed project to which the applicable listed activity relates.</b>
	(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	
GN R983 Activity 24:	The Development of a road – (ii) with a reserve wider than 13.5m or where no road reserve exists where the road is wider than 8m.	A new road will be constructed to access Hotazel 2. The access road will have a width of 8m but with the inclusion of side drains will exceed a total width of more than 8m.
GN R983 Activity 56:	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre – (ii) where no reserve exists, where the existing road is wider than 8 metres	The existing roads will be widened by more than 6m in certain sections.
<b>Activity No(s):</b>	<b>Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended</b>	<b>Portion of the proposed project to which the applicable listed activity relates.</b>
GN R984 Activity 1:	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs- within an urban area; or On existing infrastructure.	The proposed Hotazel 2 facility comprises a renewable energy generation facility, which will utilise PV technology, and will have a net generation capacity of up to 100MW. The facility does not occur within an urban area or on existing infrastructure.
GN R984 Activity 15:	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Hotazel 2 will have a maximum footprint of 230ha and as such exceeds the threshold defined in this activity.
<b>Activity No(s):</b>	<b>Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended</b>	<b>Portion of the proposed project to which the applicable listed activity relates.</b>
	NO Activities in terms of Regulation 985.	

**NOTE:** Basic Assessment as well as Scoping and Environmental Impact Reporting Activities are being triggered by the proposed development and as such, the Environmental Process will follow a Scoping and Environmental Impact Reporting process.

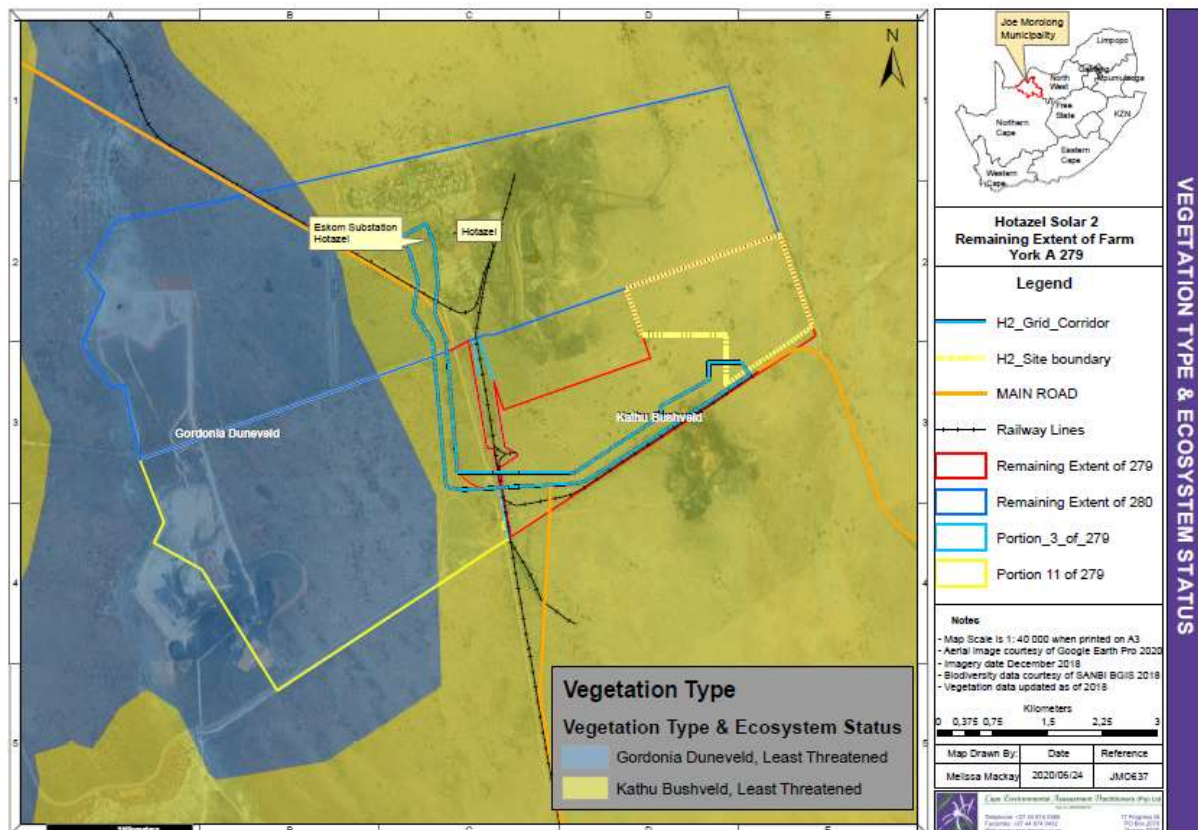
Before any of the above-mentioned listed activities can be undertaken, authorisation must be obtained from the competent authority, DEFF. Should this Department approve the proposed activity, the Environmental Authorisation does not exclude the need for obtaining relevant approvals from other Authorities who has a legal mandate in respect of the activity.

### 2.1.3 National Environmental Management: Biodiversity (ACT 10 OF 2004)

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) lists threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The Draft National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No 32689, 6 November 2009) has been gazetted for public comment.

The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the National Spatial Biodiversity Assessment (NSBA) 2004. In terms of the EIA regulations, a basic assessment report is required for the transformation or removal of indigenous vegetation in a critically endangered or endangered ecosystem regardless of the extent of transformation that will occur.

The vegetation type present on Hotazel 2 (Kathu Bushveld) is classified as Least Threatened as shown in the figure below.



**Figure 5:** Vegetation type and ecosystem threat status associated with Hotazel 2 (Cape EAPrac, 2020).

NEMBA also deals with endangered, threatened and otherwise controlled species. The Act provides for listing of species as threatened or protected, under one of the following categories:

- **Critically Endangered:** any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered:** any indigenous species facing a high risk of extinction in the wild soon, although it is not a critically endangered species.
- **Vulnerable:** any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future, although it is not a critically endangered species or an endangered species.
- **Protected species:** any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Certain activities, known as Restricted Activities, are regulated by a set of permit regulations published under the Act. These activities may not proceed without environmental authorization.

According to the national vegetation map (Mucina & Rutherford 2006 & SANBI, 2018), the site is restricted to the **Kathu Bushveld** vegetation type. This vegetation unit occupies an area of 7443 km<sup>2</sup> and extends from around Kathu and Dibeng in the south through Hotazel and to the Botswana border between Van Zylsrus and McCarthysrus. In terms of soils the vegetation type is associated with aeolian red sand and surface calcrete and deep sandy soils of the Hutton and Clovelly soil forms. The main land types are Ah and Ae with some Ag. The Kathu Bushveld vegetation type is still largely intact and less than 2% has been transformed by mining activity and it is classified as **Least Threatened**. It is,

however, poorly conserved and does not currently fall within any formal conservation areas. Although no endemic species are restricted to this vegetation type several Kalahari endemics are known to occur in this vegetation type such as *Acacia luederitzii* var *luederitzii*, *Antheophora argentea*, *Megaloprotachne albescens*, *Panicum kalaharensis* and *Neuradopsis bechuanensis*. Other vegetation types that occur in the immediate area include **Kuruman Thornveld** and **Gordoa Duneveld**, neither of which is of conservation concern nor occur on the site.

#### 2.1.4 Conservation of Agricultural Resources Act – CARA (Act 43 of 1983):

CARA provides for the regulation of control over the utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species. The Conservation of Agricultural Resources Act defines different categories of alien plants:

- Category 1 - prohibited and must be controlled;
- Category 2 – must be grown within a demarcated area under permit; and
- Category 3 - ornamental plants that may no longer be planted, but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the flood lines of water courses and wetlands.

The abundance of alien plant species on the Hotazel 2 site (including the entire property) is exceptionally low, which can be ascribed mainly to the aridity of the site.

The Department of Agriculture, Land Reform and Rural Development is guided by Act 43 of 1983.

In order to comply with their mandate in terms of this legislation, the applicant is required to take note of the following:

#### Article 7. (3)b of Regulation 9238: CONSERVATION OF AGRICULTURE RESOURCES, 1983 (Act 43 of 1983)

Utilisation and protection of vleis, marshes, water sponges and water courses

- 7.(1) “no land user shall utilize the vegetation in a vlei, marsh or water sponge or within the flood area of a water course or within 10 meters horizontally outside such flood area in a manner that causes or may cause the deterioration of or damage to the natural agriculture resources.”
- (3)(b) “cultivate any land on his farm unit within the flood area of a water course or within 10 meters horizontally outside the flood area of a water course”.

As confirmed by the Freshwater Ecologist (**Annexure E6**), the proposed development will not have an impact on any freshwater resources on or adjacent to the site.

#### 2.1.5 National Water Act, No 36 of 1998

Section 21c & i of the National Water Act (NWA) requires the Applicant to apply for authorisation from the Department of Water and Sanitation for an activity in, or in proximity to any watercourse. Such an application would be required for any infrastructure within any watercourse. As confirmed by the Freshwater Ecologist, no surface water features are present on site.

Section 21(a) of the National Water Act is related to the abstraction of water from a water resource (including abstraction of groundwater); a Water Use Licence (WUL) would be required for such abstraction.

Water required for the construction and operation of Hotazel 2 is to be sourced either from Joe Morolong Local Municipality, or utilisation of groundwater. Utilisation of groundwater for the purposes of construction or operation of the facility, will require a licence in terms of Section 21(a) of the NWA.

The Department of Water and Sanitation have been registered as a key stakeholder in this environmental process and were given an opportunity to comment on the Draft Scoping Report. At the

time of submission of this Draft EIR, no comment has been received from the Department of Water and Sanitation. This department will be given a further opportunity to comment on this Draft EIR.

### 2.1.6 National Forests Act (No. 84 of 1998):

The National Forests Act (NFA) provides for the protection of forests as well as specific tree species, quoting directly from the Act: “*no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated*”.

The ecological specialist, Mr Simon Todd, confirmed that two NFA-protected tree species occur in relatively large numbers at the site, *Acacia erioloba* and *Acacia haematoxylon*. The Ecology specialist has confirmed that although relatively large numbers of *Acacia haematoxylon* would potentially be lost as a result of the development, the extent to habitat loss (230 ha) is not seen as being highly significant for this species. Please refer to the **Ecological Impact Assessment Report in Annexure E1** for a detailed description of the protected species on the site.

Notwithstanding the significance associated with the removal of protected trees for the proposed development, the applicant will be required to submit an application in terms of the NFA for a licence to remove these protected trees.

Due to the presence of species protected in terms of the NFA, DAFF have been automatically registered as a key authority and will be requested to provide specific input in this regard. At the time of submission of this Draft EIR, no comments have been received from DAFF. DAFF will be provided with a further opportunity to comment on this report.

### 2.1.7 National Heritage Resources Act

The protection and management of South Africa’s heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). South African National Heritage Resources Agency (SAHRA) is the enforcing authority in the Northern Cape and is registered as a Stakeholder for this environmental process.

In terms of Section 38 of the National Heritage Resources Act, SAHRA will comment on the detailed Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process.

The National Heritage Resources Act requires relevant authorities to be notified about the proposed development, as the following activities are relevant:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- any development or other activity which will change the character of a site exceeding 5 000 m<sup>2</sup> in extent; and
- the re-zoning of a site exceeding 10 000m<sup>2</sup> in extent.

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority.

In terms of Section 36 (3), no person may destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority.

In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority.

Dr Lita Webley of ACO Associates has been appointed to undertake a heritage impact assessment for the proposed Hotazel 2. This heritage impact assessment includes an Archaeological Impact Assessment undertaken by Dr Lita Webley, a Paleontological letter of exemption undertaken by Dr John Almond and a Visual Impact Assessment undertaken by Mr Stephen Stead.

SAHRA were given an opportunity to comment on the Heritage Scoping study as well as the Draft Scoping Report. This Draft Environmental Impact Report and the Heritage Impact Assessment will be lodged via the SAHRIS system in order to facilitate the final comment in terms of Section 38 of the National Heritage Resources Act.

### **2.1.8 National Energy Act (No. 34 of 2008)**

The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation; while taking environmental management requirements into account. In addition, the Act also provides for energy planning, and increased generation and consumption of Renewable Energies.

The objectives of the Act, are to amongst other things, to:

- Ensure uninterrupted supply of energy to the Republic.
- Promote diversity of supply of energy and its sources.
- Facilitate energy access for improvement of the quality of life of the people of the Republic.
- Contribute to the sustainable development of South Africa's economy.

The National Energy Act therefore recognises the significant role which electricity plays growing the economy while improving citizens' quality of life. The Act provides the legal framework which supports the development of Renewable Energy facilities for the greater environmental and social good and provides the backdrop against which South Africa's strategic planning regarding future electricity provision and supply takes place. It also provides the legal framework which supports the development of RE facilities for the greater environmental and social good.

## **2.2 PROVINCIAL LEGISLATION**

This section deals with provincially promulgated or provincially applicable legislation associated with the proposed Hotazel 2.

### **2.2.1 Northern Cape Nature Conservation Act, No. 9 of 2009:**

The Northern Cape Nature Conservation Act provides inter alia for the sustainable utilisation of wild animals, aquatic biota and plants as well as permitting and trade regulations regarding wild fauna and flora within the province. In terms of this act the following section may be relevant with regards to any security fencing the solar development may require.

Manipulation of boundary fences: 19. No Person may –

- (a) erect, alter, remove or partly remove or cause to be erected, altered, removed or partly removed, any fence, whether on a common boundary or on such person's own property, in such a manner that any wild animal which as a result thereof gains access or may gain access to the property or a camp on the property, cannot escape or is likely not to be able to escape therefrom.

It is recommended that the perimeter fencing around the solar development site will be constructed in a manner which allows for the passage of small and medium sized mammals: The biodiversity specialist



will make recommendations with regard to the specific fencing configuration during the EIA phase of this project.

The Ecology specialist did not identify any species protected in terms of this Act on site.

Please also refer to the Ecological Impact Assessment Report attached in **Annexure E1** for further information on protected species present on site.

### **2.2.2 Nature and Environmental Conservation Ordinance (19 of 1974)**

This legislation was developed to protect both animal and plant species within the various provinces of the country which warrant protection. These may be species which are under threat or which are already considered to be endangered. The provincial environmental authorities are responsible for implementing the provisions of this legislation, which includes the issuing of permits etc. In the Northern Cape, the Department of Environment and Nature Conservation fulfils this mandate as per the Northern Cape Nature Conservation Act as described above.

### **2.2.3 Astronomy Geographic Advantage Act, 2007 (Act No 21 of 2007)**

The purpose of the Act is to preserve the geographic advantage areas that attract investment in astronomy. The entire Northern Cape Province, excluding the Tsantsabane Municipality, has been declared an astronomy advantage area. The Northern Cape optical and radio telescope sites were declared core astronomy advantage areas. The Act allowed for the declaration of the Southern Africa Large Telescope (SALT), Meerkat and Square Kilometre Array (SKA) as astronomy and related scientific endeavours that have to be protected.

The Nearest SKA station has been identified as **REM-Opt-14**, which is more than 340km from the site.

The South African Radio Astronomy Observatory (SARAO) conducted a high level risk assessment on the potential impact of the Hotazel 2 on the SKA. Based on the distance from the location of Hotazel 2 to the nearest SKA radio telescope facility, SARAO have confirmed that they do not anticipate any negative impact on the SKA and that they have no objection to the project.

### **2.2.4 Northern Cape Provincial Spatial Development Framework (PSDF) 2012**

The Northern Cape Provincial Spatial Development Framework (PSDF) 2012 states that the overarching goal for the Province is to enable sustainability through sustainable development. The Province considers social and economic development as imperative in order to address the most significant challenge facing the Northern Cape, which is poverty.

The PSDF considers the release of greenhouse gas (GHG) emissions created by human activity as the key cause of global warming, which in turn could result in major negative effects and disasters in the short- and medium-term. This effect would increasingly undermine human development gains. Innovative strategies would have to be implemented to reduce the impact of global deterioration.

The PSDF identifies key sectoral strategies and plans which are considered to be the key components of the PSDF. Sectoral Strategy 19 refers to a provincial renewable energy strategy. Within the PSDF a policy has been included which states that renewable energy sources (including the utilisation of solar energy) are to comprise 25% of the Province's energy generation capacity by 2020.

The overall energy objective for the Province also includes promoting the development of renewable energy supply schemes which are considered to be strategically important for increasing the diversity of domestic energy supply and avoiding energy imports, while also minimising the detrimental environmental impacts. The implementation of sustainable renewable energy is also to be promoted within the Province through appropriate financial and fiscal instruments.

Considering the need for the development of renewable energy facilities in order to achieve the objective of sustainability the development of the proposed solar energy facility within the Northern Cape and within the study area is considered to be aligned with the Northern Cape PSDF.

## **2.3 REGIONAL AND MUNICIPAL LEGISLATION**

This section deals with regionally and municipally promulgated or regionally or municipally applicable legislation associated with the proposed Hotazel 2<sup>7</sup>.

### **2.3.1 John Taolo Gaetsewe District Municipality Spatial Development Framework (Phase 5, Draft SDF), 2017**

The main economic sectors applied within the John Taolo Gaetsewe District Municipality include eco-tourism, agriculture, mining and community services. Even though the development of renewable energy is not specifically mentioned as part of the framework, the development of a solar energy facility within the area will add to the current economic sectors. That specifically includes community services as the development of a solar energy facility will aid in the provision of electricity, as well as employment opportunities and skills development on a local level.

The SDF states that one of the key objectives for the District Municipality is to attract new business. With the development of a solar energy facility within the area, other developers might be encouraged to consider the area as a viable location for further development. This will attract new business to the area and promote financial and socio-economic development within the Municipality.

### **2.3.2 Joe Morolong Local Municipality Integrated Development Plan (IDP), 2017-2018**

The vision of the Joe Morolong Local Municipality as contained within its 2017 / 2018<sup>8</sup> Integrated Development Plan (IDP) is:

*“A wealthy and prosperous local community with equal access to basic services and sustainable development opportunities.”*

The Municipality’s mission is defined as follows:

*“We commit ourselves to developing communities in a sustainable and democratic manner, with the scope of affordability with reference to:*

- *Participation in all decisions affecting their lives*
- *Basic service delivery by the municipality.”*

The IDP identifies the following issues as significant challenges for the Joe Morolong Local Municipality:

- Huge service delivery and backlog challenges
- Maintenance of aging infrastructure
- Poverty
- Unemployment
- Low Economic Growth
- Rural development

Within Ward 4 of the Joe Morolong Local Municipality, which is also the ward within which the study area is located, Key Performance Areas have been identified. These Key Performance Areas include i) basic service delivery which in-turn includes the promotion of a safe and clean environment and ii) local economic development (LED) which in-turn includes the promotion of economic development. The

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<sup>7</sup> This section includes legislation applicable to both the District (Category C) and Local (Category B) municipalities.

<sup>8</sup> At the time of publishing this report, the 2019-2020 IDP was not yet published.

development of a solar energy facility will assist the Local Municipality in reaching the objectives of the Key Performance Areas through the development of an electricity supply facility which will assist in service delivery and promote a clean environment due to the nature of the development. Local economic development will also take place with the construction and operation of a solar energy facility due to the fact that the development will promote skills development which will enable local residents to grow in terms of skill capacity by providing them with more opportunity for employment in the future.

## **2.4 GUIDELINES, POLICIES AND AUTHORITATIVE REPORTS**

This section includes relevant Guidelines, Policies and Authoritative reports applicable to the proposed Hotazel 2.

### **2.4.1 National Protected Area Expansion Strategy (NPAES) for S.A. 2008 (2010)**

Considering that South Africa's protected area network currently falls far short of sustaining biodiversity and ecological processes, the NPEAS aims to achieve cost-effective protected area expansion for ecological sustainability and increased resilience to Climate Change. Protected areas, recognised by the National Environmental Management: Protected Areas Act (Act 57 of 2003), are considered formal protected areas in the NPAES. The NPAES sets targets for expansion of these protected areas, provides maps of the most important protected area expansion, and makes recommendations on mechanisms for protected area expansion.

The NPAES identifies 42 focus areas for land-based protected area expansion in South Africa. These are large intact and un-fragmented areas suitable for the creation or expansion of large protected areas. The closest focus areas are the **Eastern Kalahari Bushveld Focus Area** (situated a considerable distance from the site)

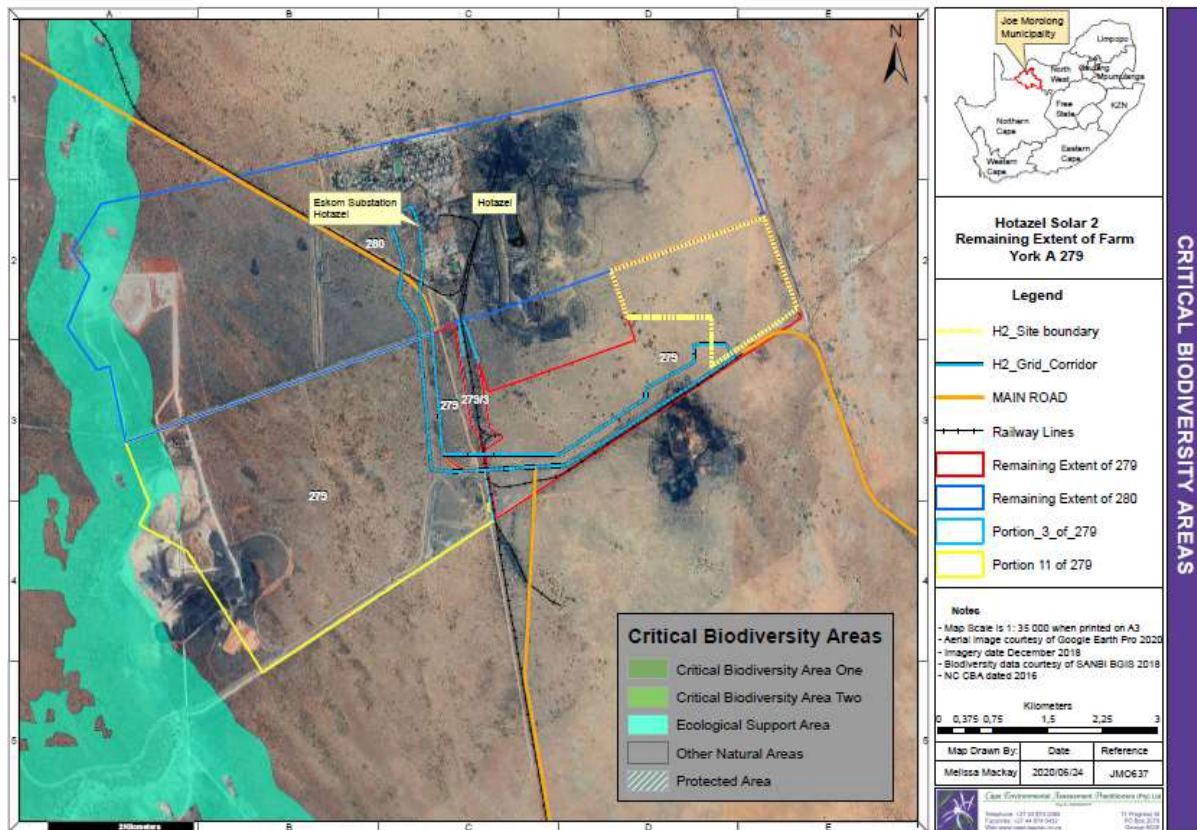
The proposed **Hotazel 2** will **not affect** this or any other **NPAES** focus area as it is situated considerable distance from the Focus Area.

### **2.4.2 Critical Biodiversity Areas**

A Critical Biodiversity Areas (CBA) Map is a spatial plan for ecological sustainability. It identifies a set of biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.

CBA Maps can be given formal legal status through the National Environmental Management: Biodiversity Act (Act 10 of 2004).

An extract of the Northern Cape Critical Biodiversity Areas map for the study area is depicted below in the Figure below. The site lies within an area classified as "Other natural areas" and is not classified as a Critical Biodiversity Area (CBA) nor an Ecological Support Area (ESA). There are no CBAs in close proximity to the site, indicating that the development does not pose a threat to any CBAs or other areas considered to be of significance from a broad-scale conservation planning perspective.



**Figure 6:** Extract of the Northern Cape Critical Biodiversity Areas map for the study area, showing that there are no CBAs in close proximity to the site (Cape EAPrac, 2020)

### 2.4.3 White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)

The White Paper on Renewable Energy Policy of 2003 supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of renewable energy, and aims to create the necessary conditions for the development and commercial implementation of renewable energy technologies. The position of the White Paper on renewable energy Policy is based on the integrated resource planning criterion of:

*“Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options.”*

The White Paper on Renewable Energy Policy sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing Renewable Energy in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, and fairly accessible and affordable coal resources. However, massive renewable energy resources that can be sustainable alternatives to fossil fuels, have so far remained largely untapped. The White Paper on Renewable Energy Policy fosters the uptake of Renewable Energy in the economy and has a number of objectives that include: ensuring equitable resources are invested in renewable technologies; directing public resources for implementation of Renewable Energy technologies; introducing suitable fiscal incentives for Renewable Energy and; creating an investment climate for the development of the renewable energy sector.

The White Paper on Renewable Energy Policy set a target of 10 000GWh to be generated from renewable energy by 2013 to be produced mainly from biomass, wind, solar and small-scale hydro. The target was subsequently reviewed in 2009 during the renewable energy summit of 2009. The objectives of the White Paper on Renewable Energy Policy are considered in six focal areas, namely; financial

instruments, legal instruments, technology development, awareness raising, capacity building and education, and market based and regulatory instruments. The policy supports the investment in Renewable Energy facilities as they contribute towards ensuring energy security through the diversification of energy supply, reducing greenhouse gas emissions and the promotion of Renewable Energy sources.

#### **2.4.4 White Paper on the Energy Policy of the Republic of South Africa (1998)**

The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of renewable energy and encouraging new entries into the generation market. South Africa has an attractive range of cost-effective renewable resources, taking into consideration social and environmental costs. Government policy on renewable energy is thus concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented.
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options.
- Addressing constraints on the development of the renewable industry.

The policy states that the advantages of RE include; minimal environmental impacts during operation in comparison with traditional supply technologies, generally lower running costs, and high labour intensities. Disadvantages include; higher capital costs in some cases; lower energy densities; and lower levels of availability, depending on specific conditions, especially with sun and wind based systems. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future. The White Paper on Energy Policy therefore supports the advancement of RE sources and ensuring energy security through the diversification of supply.

#### **2.4.5 Integrated Energy Plan (IEP), 2015**

The Integrated Energy Plan (IEP) (which was developed under the National Energy Act (No. 34 of 2008)), recognises that energy is essential to many human activities, and is critical to the social and economic development of a country. The purpose of the IEP is essentially to ensure the availability of energy resources, and access to energy services in an affordable and sustainable manner, while minimising associated adverse environmental impacts. Energy planning therefore needs to balance the need for continued economic growth with social needs, and the need to protect the natural environment.

The IEP is a multi-faceted, long-term energy framework which has multiple aims, some of which include:

- To guide the development of energy policies and, where relevant, set the framework for regulations in the energy sector.
- To guide the selection of appropriate technologies to meet energy demand (i.e. the types and sizes of new power plants and refineries to be built and the prices that should be charged for fuels).
- To guide investment in and the development of energy infrastructure in South Africa.
- To propose alternative energy strategies which are informed by testing the potential impacts of various factors such as proposed policies, introduction of new technologies, and effects of exogenous macro-economic factors.

The 8 key objectives of the integrated energy planning process, are as follows:

- Objective 1: Ensure security of supply.
- Objective 2: Minimise the cost of energy.
- Objective 3: Promote the creation of jobs and localisation.
- Objective 4: Minimise negative environmental impacts from the energy sector.

- Objective 5: Promote the conservation of water.
- Objective 6: Diversify supply sources and primary sources of energy.
- Objective 7: Promote energy efficiency in the economy.
- Objective 8: Increase access to modern energy.

#### **2.4.6 Integrated Resource Plan for Electricity (2010-2030)**

The Integrated Resource Plan (IRP) for Electricity 2010 – 2030 is a subset of the IEP and constitutes South Africa's national electricity plan. The primary objective of the IRP is to determine the long term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.

The current iteration of the IRP, led to the Revised Balanced Scenario (RBS) that was published in 2019.

The document outlines the proposed generation new-build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on a cost-optimal solution for new-build options (considering the direct costs of new build power plants), which was then "balanced" in accordance with qualitative measures such as local job creation.

In terms of the IRP, 1 000MW has been allocated for solar PV facilities from 2022 to 2030

#### **2.4.7 National Development Plan 2030 (2012)**

The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030. The NDP aims to achieve this by drawing on the energies of its people, growing and inclusive economy, building capabilities, enhancing the capacity of the state and promoting leaderships and partnerships throughout society. While the achievement of the objectives of the NDP requires progress on a broad front, three priorities stand out, namely:

- Raising employment through faster economic growth.
- Improving the quality of education, skills development and innovation.
- Building the capability of the state to play a developmental, transformative role.

In terms of the Energy Sectors role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes:

- Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.

The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed project will assist in reducing carbon emissions targets and creating jobs in the local area as well as assist in creating a competitive infrastructure based on terms of energy contribution to the national grid.

#### **2.4.8 Strategic Infrastructure Projects (SIPs)**

The Presidential Infrastructure Coordinating Committee (PICC) are integrating and phasing investment plans across 18 Strategic Infrastructure Projects (SIPs) which have the following 5 core functions:

- To unlock opportunity.

- Transform the economic landscape.
- Create new jobs.
- Strengthen the delivery of basic services.
- Support the integration of African economies.

A balanced approach is being fostered through greening of the economy, boosting energy security, promoting integrated municipal infrastructure investment, facilitating integrated urban development, accelerating skills development, investing in rural development and enabling regional integration.

SIP 8 of the energy SIPs supports the development of Renewable Energy projects as follow:

**SIP 8: Green energy in support of the South African economy:**

*Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010) and supports bio-fuel production facilities.*

The development of the proposed project is therefore also aligned with SIP 8 as it constitutes a green energy initiative which would contribute clean energy in accordance with the IRP 2010 – 2030.

#### **2.4.9 The Convention on the Conservation of Migratory Species of Wild Animals**

The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention) is an intergovernmental treaty and is the most appropriate instrument to deal with the conservation of terrestrial, aquatic and avian migratory species. The convention includes policy and guidelines with regards to the impact associated with man-made infrastructure. CMS requires that parties (South Africa is a signatory) take measures to avoid migratory species from becoming endangered (Art II, par. 1 and 2) and to make every effort to prevent the adverse effects of activities and obstacles that seriously impede or prevent the migration of migratory species i.e. power lines (Art 111, par. 4b and 4c).

An Avifaunal Specialist has been appointed to consider the impact of the proposed energy facility as well as the powerline connecting the facility to the Eskom Hotazel substation (**Annexure E2**). Birdlife South Africa has also been given an opportunity to comment in this regard.

#### **2.4.10 The Agreement on the Convention of African-Eurasian Migratory Water Birds**

The Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA) is an intergovernmental treaty dedicated to the conservation of migratory water birds and their habitat across Africa, Europe, the Middle East Central Asia, Greenland and the Canadian Archipelago. The AEWA covers 255 species of birds ecologically dependent on wetlands for at least part of their annual cycle and is a legally binding agreement by all contracting parties (South Africa included) to guarantee the conservation of migratory water birds within their national boundaries through species and habitat protection and the management of human activities. As mentioned above, an Avifaunal Specialist has been appointed to consider the impact of the proposed energy facility as well as the powerline connecting the facility to the Eskom Hotazel substation (**Annexure E2**). Birdlife South Africa has also been given an opportunity to comment in this regard.

#### **2.4.11 Guidelines to minimise the impacts on birds of Solar Facilities and Associated Infrastructure in South Africa**

The “Guidelines to minimise the impact on birds of Solar Facilities and Associated Infrastructure in South Africa” (Smit, 2012) is perhaps the most important (although not legally binding) document from an avifaunal impact perspective currently applicable to solar development in South Africa. The guidelines are published by BirdLife South Africa (BLSA) and detail the recommended procedure for conducting an avifaunal specialist study as well as list all of the potential impacts of interactions between birds and

solar facilities and associated infrastructure. We are aware of changes to the BirdLife South Africa best-practise guidelines recently published at the Birds and Renewable Energy Forum in Johannesburg (2015) and although the revised requirements are still a work in progress and have not yet been ratified, they will inform this assessment where applicable. Please refer to **Annexure E2** for a copy of the Avifaunal assessment undertaken for this project.

#### 2.4.12 Environmental Impact Assessment Guideline for Renewable Energy Projects

The Minister of Environmental Affairs published the Environmental Impact Assessment Guideline for Renewable Energy in terms of section 24J of the National Environmental Management Act, 1998 (Act No. 107 of 1998) on 16 October 2016.

In pursuit of promoting the country's Renewable Energy development imperatives, the Government has been actively encouraging the role of Independent Power Producers (IPPs) to feed into the national grid. Through its REIPPPP, the DoE has been engaging with the sector in order to strengthen the role of IPPs in renewable energy development. Launched during 2011, the REIPPPP is designed to contribute towards a target of 3 725MW, and towards socio-economic and environmentally sustainable development, as well as to further stimulate the renewable industry in South Africa.

In order to facilitate the development of the first phase of IPPs in South Africa, these guidelines have been written to assist project planning, financing, permitting, and implementation for both developers and regulators. The guideline is principally intended for use by the following stakeholder groups:

- Public Sector Authorities (as regulator and/or competent authority);
- Joint public sector authorities and project funders, e.g., Eskom, IDC, etc.
- Private Sector Entities (as project funder/developer/consultant);
- Other interested and affected parties (as determined by the project location and/or scope).

This guideline aims to ensure that all potential environmental issues pertaining to renewable energy projects are adequately and timeously assessed and addressed as necessary so as to ensure sustainable roll-out of these technologies by creating a better understanding of the environmental approval process for renewable energy projects.

The guidelines list the following possible environmental impacts associated with the development of solar energy facilities.

**Table 4:** Potential environmental impacts of solar energy projects (Adapted from DEA, 2015) showing where they have been considered in this report

Impact Description	Relevant Legislation
Visual Impact – Specialist input attached in <b>Annexure E8</b> .	NEMA
Noise Impact (CSP) – Not applicable, as CSP is not considered as a technology alternative.	NEMA
Land Use Transformation (fuel growth and production) – Not Applicable to PV. However, Agricultural specialist input is attached in <b>Annexure E3</b>	NEMA, NEMPAA, NHRA
Impacts on Cultural Heritage – Archaeology input attached in <b>Annexure E4</b> .	NEMA, NHRA
Impacts on Biodiversity – Biodiversity specialist input attached in <b>Annexure E1, E2 and E6</b> (Ecology, Avifaunal and Freshwater respectively)	NEMA, NEMBA, NEMPAA, NFA



Impact Description	Relevant Legislation
Impacts on Water Resources – The project will obtain water directly from the local municipality. The municipality have been requested to provide confirmation of availability in this regard. A freshwater ecologist has assessed the potential impacts on freshwater resources ( <b>Annexure E6</b> ).	NEMA, NEMICMA, NWA, WSA
Hazardous Waste Generation (CSP and PV) – The EMPr will make provision for damaged and defunct PV infrastructure for dismantling and re-use.	NEMA, NEMWA, HAS
Electromagnetic Interference – SKA will be requested to comment and provide input in this regard.	NEMA
Aircraft Interference – The SA CAA have been automatically registered as an interested and affected party on this environmental process. There are no airports nor landing strips in the vicinity of the proposed site. The applicant has submitted an application for obstacles approval in terms of the CAA regulations.	NEMA, MSA
Loss of Agricultural Land – Agricultural specialist input is attached in <b>Annexure E3</b>	SALA
Sterilisation of mineral resources – The Department of Mineral resources has been registered as an I&AP on this environmental process. All parties with prospecting options on the portion of land have been automatically registered as I&AP's on this environmental Process.	MPRDA

Assuming an IPP project triggers the need for Basic Assessment (BA) or scoping environmental Impact Assessment (S&EIA) under the EIA regulations, included in the assessment process is the preparation of an environmental management programme (EMPr). Project-specific measures designed to mitigate negative impacts and enhance positive impacts should be informed by good industry practice and are to be included in the EMPr. Potential mitigation measures for solar energy projects include but are not limited to:

- Conduct pre-disturbance surveys as appropriate to assess the presence of sensitive areas, fauna, flora and sensitive habitats;
- Plan visual impact reduction measures such as natural (vegetation and topography) and engineered (berms, fences, and shades, etc.) screens and buffers;
- Utilise existing roads and servitudes as much as possible to minimise project footprint;
- Site projects to avoid construction too near pristine natural areas and communities;
- Locate developments away from important habitat for faunal species, particularly species which are threatened or have restricted ranges, and are collision-prone or vulnerable to disturbance, displacement and/or habitat loss;
- Fence sites as appropriate to ensure safe restricted access;
- Ensure dust abatement measures are in place during and post construction;

- Develop and implement a storm water management plan;
- Develop and implement waste management plan; and
- Re-vegetation with appropriate indigenous species to prevent dust and erosion, as well as establishment of alien species.

### 2.4.13 Sustainability Imperative

The norm implicit to our environmental law is the notion of sustainable development (“SD”). SD and sustainable use and exploitation of natural resources are at the core of the protection of the environment. SD is generally accepted to mean development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. The evolving elements of the concept of SD *inter alia* include the right to develop; the pursuit of equity in the use and allocation of natural resources (the principle of intra-generational equity) and the need to preserve natural resources for the benefit of present and future generations. Economic development, social development and the protection of the environment are considered the pillars of SD (the triple bottom line).

“Man-land relationships require a holistic perspective, an ability to appreciate the many aspects that make up the real problems. Sustainable planning must confront the physical, social, environmental and economic challenges and conflicting aspirations of local communities. The imperative of sustainable planning translates into notions of striking a balance between the many competing interests in the ecological, economic, and social fields in a planned manner. The ‘triple bottom line’ objectives of sustainable planning and development should be understood in terms of economic efficiency (employment and economic growth), social equity (human needs) and ecological integrity (ecological capital).”

As was pointed out by the Constitutional Court, SD does not require the cessation of socio-economic development but seeks to regulate the way it takes place. The idea that developmental and environmental protection must be reconciled is central to the concept of SD - it implies the accommodation, reconciliation and (in some instances) integration between economic development, social development, and environmental protection. It is regarded as providing a “conceptual bridge” between the right to social and economic development, and the need to protect the environment.

Our Constitutional Court has pointed out that the requirement that environmental authorities must place people and their needs at the forefront of their concern so that environmental management can serve their developmental, cultural and social interests, can be achieved if a development is sustainable. “*The very idea of sustainability implies continuity. It reflects the concern for social and developmental equity between generations, a concern that must logically be extended to equity within each generation. This concern is reflected in the principles of inter-generational and intra-generational equity which are embodied in both section 24 of the Constitution and the principles of environmental management contained in NEMA.*” [Emphasis added.]

In terms of NEMA sustainable development requires the integration of the relevant factors, the purpose of which is *to ensure that development serves present and future generations.*<sup>9</sup>

It is believed that the proposed 100MW Hotazel 2 solar energy facility supports the notion of sustainable development by presenting a reasonable and feasible alternative to the existing vacant land use type, which has limited agricultural potential due the lack of water and infrastructure.

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<sup>9</sup> Refer to definition of “sustainable development” in section 1 of NEMA.

Furthermore, the proposed alternative energy project (reliant on a natural renewable resource – solar energy) is in line with the national and global goal of reducing reliance on fossil fuels, thereby providing long-term benefits to future generations in a sustainable manner.

#### 2.4.14 National Screening Tool, 2018

The results of the National Screening Tool Analysis are included in **Annexure G6** of this report.

The submission of a report generated from the national web-based environmental screening tool, as contemplated in Regulation 16(1)(b)(v) of the Environmental Impact Assessment Regulations, 2014, published under Government Notice No. R982 in Government Gazette No. 38282 of 4 December 2014, as amended, came into effect as of 4 October 2019.

The report uses national datasets to identify site sensitivities and potential specialist studies that may be required for any particular development. Since the datasets are not necessarily ground-truthed, there may be instances where the required specialist study is in actual fact not necessary. According to the Assessment Protocol for specialist involvement, if any part of the proposed development falls within an area of “very high” sensitivity, the requirements prescribed for such sensitivity must be undertaken.

The screening tool did not identify any Vey-High or High sensitivity themes. The sensitivities identified in the screening tool are shown in the table below.

**Table 5:** Theme sensitivities as per National Screening Tool

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agriculture			✓	
Animal Species				✓
Aquatic Biodiversity				✓
Bats				✓
Civil Aviation			✓	
Defence				✓
Landscape			✓	
Palaeontology			✓	
Plant Species				✓
RFI				✓
Terrestrial biodiversity				✓

Below is a list of the studies generated by the Screening Tool for Hotazel 2, including the motivations as to whether or not the investigation has been done or is required.

**Table 6:** Specialist input identified in Screening Tool Assessment

No.	Specialist assessment	✓ / ✗	Assessment Protocol Reasoning
1	Agricultural Impact Assessment	✓	Attached in <b>annexure E3</b> .
2	Landscape/Visual Impact Assessment	✓	Attached in <b>annexure E8</b> .
3	Archaeological and Cultural Heritage Impact Assessment	✓	Attached in <b>annexure E4</b> .
4	Palaeontology Impact Assessment	✓	Attached in <b>Annexure E5</b> .
5	Terrestrial Biodiversity Impact Assessment	✓	Attached in <b>Annexure E1</b> .

No.	Specialist assessment	✓ / ✗	Assessment Protocol Reasoning
6	Aquatic Biodiversity Impact Assessment	✓	Attached in <b>Annexure E6</b> .
7	Avian Impact Assessment	✓	Attached in <b>Annexure E2</b>
8	Civil Aviation Assessment	✗	The applicant has applied for an obstacle clearance certificate with the Civil Aviation Authority.
9	Defense Assessment	✗	The screening tool identified a low defence theme sensitivity. There are no defence infrastructure in the vicinity of the proposed development.
10	RFI Assessment	✗	SARAO have confirmed that the closest SKA radio Station is approximately 340km from the property and will therefore not likely have any negative impact on the SKA.
11	Geotechnical Assessment	✓	A screening assessment from the council for geoscience is included in <b>Annexure E14</b> . No unstable geological formations (i.e. dolomite) have been identified on the property.
12	Socio-Economic Assessment	✓	Attached in <b>Annexure E7</b>
13	Plant Species Assessment	✓	Attached in <b>Annexure E1</b>
14	Animal Species Assessment	✓	Attached in <b>Annexure E1</b>

### 3. REGIONAL SOCIO-ECONOMIC CONTEXT

Ms Lisa Oppermann of Savannah Environmental undertook a social impact assessment of the proposed development (**Annexure E7**). The following contextual social information associated with the region is summarised from this study.

#### 3.1 REGIONAL CONTEXT

This section provides an overview of the Spatial Context of the Province, District Municipality, and Local Municipality within which the Hotazel 2 is proposed for development and provides the socio-economic basis against which potential issues can be identified.

##### 3.1.1 Spatial Context of the Northern Cape Province

The Northern Cape Province is located in the north-western extent of South Africa and comprises South Africa's largest province; occupying an area 372 889km<sup>2</sup> in extent, equivalent to nearly a third (30.5%) of the country's total land mass. It is also South Africa's most sparsely populated province with a population of 1 145 861, and a population density of 3.1/km<sup>2</sup>. It is bordered by the Provinces of Western Cape, and Eastern Cape Provinces to the south, and south-east; Free State, and North West Provinces to the east; Botswana and Namibia, to the north; and the Atlantic Ocean to the west. The Northern Cape is the only South African province which borders Namibia, and therefore plays an important role in terms of providing linkages between Namibia and the rest of South Africa. The Orange River is a significant feature, and is also the main source of water in the Province, while also constituting the international border between the Northern Cape and Namibia.

The Northern Cape offers unique tourism opportunities including wildlife conservation destinations, natural features, historic sites, festivals, cultural sites, stars gazing, adventure tourism, agricultural tourism, ecotourism, game farms, and hunting areas, etc. The Province is home to the Richtersveld Botanical and Landscape World Heritage Site, which comprises a United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site under the World Heritage Convention. The Northern Cape is also home to 2 Transfrontier National Parks, namely the Kgalagadi Transfrontier Park, and the Richtersveld /Ai-Ais Transfrontier Park, as well as 5 national parks, and 6 provincial reserves.

The Northern Cape also plays a significant role in South Africa's science and technology sector, as it is home to the Square Kilometre Array (SKA), the Southern African Large Telescope (SALT), and the Karoo Array Telescope (MeerKAT).

The Northern Cape makes the smallest contribution to South Africa's economy (contributing only 2% to South Africa's Gross Domestic Product per region (GDP-R) in 2007). At 26% the mining sector is the largest contributor to the provincial GDP. The Northern Cape's mining industry is of national and international importance, as it produces approximately 37% of South Africa's diamond output, 44% of its zinc, 70% of its silver, 84% of its iron-ore, 93% of its lead and 99% of its manganese.

In 2007 the agricultural sector contributed 5.8% to the Northern Cape GDP per region which was equivalent to approximately R1.3 billion. The agricultural sector also employs approximately 19.5% of the total formally employed individuals (LED Strategy). The sector is experiencing significant growth in value-added activities, including game-farming; while food production and processing for the local and export market is also growing significantly (PGDS, July 2011). Approximately 96% of the land is used for stock farming; including beef cattle and sheep or goats, as well as game farming; while approximately 2% of the province is used for crop farming, mainly under irrigation in the Orange River Valley and Vaalharts Irrigation Scheme (LED Strategy).

### 3.1.2 Spatial Context of the District<sup>10</sup>

The John Taolo Gaetsewe District (previously known as the Kgalagadi District Municipality) is situated in the north-eastern extent of Northern Cape Province. It is the second smallest district in the Province in terms of land mass (27 283km<sup>2</sup>, equivalent to 7.32% of the total Provincial land mass), and third largest in terms of population (224 799, equivalent to 19.62% of the total Provincial population), with the second highest population density of 8.2/km<sup>2</sup>. The John Taolo Gaetsewe District is bordered by ZF Mgcawu District to the south-west, and south; Frances Baard District to the south-east; Dr Ruth Segomotsi Mompati District of North West Province to the east; and Botswana to the north. The District comprises 3 Local Municipalities, namely: Joe Morolong, Ga-Segonyana, and Gamagara Local Municipalities. In 2006 the boundaries of the John Taolo Gaetsewe District were demarcated to include the once north-western part of Joe Morolong and Olifantshoek, along with its surrounds, into the Gamagara Local Municipality.

The John Taolo Gaetsewe District comprises 186 towns and settlements, approximately 80% of which comprise villages. Predominant towns within the District include: Bankhara-Bodulong, Deben, Hotazel, Kathu, Kuruman, Mothibistad, Olifantshoek, Santoy, and Van Zylsrus. It is characterised by a mixture of land uses, of which agriculture and mining are dominant. The main economic sectors within the District include agriculture, mining, and retail. The District holds potential as a viable tourist destination and has numerous growth opportunities in the industrial sector.

The proposed Hotazel 2 is situated in the Joe Mololong local municipality in the North of the District

### 3.1.3 Spatial context of the local area<sup>11</sup>

The Joe Morolong Local Municipality is the largest municipality in the John Taolo Gaetsewe District in terms of land mass (20 172km<sup>2</sup>, equivalent to 73.94% of the District land mass), and second largest in terms of population (i.e. 89 530, equivalent to 39.83% of the District population), with the lowest population density of 4.4/km<sup>2</sup>. The Joe Morolong Local Municipality is bordered by the Gamagara and Ga-Segonyana Local Municipalities to the south; Greater Taung, and Kagisano-Molopo Local

<sup>10</sup> John Taolo Gaetsewe District Municipality

<sup>11</sup> Joe Morolong Local Municipality

Municipalities of North West Province to the south-east, east, and north-east; Botswana to the north, and north-west; and Dawid Kruiper, and Tsantsabane Local Municipalities to the south-west.

The Joe Morolong Local Municipality is predominantly rural in nature, with approximately 60% of the municipality comprising virgin land surface. Although unemployment is high, the municipality has potential for developers, especially those interested in ecotourism and conservation. Predominant towns within the municipality include: Hotazel, Santoy, and Van Zylsrus. The predominant economic sectors within the municipality include agriculture, mining, and community services.

### 3.1.4 Spatial context of the project site

Hotazel 2 is proposed on the Remaining Extent of the Farm York A 279, located approximately 3km south-east of Hotazel. Other towns in proximity of the project site include Kuruman, located approximately 52km south-east, and Kathu located approximately 60km south of the project site. Built infrastructure in the form of farm homesteads, workers quarters and storage areas occur within proximity of the project site, and may be impacted on (i.e. in terms of nuisance and / or visual impacts) as a result of the proposed project.

A number of manganese mining operations occur within close proximity of the project site. The Langdon Devon Manganese Mine is located immediately south of the project site. As a result numerous waste rock dumps associated with these Manganese mines are located within the vicinity of the project site. The presence of these waste rock dumps have influenced the local landscape character. The greater area within which the project is proposed has already been transformed as a result of mining, and associated infrastructure, and waste rock dumps.

The vertical and horizontal landscapes are also disturbed due to the presence of linear infrastructure within the surrounding area, including:

- Power lines:
  - Hotazel SAR Traction / Hotazel 1 132kV power line traverses the area west of the project site in a north-to-south direction from the SAR Hotazel 132kV Traction Substation located adjacent to the south-western extent of the project site, coming to an end at the Hotazel 132 / 66 / 11kV Substation located north-west of the project site in Hotazel.
  - Hotazel / Middelplaats 1 66kV power line traverses the area west of the project site in a north-to-south direction coming to an end at the Hotazel 132 / 66 / 11kV Substation located north-west of the project site in Hotazel.
  - Hotazel / Riries 1 66kV power line traverses the south-western corner of the project site, and traverses the area west of the project site in a north-to-south direction, coming to an end at the Hotazel 132 / 66 / 11kV Substation located north-west of the project site in Hotazel.
  - There is a 132kV power line recently constructed on the southern boundary of the site, that comes from Eldoret substation and follows the R31 and adjacent to the other lines connecting to the Eskom Hotazel Substation.
- Regional roads:
  - R31 Regional Road traverses the south-eastern boundary of the project site and provides primary access to the project site.
  - R380 Regional Road joins the R31 in the south-western extent of the project site.
- Railway line:
  - A railway line occurs along the south-western boundary of the project site, and traverses the area just west of the project site in a north-to-south direction.

## 3.2 BASELINE DESCRIPTION OF THE SOCIAL ENVIRONMENT

The following subsections provide an overview of the socio-economic profile of the Joe Morolong Local Municipality described above. The data presented in this section from the SIA which sourced the data from the 2011 Census, the Local Government Handbook South Africa 2018, the Northern Cape Provincial Spatial Development Framework (PSDF), and the John Taolo Gaetsewe DM and Joe Morolong LM IDPs.

### 3.2.1 Population Size

The Joe Morolong LM has a very small population of 89 528; which is equivalent to approximately 39.8% of the DM population, 7.8% of the provincial population, and only 0.2% of the national population. The Joe Morolong LM also has a relatively low population density of 4.4/km<sup>2</sup>, which is almost half of the DM's population density (8.2/km<sup>2</sup>).

Between 2001 and 2011 the LM experienced a negative population growth of -0.9% per year. This contrasts with the DM, Province, and South Africa as a whole, which all experienced positive population growth rates in the region of 1.4% to 1.6% per year. The Joe Morolong LM's negative population growth rate can be attributed to individuals leaving the municipality in search of employment opportunities elsewhere.

### 3.2.2 Population Group

According to Census 2011, the significant majority (96.4%) of the Joe Morolong LM population are Black African, followed secondly by 2% which are Coloured, 1.2% which are White, and 0.3% which are Indian / Asian. This population structure is similar to that of the John Taolo Gaetsewe DM which is also characterised by a majority of 84.8% comprising Black African, followed by 9.3% Coloured, and 5% White; but differs from the Northern Cape Provincial population structure, which is characterised by a much more predominant split, and a much larger proportion of the population (40.3%) comprising Coloured individuals.

### 3.2.3 Sex Profile

The Joe Morolong LM is female dominated with females making up 53.9% of the population, and males the remaining 46.1%. This correlates with the District, Provincial and National populations, which are all female dominated, however the split between males and females is slightly more pronounced within the Joe Morolong LM. Such a profile can again be attributed to the fact that a significant number of male individuals may have left the LM in search for employment opportunities elsewhere, thus resulting in a more heavily female dominated population.

### 3.2.4 Age Profile

The age structure of the Joe Morolong LM, John Taolo Gaetsewe DM, Northern Cape Province and South African national populations differ somewhat from one another. Whereas the South African national population is characterised by a large proportion of youth specifically between 0 – 4 years, and 15 – 29 years; the Northern Cape Provincial population and John Taolo Gaetsewe DM, while also youth dominated, are far more uniform. The Joe Morolong LM is also heavily youth dominated, but is characterised by a much smaller proportion of males of working age (between 20 and 59 years of age).

The lower proportion of potentially economically active persons within the Joe Morolong LM implies that there is a small human resource base for development projects to involve the local population. The youth represents the largest proportion of the population, which means that focus needs to be placed on youth development.

### 3.2.5 Dependency Ratio

### 3.2.6 The Joe Morolong LM has a dependency ratio of 45.8; implying that for every 100 people within the Joe Morolong LM, 45.8 (i.e. almost half) of them are considered dependent. This figure is considerably higher than the John Taolo Gaetsewe DM (i.e. 38.8), which is itself higher than the Provincial (35.8) and National (34.5) dependency ratios.

Almost a quarter (22.8%) of the Joe Morolong LM population aged 20 years and older have received no form of schooling. This figure is significantly higher than the DM (14.3%), Provincial (11.1%), and national (8.4%) averages. Only 15.1% of the LM population completed Matric, with only 2% having received some form of higher / tertiary education.

Due to the fact that a significant proportion of the Joe Morolong LM population have received no form of schooling (22.8%), and due to the fact that 76.8% of the LM population which have received some schooling have not completed Matric, it can be expected that a large proportion of the population will be either unskilled or have a low-skill level, and would therefore either require employment in non-skilled or low-skill sectors; or alternatively would require skills development opportunities in order to improve the skills, and income levels of the area.

### 3.2.7 Employment

Of the Joe Morolong LM's labour force (i.e. individuals ages between 15 and 64 years of age) the majority of 61% are not economically active. This refers to the economically inactive portion of the population who are able and available to work, but who do not work, and who are not looking for work. Such a figure is of significance as it demonstrates a population's willingness and desire to find employment. The economically inactive proportion of the Joe Morolong LM's labour force is significantly higher than the DM (46.8%), Provincial (41.6%), and national averages (39.2%).

Approximately 10.1% of the Joe Morolong LM's labour force is unemployed. This means that 10.1% of the economically active population within the LM are currently unemployed, but are willing and able to work, and are actively seeking employment. While the unemployment rate for the LM is somewhat lower than the DM (13.5%), Provincial (14.5%), and national averages (16.5%); the employment proportion of the population within the LM (16.1%) is considerably lower and equivalent to approximately half of the DM (31.8%), Provincial (38.4%), and national averages (38.9%). This implies that irrespective of the size of the Joe Morolong LM's labour force, a far smaller proportion would be available to absorb employment opportunities; and the possibility therefore exists that labour may need to be sourced from elsewhere (i.e. beyond the Joe Morolong LM).

Based on the statistics provided it can be assumed that there are fewer individuals in search of employment opportunities within the LM than the DM, Province or South Africa as a whole. This implies that there is little human capital available for any kind of work in the Joe Morolong LM, without providing the necessary training and development of young and economically active people in occupations in the relevant fields needed.

### 3.2.8 Annual Household Income levels

Households that have either no income or low income fall within the poverty level (R0 – R38 400 per annum), indicating the difficulty to meet basic need requirements. Middle-income is classified as earning R38 401 – R307 200, and high income is classified as earning R307 201 or more per annum.

Almost two thirds (64%) of households within the Joe Morolong LM fall within the low income (poverty level) bracket. This figure is like that of the Northern Cape provincial average (61%), but somewhat higher than the John Taolo Gaetsewe DM (54%) and national average (56%). Approximately one third



(33%) of households within the LM fall within the medium income bracket, while the remaining 3% fall within the high-income bracket.

### **3.2.9 The high poverty level prevalent within the LM can be attributed with social consequences such as an inability to pay for basic needs and services, which in turn has influence on an individuals' standard of living. Economic Activities**

According to the Joe Morolong LM IDP 2017/18 mining and agriculture are the largest contributors to the LM's economy. In terms of employment however, 41% of formally employed individuals are employed in the Community Services sector, followed by 18% employed in agricultural work, and 12% employed in Mining, and Quarrying. The Electricity, Gas, and Water industry employs approximately only 3% of formally employed individuals within the LM.

#### **3.2.10 Access to Water**

The majority (73.3%) of households within the Joe Morolong LM receive their water from a regional / local water scheme (operated by the municipality or other water services provider), which is considered to be above basic level service provision.

#### **3.2.11 Access to Sanitation**

40.1% of households within the Joe Morolong LM make use of Ventilated Improved Pit Latrines (VIP), followed by 36.5% which make use of pit latrines without ventilation, and 10.2% which have no access to sanitation services. Approximately only 6.1% of households within the LM have access to a flush toilet connected to a sewage system. Households within the Joe Morolong LM are characterised by poor access to sanitation services.

#### **3.2.12 Access to Electricity**

Energy is required for cooking, heating, and lighting purposes. Individuals' access to different energy sources for cooking, heating, and lighting purposes is significant; as the burning of fuel sources such as wood, coal, and / or animal dung over extensive periods of time could result in negative health impacts for household members. Health impacts would be most significantly experienced by those vulnerable members of society, such as young children, pregnant women, and the elderly.

The significant majority (81.8%) of households within the Joe Morolong LM have access to electricity for lighting purposes. Similarly over half of the households within the LM (53.2%) make use of electricity for cooking purposes, while 51.2% of household make use of wood for heating purposes. A significant proportion (39.3%) of households within the LM make use of wood for cooking purposes, and 16.1% make use of candles for their lighting purposes.

#### **3.2.13 Access to Refuse Removal**

Approximately 81.2% of households within the Joe Morolong LM dispose of their refuse by making use of their own refuse dump, which is considered to be below the basic level of service provision for refuse removal. Approximately only 5.2% of households have their refuse removed by a local authority at least once a week, while 10.8% of households have no form of refuse removal.

### **3.3 SUMMARY OF SOCIOECONOMIC CONTEXT**

In summary, the area was found to have the following socio-economic characteristics:

- The project is proposed within the Northern Cape Province, which is South Africa's largest, but least populated Province.
- The project is proposed within the Joe Morolong LM of the John Taolo Gaetsewe District.

- The Joe Morolong LM covers an area of land 20 172km<sup>2</sup> in extent and comprises one semi-urban area, villages, and commercial farms. The LM is largely characterised by rural establishments that are mostly connected through gravel and dirt roads.
- There are Tribal authorities with 8 Paramount Chiefs present within the Joe Morolong LM's area of jurisdiction.
- The Joe Morolong LM is regarded as the poorest area in the John Taolo Gaetsewe DM.
- The Joe Morolong LM municipal population is 89 377 (Census 2011).
- The Joe Morolong LM has 168 schools, 4 police stations, 24 clinics, and 3 community health centres.
- The following mining houses are located within the Joe Morolong LM: UMK, South 32, Assmang Blackrock Mine, Tshipi-e-Ntle, Kalagadi, Kudumane Mining Resources, Baga Phadima Sand Mining, Sebilo Mine and Aqcuala mine (Sebilo and Aqcuala not yet in operation).
- Between 2001 and 2011 the Joe Morolong LM experienced a negative population growth rate of -0.9% per year. This can largely be attributed to the fact that a large number of individuals have left the LM in search of employment opportunities elsewhere.
- The Joe Morolong LM is female dominated, with females comprising approximately 53.9% of the LM population.
- Black Africans comprise the predominant population group within the Joe Morolong LM, John Taolo Gaetsewe DM, and Northern Cape Province.
- The Joe Morolong LM, John Taolo Gaetsewe DM, and Northern Cape Provincial population age structures are youth dominated. A considerable proportion of the respective populations therefore comprise individuals of the economically active population between the ages of 15 – 64.
- The Joe Morolong LM has a high dependency ratio (45.8), which is considerably higher than the John Taolo Gaetsewe DM (38.8), and Northern Cape Province (35.8).
- Education levels within the Joe Morolong LM are very low with almost a quarter (22.8%) of the population aged 20 years and older have received no form of schooling, and only 15.1% having completed Matric, with 2% having received some form of higher / tertiary education. This means that the majority of the population can be expected to have a relatively low-skill level and would either require employment in low-skill sectors, or skills development opportunities in order to improve the skills level of the area.
- The unemployment rate of the Joe Morolong LM is lower than that of the John Taolo Gaetsewe DM, however the percentage of economically inactive individuals within the Joe Morolong LM is much higher than in the John Taolo Gaetsewe DM. This could have a negative impact in terms of the local human capital available for employment.
- Household income levels are low within the area, with almost two thirds falling within the poverty level. The area can therefore be expected to have a high poverty level with associated social consequences such as not being able to pay for basic needs and services and poor living conditions.
- The primary economic activities within the Joe Morolong LM comprise mining, and agriculture; while the highest employers comprise Community Services, Agriculture, and Mining, and Quarrying
- The Joe Morolong LM and John Taolo Gaetsewe DM are poorly serviced in terms of public sector health facilities. There are no hospitals within the Joe Morolong LM; and only 3 public sector dentists within the John Taolo Gaetsewe DM, and no public sector optometrists.
- The majority of households within the Joe Morolong LM are well serviced with regards to electricity, and water, but are poorly serviced with regards to sanitation and refuse removal.

### 3.4 PROJECT COST OVERVIEW

Renewable energy projects, such as the proposed solar facility, require significant capital investment. Funds of equity and debt investors either from foreign or domestic sources are obtained. The cost requirements and potential revenue are discussed in this section, sketching a business case for the development of renewable energy projects within South Africa (specifically solar farms in the Northern Cape).

The project costs consist of two parts, capital cost and running cost. The capital cost pertains to all costs incurred for the establishment of a producing facility. The running cost relates to those costs incurred to ensure that the facility operates as it should throughout its expected lifetime.

Solar PV installations can operate for many years with relatively little maintenance or intervention. Therefore, after the initial capital outlay required for building the solar power plant, further financial investment is limited. Operating costs are also limited compared to other power generation technologies.

#### 3.4.1 Project specific costs

The Hotazel 2 detailed costing has not been completed on the date of submitting this Environmental Impact Report. The project is, however, based on the industry standard cost with capital expenditure that can amount to more or less R20-25M per megawatt installed capacity. The running cost of a solar PV facility is minimal related to the initial capital cost.

#### 3.4.2 Revenue streams

The payback of the facility results mainly from electricity sales, intended under the current governmental programme, known as the REIPPPP.

The REIPPPP portrays fixed ceiling prices for bidders to tender against in a competitive environment. The establishment of these ceiling prices is based on industry standard return on investments.

As part of the REIPPPP, preferred bidders will enter into a power purchase agreement between the IPP generator and Eskom. National treasury provides surety, while NERSA regulates the IPP licences.

The bidding and tender procedure of the REIPPPP requires an approved EIA Environmental Authorisation/Record of Decision as a gate keeping criteria, where no project would be considered without the EIA Environmental Authorisation being given.

## 4. NEED AND DESIRABILITY

In keeping with the requirements of an integrated Environmental Impact process, the DEA&DP <sup>12</sup>*Guidelines on Need and Desirability (2010 & 2011)* were referenced to provide the following estimation of the activity in relation to the broader societal needs. The concept of need and desirability can be explained in terms of its two components, where *need* refers to *time* and *desirability* refers to *place*. Questions pertaining to these components are answered in the Sections below.

Section 1.1 above considers the overall need for alternative, so-called 'green energy' considering the known environmental burdens associated with the impact of coal power generation through which most of our country's electricity is currently being generated. Associated aspects such as air pollution, water use and carbon tax are discussed in order to further explain the need and desirability for 'green energy' projects in general.

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<sup>12</sup> The Western Cape Provincial guidelines on Need and Desirability were considered in the absence of National and Northern Cape Guidelines.

### 4.1.1 Feasibility consideration

The commercial feasibility for the proposed 100MW<sub>AC</sub> Hotazel 2 to be built on private land near Hotazel, has been informed by its contextual location, and economic, social and environmental impacts and influence. The project has gathered sufficient information and conducted studies of the site and the region to make qualified and reliable assumptions on the project's various impacts.

### 4.1.2 Solar Resource & Energy Production

The arid climate experienced in the Northern Cape lends itself to the availability of high levels of solar energy. Considering the steady nature of the solar radiation at the Hotazel 2 site, the resource is sufficient to guarantee a positive return on investment.

### 4.1.3 Solar Farm & Grid Connection

Among the outstanding characteristics of the Hotazel 2 Solar site is its exceptionally flat nature, sufficient medium-low sensitivity environments, and accessible location, facilitating the delivery of bulky PV Panel infrastructure, and the construction and assembly process. The proximity of the site to the R31 and R380 decreases the impact on secondary roads and natural habitat from the traffic going to and from the solar facility during construction and operations. The proximity of the existing Eskom Hotazel Sub-Station also allows for connection via a short distribution line. As the site is not used for intensive agricultural purposes, the solar facility will not significantly interfere with the agricultural productivity of the area.

### 4.1.4 Social impact

The Northern Cape region is economically challenged due to its arid climate, challenging agricultural conditions, lack of water and limited natural resources (away from the Orange River). The Northern Cape is well-known for the large number of copper and zinc mines in the area, but since the early 1990's, many of these mines have closed down, leaving a devastating trail of unemployment behind. The local economy, mainly supported by limited agriculture, simply isn't enough to accommodate the high level of unemployment.

Private sector development is seen to offer opportunities to access Enterprise Development funds of the main mining groups. This can contribute to entrepreneurial activities linked to their supply chain. The same applies to the investment, in terms of employment opportunities and entrepreneurial activities, associated with renewable energy projects.

Power generation is one of the rare growth opportunities for the Northern Cape due to the high solar irradiation levels and its strategic position relative to the National Transmission Network. This setup creates unprecedented growth opportunities for the area and the establishment of a **renewable energy project is considered important to diversify and compliment the economic development of the region.**

### 4.1.5 Employment & Skills Transfer

The benefits of renewable energy facilities to local regions are not confined to the initial investment in the project. They also provide a reliable and on-going income for landowners and municipality, creating direct employment opportunities for locals, as well as flow-on employment for local businesses through provision of products and services to the project and its employees.

Hotazel 2 will have a positive impact on local employment. During the estimated 18-month construction phase, the project will **employ approximately 300 – 400** individuals of various qualifications. The majority will be provided by the local and district labour market. During operations, the solar facility is expected to have up to **60 employment opportunities** ranging from security staff to administration and artisans. To guarantee successful operations over the lifetime of the investment, Hotazel 2 will likely

use the skills of outside labour to **cross-train local specialists**. This cross training and skills development will take place especially in the area of technical maintenance and administration.

Note: A Social Impact Assessment has been undertaken and is appended to this report in **Annexure E7**.

#### 4.1.6 Need (time)

Is the land use considered within the timeframe intended by the existing approved Spatial Development Framework (SDF)? I.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP?

Yes, 'the employment of renewable energy technology' / development has a spatial strategic place in the Joe Morolong Municipality SDF while the need for a policy on the development of sustainable solar energy farms has been identified as Key Development Priority / Project.

Should the development occur here at this point in time?

Yes, the proposed Hotazel 2 is to be located outside the Hotazel urban edge, and would provide a welcomed diversification to the local economy and perhaps serve as a catalyst for further expansion in the stream of sustainable renewable energy development (identified as a priority development strategy IDP & SDF).

Does the community / area need the activity and the associated land use concerned?

The Joe Morolong Municipality identified the opportunity for a renewable energy project through their SDF and IDP processes, which include public participation. The proposed renewable energy development will allow for a diversification of employment, skills and contribute to the potential development of small business associated with its construction, operation and maintenance activities.

From the location near Hotazel, the proposed solar farm will contribute electricity to the constrained Northern Cape and National electrical network, contributing to a provincial and national need. Hotazel 2 has been designed to in such a way as to avoid or minimize potential negative impacts of the local environment while enhancing potential positive impacts, locally and regionally.

Are the necessary services with adequate capacity currently available?

Some services are existing and some new services are required. Hotazel 2 requires the installation of a 132 kV overhead distribution line to connect to the existing Eskom Hotazel Substation (feed into the national grid system), as well as an access road to the development site from the R31. The cost of supplying the new infrastructure will be covered by the Applicant.

The water required for the construction and operation of the solar facility will be sourced from the Joe Morolong Municipality / Groundwater and will be supplemented by stored rainwater (Proof of confirmation of availability will be included in the Environmental Impact Report).

Construction waste (General Waste) will be disposed of at the existing landfill sites - confirmation of capacity of the municipal landfill site to accept the estimated volumes of general waste will be included in the Draft Environmental Impact Report. Defunct and damaged panels identified during construction will be returned to the supplier for recycling and/or disposal.

Is this development provided for in the infrastructure planning of the municipality?

Yes. Attracting private investment and the employment of renewable energy development are identified as priority strategies to create sustainable urban and rural settlements.

Is this project part of a national programme to address an issue of national concern or importance?

Yes. In order to meet the increasing power demand within South Africa, Eskom has set a target of 30% of all new power generation to be derived from independent power producers (IPPs). Hotazel Solar

Facility 2 (Pty) Ltd is one such IPP which intends to generate up to 100MW<sub>AC</sub> of electricity from the proposed solar farm, for input into the national grid (via the existing Eskom Hotazel Sub Station).

#### 4.1.7 Desirability (place)

##### Is the development the best practicable environmental option for this land / site?

The target property is outside the Hotazel Urban Edge and as such may not be considered for an alternative land use such as urban development. The property has a poor agricultural potential due to the arid climate and other limiting factors. These factors have rendered the property vacant with limited land use option alternatives.

##### Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?

No. According to the IDP, attracting Renewable Energy Investment is seen as an IDP Strategy and economic driver to alleviate unemployment and poverty and “to ensure sustainable economic and social transformation in the District”. The performance of which would be reflected in the development of a Renewable Energy Strategy and Policy for the District by 2013 (IDP, 2012-2016).

##### Would the approval of this application compromise the integrity of the existing approved environmental management priorities for the area?

Unlikely. According to the national vegetation map (Mucina & Rutherford, 2006 and SANBI, 2018), the solar development site lies entirely within a vegetation type classified as Least Threatened (Ecosystems that cover most of their original extent and which are mostly undamaged, healthy and functioning). Considering the extent of this relatively intact ecosystem type, and the fact that the site is not highly sensitive (there are no unique, threatened or otherwise unique habitats present which are not widely available in the wider landscape), it can withstand some loss of natural area through development.

##### Do location factors favor this land use at this place?

Yes. The Northern Cape region has been identified as being one of the most viable for solar energy generation due to the following factors:

- Excellent solar radiation (compared to other regions).
- Close to existing main transport routes and access points.
- Close to connection points to the local and national electrical grid.
- Outside Critical Biodiversity areas.

##### How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas?

The alternatives considered for the solar development have been iteratively designed and informed by various investigations and assessments that considered both the natural and cultural landscapes. The natural and culturally sensitive areas have been identified and where possible, avoided to prevent negative impacts on such areas.

##### How will the development impact on people’s health and wellbeing?

The site is located outside of the Hotazel urban edge and as a result is unlikely to impact negatively on the community’s health and wellbeing.

##### Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?

Unlikely. The next best land use alternative to the solar facility is limited agriculture (the status-quo). However, the proposed solar development site does not have any significant agricultural value and has not been utilized for any intensive agricultural purposes. The carrying capacity of the site is too low to generate noteworthy financial benefit from agricultural activities. The economic benefits and

opportunities that the proposed solar development holds for the landowner and the local economy of the municipal area cannot be recovered from the current or potential agricultural activities.

The opportunity costs in terms of the water-use requirements of the solar facility are within acceptable bounds if one considers the minimal demand on the resources.

#### Will the proposed land use result in unacceptable cumulative impacts?

Unlikely. Due to the fact that Northern Cape has been identified as an area with high potential for renewable energy generation: solar irradiation and availability of vast tracts of land with low sensitivity, there are a number of on-going applications in the region already. The potential for further, future solar developments in the area cannot be discounted (as a large number have already been approved or are in progress). However, these will have synergistic benefits for the economy and growth of the area, while the contribution to cumulative habitat loss in the area associated with this and potential future solar development would be relatively small in relation to the land resources available, with low impacts restricted to the local area.

## 5. PLANNING CONTEXT

### FURTHER ACTIONS REQUIRED

A planning specialist needs to be appointed to ensure compliance with the regional and local planning legislation and to lodge necessary applications in terms of Act 70 of 1970 (Subdivision of Agricultural Land Act). Such applications are usually only lodged once the project is selected as a preferred bidder under the REIPPPP.

A Planning specialist will be appointed in order to consider the planning implications of the proposed facility. The following key components will likely take place from a planning perspective.

- A **land use change application** for the rezoning of approximately 230ha, 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).

The planning specialist will furthermore likely engage with the following authorities as part of the planning process. Where relevant, these authorities will also be engaged with as part of the Environmental Process and will be given an opportunity to provide input and comment on this

- **Joe Morolong Municipality** for approval in terms of the relevant Zoning Scheme;
- **Northern Cape Department of Agriculture** as well as the **National Department of Agriculture, Forestry & Fisheries** (DAFF) for approval in terms of Act 70 of 1970 (SALA) and Act 43 of 1983(CARA);
- **District Roads Engineer** for comment on the land use application;

- **Department of Water and Sanitation (DWS)** for comment in terms of the National Water Act and the land use application;
- **Department of Mineral Resources** for approval in terms of Section 53 of Act 28 of 2002;
- **Department of Transport & Public Works** for comment on the land use application;
- **South African Heritage Resource (SAHRA)** Agency for comment on the land use application;
- **Civil Aviation Authority** for comment on the land use application;
- **Eskom Northern Cape** for comment on the land use application; and
- **Northern Cape Nature Conservation** for comment on the land use application.

## 6. SITE SELECTION

The site selection process followed a two-stage approach; firstly, to select the property for the proposed development (Remainder of the Farm York A, 279), and secondly, to select the footprint of the proposed development within the farm portion.

### 6.1 PROPERTY SELECTION PROCESS

Please refer to the site selection matrix attached in **Annexure E11** from which the following is summarised.

#### 6.1.1 Solar resource

The proposed site was selected for the development of a solar PV facility based on the predicted solar resource, as the economic viability of a solar facility is directly dependent on the intensity of the solar resource/ global horizontal irradiation (GHI). The overarching objective for the solar energy facility is to maximise electricity production through exposure to the solar resource, while minimising infrastructure, operational and maintenance costs, as well as social and environmental impacts. The Northern Cape receives the highest average daily GHI in South Africa, with the Hotazel area exhibiting approximately 2233 kWh/m<sup>2</sup>/annum.

#### 6.1.2 Proximity to towns with a need for socio-economic upliftment.

The Site is situated near the town of Hotazel and relatively close proximity to the towns of Deben, Kathu, and Kuruman. These towns are typically masked with high rates of unemployment, as is the case in the Northern Cape. The closest cities in the area are Kimberley and Upington, which both also experience a similar level of unemployment and poverty. Consequently, local labour would be easy to source, which fits in well with the REIPPPP economic development criteria for socio-economic upliftment. Currently, a large proportion of local labour is used in the mining and agricultural industry. A few negatives related to agricultural employment are that it is very seasonal and it is not always in close proximity to their homes, forcing workers to travel large distances on a daily basis to reach their place of employment. Over the years, employment in the mining sector has shown to be very volatile.

#### 6.1.3 Access to grid

A key factor in the siting of any energy generation project is that the project must have a viable grid connection. Technical constraints, such as complex grid connections, can affect the costs of the facility and can therefore influence its economic feasibility. Solar PV facilities that are in close proximity to a grid connection point and/or demand centre are favourable and reduce the losses associated with power transmission.

The developer corresponded with Eskom network planners to understand their future demand centres as well as strategic plans to upgrade and strengthen any local networks. Hotazel 2 is intended to connect to the Eskom Hotazel Substation, which is less than 3 km from the site. The 66kV grid network between Hotazel, Kuruman and Kathu is currently being upgraded to 132kV to meet the increasing demand from



mining activity in the area. Some of these upgrades are already complete, most noteworthy being the Hotazel-Eldoret 132kV line which runs along the south eastern boundary of the site. In addition, Eskom intends to construct a 400kV transmission line from the Mookodi MTS in Vryburg through to Hotazel. Notwithstanding the fact that the Hotazel 2 will contribute to meeting the electrical demand on the distribution network, close proximity to the planned 400kV infrastructure means that in due course, surplus power can be evacuated into Eskom's Transmission System and conveyed at very high voltage for consumption elsewhere in the country.



Figure 7: Potential Grid Connection.

#### 6.1.4 Land availability

Availability of large areas with few constraints can be a restraining factor for the development of a solar PV facility. The proposed Hotazel 2 project site is approximately 230ha. This is considered sufficient for the installation of a solar PV facility, while allowing for avoidance of any sensitive areas or features that may occur within the project site.

#### 6.1.5 Landowner Support

The selection of a site where the landowner is supportive of the development of renewable energy is essential for ensuring the success of the project. The landowner does not view the development as a conflict with their current land use practices. The support from the landowner for the development to be undertaken on the affected property has been solidified by the provision of consent for the project to proceed on the property through the signing of a land lease agreement with the developer.

### 6.1.6 Topography

Sites that facilitate easy construction conditions (i.e. relatively flat topography, lack of major rock outcrops, limited watercourse crossing etc.) are favoured during site selection.

The project site consists of gently undulating topography, with slopes of less than 5% over most of the area, and with an altitude range of 1060-1080m above sea level. There are no streams or rivers located in the site. These characteristics are favourable for the construction and operation of a solar PV facility.

### 6.1.7 Site Access

Access to the project site is considered as an important characteristic as easy access is required for the transportation of project related infrastructure (materials and components) and heavy machinery during construction. This is particularly important when considering transportation costs (direct & indirect), and the impact that they have on project economics and the ability to submit a competitive bid under the Department of Energy's ("DoE") Renewable Energy Independent Power Producer Procurement Programme ("REIPPPP").

The project site can be accessed by the Regional Route 31 (R31), which runs along the southern boundary of the site.



**Figure 5:** Roads surrounding the project site.

### 6.1.8 Land use considerations.

The current land use of the site is an important consideration in terms of limiting disruption to existing land use practices. Grazing land is generally preferred as the majority of the associated farming

practices can continue in tandem with the operation of the solar PV facility. Surrounding land uses should also be assessed to ensure that the project is compatible with the surrounding area and does not present a conflicting land use.

The majority of land surrounding the Hotazel town is mining land reserved for related mining activities. The Remaining Extent (Portion 0) of the Farm York A 279 is one of the few available privately-owned land parcels suitable for solar PV development.

Agricultural land around Hotazel generally has very low agricultural potential, owing particularly to the following factors:

- The depletion of underground water resources due to mining activity;
- Periodic droughts that directly impact the ability to farm sustainably; and
- Stock theft being a persistent problem in the area and therefore resulting in low agricultural production as cattle and sheep farming, and other forms of small livestock farming prove to be challenging.

Within the proposed Hotazel 2 project site, there is no cultivated agricultural land (as a result of low agricultural potential). The land is currently used for livestock grazing. Furthermore, the landowner is currently considering alternative land use options.

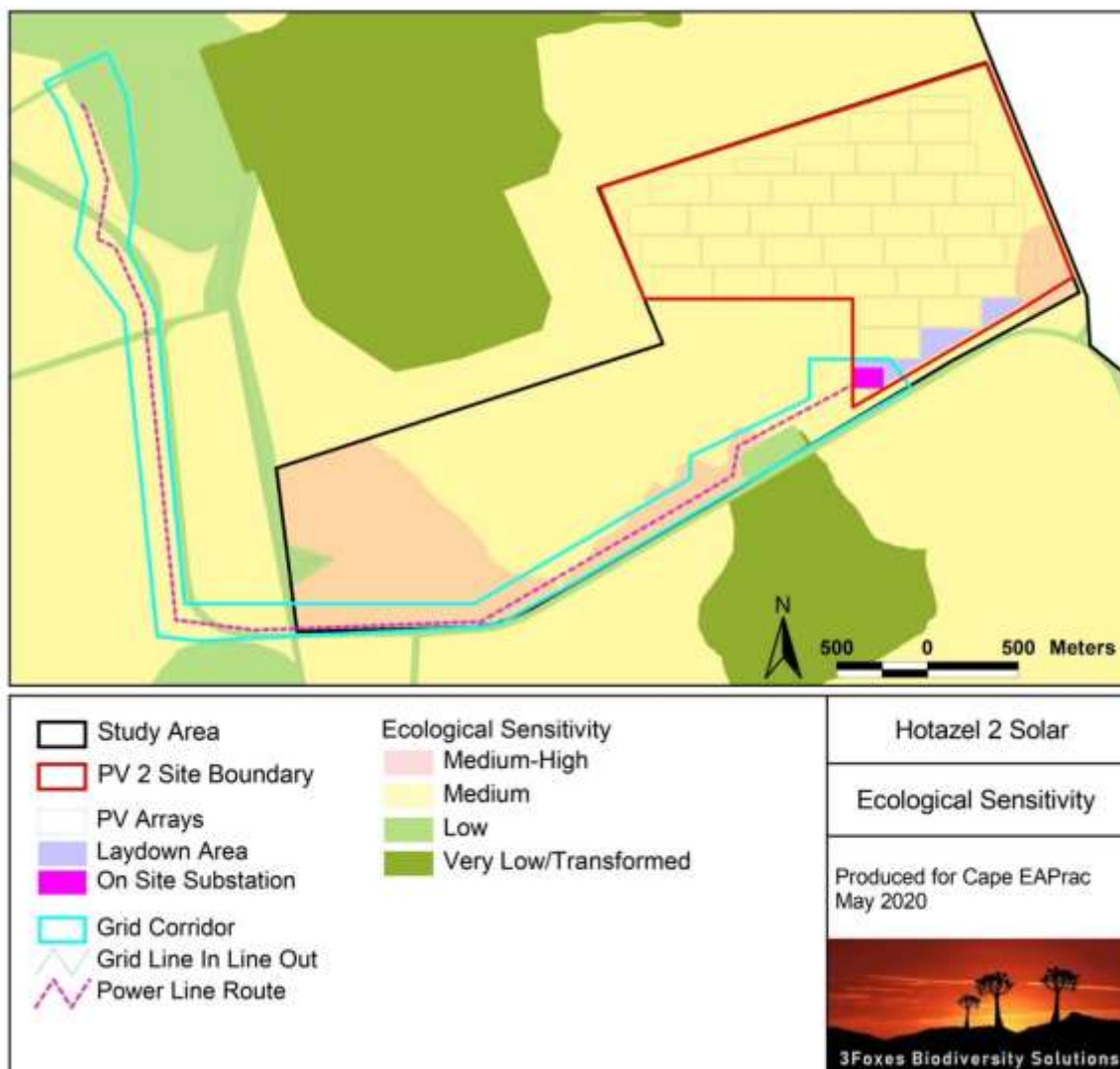
Other activities present within the surrounding areas include power lines, railway infrastructure, mining activities and the future development of other solar PV facilities that have received Environmental Authorisation. The development of Hotazel 2 is therefore compatible with the surrounding area and would not present a conflicting land-use.

## **6.2 FOOTPRINT SELECTION PROCESS**

Due to the fact that another facility (Hotazel Solar<sup>13</sup>) is also authorised on the same property as the proposed Hotazel 2, limited opportunities were available in terms of footprint selection. According to the ecological specialist, the footprint of Hotazel 2 is largely restricted to Medium sensitivity habitat, with only a very small portion in the south-eastern corner falling within habitat classified as Medium-High.

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<sup>13</sup> The Amendment process for Hotazel Solar has been finalised.



**Figure 8:** Showing Ecological Sensitivity of the proposed Hotazel 2.

## 7. CONSIDERATION OF ALTERNATIVES

The Hotazel 2 solar energy facility is to consist of solar photovoltaic (PV) technology with fixed, single or double axis tracking mounting structures, with a net generation (contracted) capacity of 100MW<sub>AC</sub> as well as associated infrastructure.

The consideration of alternatives, including technological and alignment alternatives are detailed below. Please refer to the technical design report attached in **Annexure E9** for further details in this regard.

### 7.1 LAYOUT ALTERNATIVES

It is customary to develop the final / detailed construction layout of the SEF only once an IPP is awarded a successful bid under the REIPPPP, after which major contracts are negotiated and final equipment suppliers identified. However, for the purpose of the Environmental Impact Report in accordance with the minimum requirements prescribed, a preferred layout is presented, which will be comparatively assessed with the no-go alternative.

### 7.1.1 Initial Assessment Area

The Remaining Extent (Portion 0) of the Farm York A 279, situated in the District of Hotazel in the Northern Cape Province, was identified for the development of the proposed Hotazel 2.

This was based on the favourable location characteristics which are described in section 6 above

An initial conceptual area of  $\pm 450$  ha was identified during the planning phase of the project. This area is illustrated in the figure below.



**Figure 9:** Initial Conceptual Area

The delineation of the initial conceptual area was based purely on the power lines and the regional roads that intersect the property. This area was thus an undivided piece of land that was available for the development of a Solar PV Facility.

Following the identification of the initial conceptual area, a Full Scoping and Environmental Impact Assessment (S&EIA) process was conducted to assess any environmental sensitivities in the context of the proposed development of the Hotazel Solar facility (EIA Ref No: 14/12/16/3/3/2/1086). The project was granted Environmental Authorisation (EA) on 30 May 2019. The original authorised footprint is illustrated in the figure below.



**Figure 10:** Authorised footprint for Hotazel Solar

Subsequently, Hotazel Solar has been subject to a Part 2 Amendment process<sup>14</sup> to shift the authorized project footprint by less than a kilometre towards the western boundary of the initial concept area. In doing so, there is now sufficient space for a second solar development (i.e. this application) on the eastern side of the initial concept area.

### 7.1.2 Proposed Layout

Hotazel 2 is to consist of solar photovoltaic (PV) technology with fixed, single or double axis tracking mounting structures, with a net generation (contracted) capacity of 100 MW<sub>AC</sub> (MegaWatts), as well as associated infrastructure as shown in the figure below. Please also refer to the detailed layout plan attached in Appendix D.

<sup>14</sup> The decision on this amendment process has been granted.

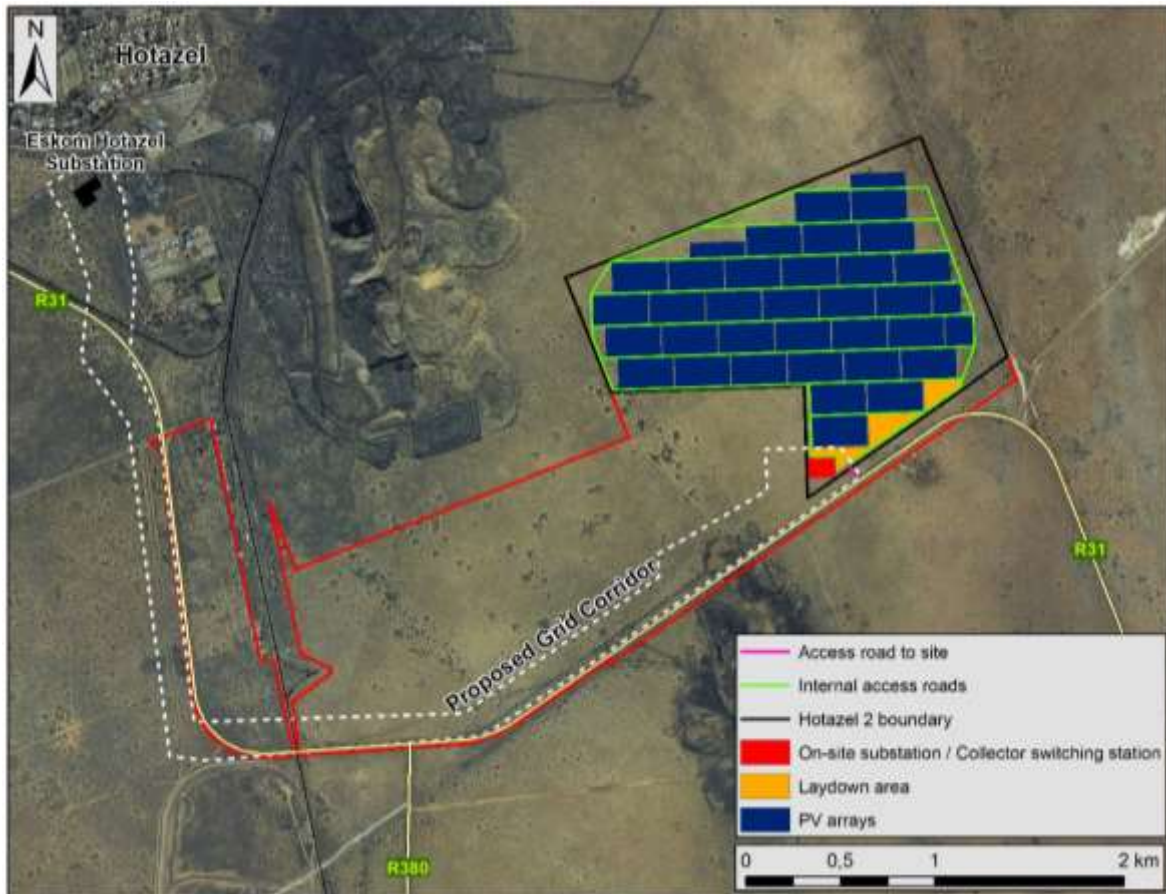


Figure 11: Proposed Hotazel 2 Layout

## 7.2 GRID CONNECTION ALTERNATIVES

Hotazel 2 is proposed to connect directly to Eskom's Hotazel Substation located  $\pm 3$ km to the north west of the property. The Hotazel 2 substation / collector switching station will be approximately 2 ha in size and feature a step-up transformer/s to transmit electricity via a 132 kV OHL directly to the Eskom Hotazel Substation. There are three alternatives proposed to connect Hotazel 2 to the Eskom Hotazel Substation as described and shown in the figure below:

- Alternative 1 (Technically Preferred):  $\pm 6.7$ km overhead 132kV powerline from the Hotazel 2 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.
- Alternative 2:  $\pm 100$ m overhead 132kV electrical transmission line 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.
- Alternative 3:  $\pm 1$ km overhead 132kV powerline from the Hotazel 2 on-site substation/ collector switching station to the Hotazel Solar collector switching station. The powerline will follow the same corridor as Option 1, but only until it reaches the Hotazel Solar collector switching station. The powerline will have a maximum height of 32m and a servitude width of between 31m and 36m.

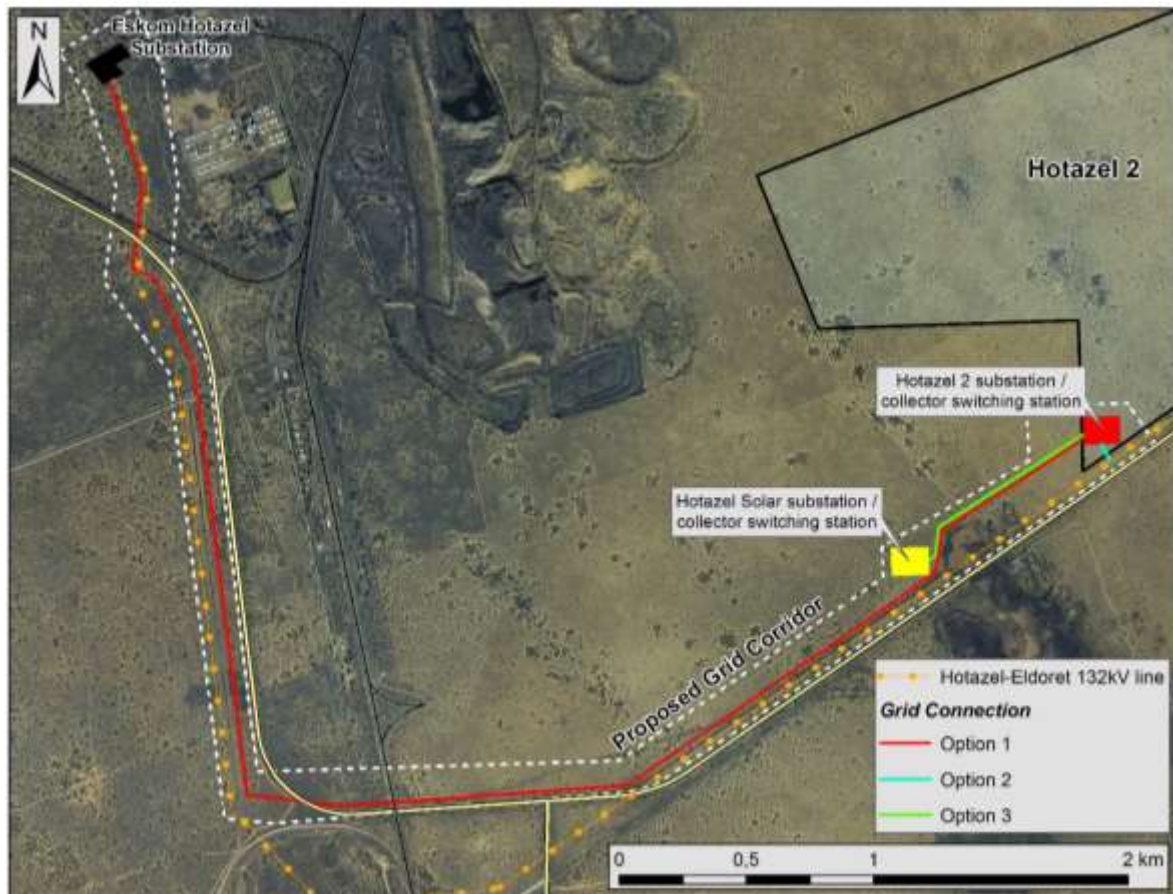


Figure 12: Grid Connection Alternatives<sup>15</sup>

### 7.3 ACCESS ROAD ALTERNATIVES

Access road alternatives were not considered in this environmental application as access can be achieved directly from the R31.

The new main access road will be approximately 100m long and up to 8m wide.

Please refer to the Traffic Impact Assessment attached in **Annexure E12** for further details regarding the access road.

<sup>15</sup> The Hotazel Solar substation indicated in the yellow polygon does not form part of this application. This shows the authorised position of the substation for Hotazel Solar.





**Figure 13:** Showing main access and internal road network.

#### 7.4 THE NO-GO ALTERNATIVE

The Status Quo Alternative proposes that Hotazel 2 not go ahead and that the area in proximity to the Eskom Hotazel substation will remain undeveloped as it is currently. The land on which Hotazel 2 is proposed is currently vacant. It is currently used for limited cattle grazing activities (which is further limited by the persistent stock theft in the area), however due to a combination of water scarcity and extreme climatic conditions, it has no potential for irrigated crop cultivation (this has been confirmed by the Agricultural Specialist in his report attached in **Annexure E3**). The area in question is also considered too small to generate noteworthy financial benefit from agricultural activities due to its low carrying capacity and other limiting characteristics.

The solar-power generation potential of the Northern Cape area, particularly in proximity to the existing and proposed substations, is significant and will persist should the no-go option be taken.

The 'No-go/Status Quo' alternative will limit the potential associated with the land and the area as a whole for ensuring energy security locally, as well as the meeting of renewable energy targets on a provincial and national scale. Should the 'no-go' alternative be considered, the positive impacts associated with the solar facility (increased revenue for the farmer, economic investment, local employment and generation of electricity from a renewable resource) will not be realised.

The no-go alternative is thus not considered a favourable option in light of the benefits associated with the proposed facility. However, it will be used as a baseline from which to determine the level and significance of potential impacts associated with the proposed solar development during the Impact Assessment phase of the on-going environmental process.

## 8. SITE DESCRIPTION AND ATTRIBUTES

The following sections provide a description of the natural environmental and built environment context of the Remainder of the Farm York A 279, Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279; and the Remaining Extent (Portion 0) of the Farm Hotazel 280 with focus on the site location for the proposed Hotazel 2.

### 8.1 LOCATION & BUILT ENVIRONMENT

The Remainder of Farm York A 279 is located in the John Taolo Gaetsewe District (previously Kgalagadi District) of the Northern Cape Province, within the jurisdiction area of the Joe Morolong Local Municipality. The property is approximately **636.794 ha** in size and is located approximately 3km south of Hotazel.

The proposed Hotazel 2 is situated directly north of the R31 and directly east of the R380.

No buildings, ruins or any other structures were noted on or the proposed solar development site.

### 8.2 GEOLOGY & CLIMATE

The following information relating to geology and climate was obtained from the Agricultural Specialist; please refer to **Annexure E3** for a full copy of his report.

#### 8.2.1 Geology

The geology of the area around and to the southeast of Hotazel is outlined on the 1: 250 000 scale geological map 2722 Kuruman.



**Figure 14:** 1:250000 Geological map of the Hotazel Area.

The Hotazel 2 PV Facility project area (including the OHL corridor options) is entirely underlain by Pleistocene to Recent aeolian sands of the **Gordonia Formation (Kalahari Group)**. The geological map as well as recent field studies in the region (Almond 2013a, 2013b) show that the Kalahari sands are extensively underlain by hardpan calcretes some of which at least can be assigned to the **Mokalanen Formation** of the Kalahari Group. Subdued linear sand dunes trending NW-SE as well as pale calcrete exposures along the Ga-Mogara River and nearby pans are clearly visible outside the present project area on satellite images. No major drainage lines or pans are visible on satellite images within the present project area but calcretes are expected here at depth beneath the cover sands.

The following account of the geology of the Hotazel region has largely been abstracted from previous PIA reports by Almond (2103a, 2013b, 2016). Ancient bedrocks of the Transvaal Supergroup and other Precambrian sediments in the Hotazel area are mantled by a thick succession of **superficial sediments** of probable Late Caenozoic (*i.e.* Late Tertiary or Neogene to Recent) age, most of which are assigned to the **Kalahari Group**. The geology of the Late Cretaceous to Recent Kalahari Group is reviewed by Thomas (1981), Dingle *et al.* (1983), Thomas & Shaw 1991, Haddon (2000) and Partridge *et al.* (2006). Other superficial sediments whose outcrop areas are often not indicated on geological maps include colluvial or slope deposits (scree, hillwash, debris flows *etc*), sandy, gravelly and bouldery river alluvium, surface gravels of various origins, as well as spring and pan sediments. The colluvial and alluvial deposits may be extensively calcretised (*i.e.* cemented with pedogenic limestone), especially in the neighbourhood of dolerite intrusions or overlying Ghaap Group carbonate rocks.

**Calcretes** or **surface limestones (QI** in Figure. 14) in the southern Kalahari Region are pedogenic limestone deposits that reflect seasonally arid climates in the region over the last five or so million years. They are briefly described by Truter *et al.* (1938) as well as Visser (1958) and Bosch (1993). The surface limestones may reach thicknesses of over 20 m, but are often much thinner, and are locally conglomeratic with clasts of reworked calcrete as well as exotic pebbles. The limestones may be secondarily silicified and incorporate blocks of the underlying Precambrian carbonate rocks. The older, Pliocene - Pleistocene calcretes in the broader Kalahari region, including sandy limestones and calcretised conglomerates, have been assigned to the **Mokalanen Formation** of the **Kalahari Group** and are possibly related to a globally arid time period between 2.8 and 2.6 million years ago, *i.e.* late Pliocene (Partridge *et al.* 2006).

Large areas of unconsolidated, reddish-brown to grey aeolian (*i.e.* wind-blown) sands of the Quaternary **Gordonia Formation (Kalahari Group; Qs** in Figure. 14) are mapped in the southern Kalahari study region. According to Bosch (1993) the Gordonia sands in the Kimberley area reach thicknesses of up to eight meters and consist of up to 85% quartz associated with minor feldspar, mica and a range of heavy minerals. The Gordonia dune sands are considered to range in age from the Late Pliocene / Early Pleistocene to Recent, dated in part from enclosed Middle to Later Stone Age stone tools (Dingle *et al.*, 1983, p. 291). Note that the recent extension of the Pliocene - Pleistocene boundary from 1.8 Ma back to 2.588 Ma would place the Gordonia Formation almost entirely within the Pleistocene Epoch. Reworked and diagenetically altered sands of probable aeolian origin in the Kimberley area are often referred to as Hutton Sands.

## 8.2.2 Climate

The Kalahari region has consistent temperatures with summer and early autumn rainfall. Winters are very dry. The wettest part of the Kalahari region appears in the east, with a mean annual precipitation of 500mm / annum, and driest in the west, with 120 mm/annum. The MAP for the whole Ecozone is 250 mm/annum. The region is classified as an arid zone with a desert climate.

**Table 7:** Climatic information for Hotazel 2.

Rainfall		Evaporation	Temperature			
Month	Monthly mm	Monthly mm	Max °C	Min °C	Mean °C	Heat units
January	63	270	33.7	18.5	26.1	499.1
February	60	284	32.4	17.9	25.1	422.8
March	79	294	29.7	15.8	22.7	393.7

Rainfall		Evaporation		Temperature		
April	33	277	25.7	11	18.8	264
May	21	210	23.2	6.1	14.6	142.6
June	08	193	20.6	2.3	11.4	33
July	00	144	20.4	2	11.2	37.2
August	03	115	23.1	4	13.6	111.6
September	06	91	23.6	8.7	17.4	222
October	16	106	29.7	12.5	21.1	344.1
November	30	154	31.7	15.2	23.4	402
December	43	213	33.0	17.4	25.2	471
Total/Mean	362	2351	27.2	10.95	19.2	

### 8.3 SOILS

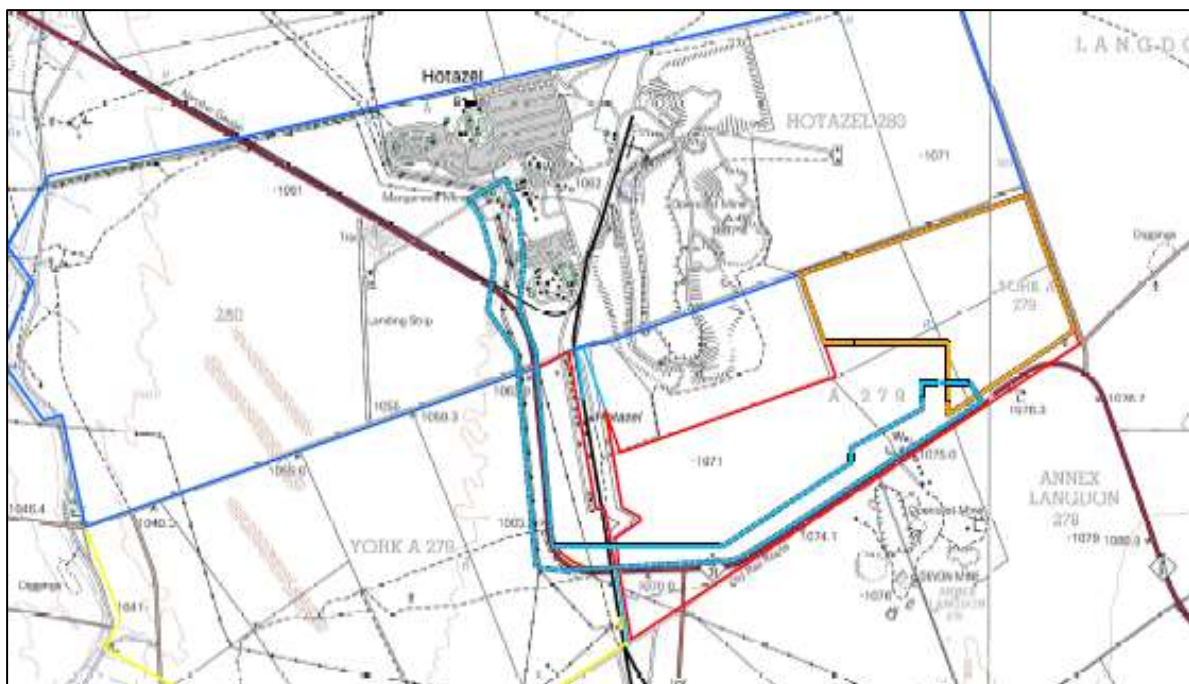
Soils in this region usually show the following characteristics:

- Soils have minimal development, are usually shallow, on hard or weathering rock, with or without intermittent diverse soils.
- Lime is generally present in part or most of the landscape.
- Red and yellow well-drained sandy soil with high base status may occur.
- Freely drained, structure less soils may occur.
- Soils may have favourable physical properties.
- Soils may also have restricted depth, excessive drainage, high erodibility and low natural fertility.

### 8.4 TOPOGRAPHY

The site has an almost level topography with the straight shape and slope gradient of 0.5 %.

Features captured on Topographical map 2722BB Hotazel include Arterial road R31, Main road R320, Railway station and railway lines, power lines, a wind pump, a communication tower, mine dumps and excavations, prominent rock outcrops, erosion and sand, a narrow gauge track, a hiking trail, cadastral and internal fences, and contours at 20 m intervals.



**Figure 15:** 1:5000 Topographical map showing the position of Hotazel 2 (Orange Polygon), affected property (Red Polygon) and Grid Connection corridor (Blue Polygon)

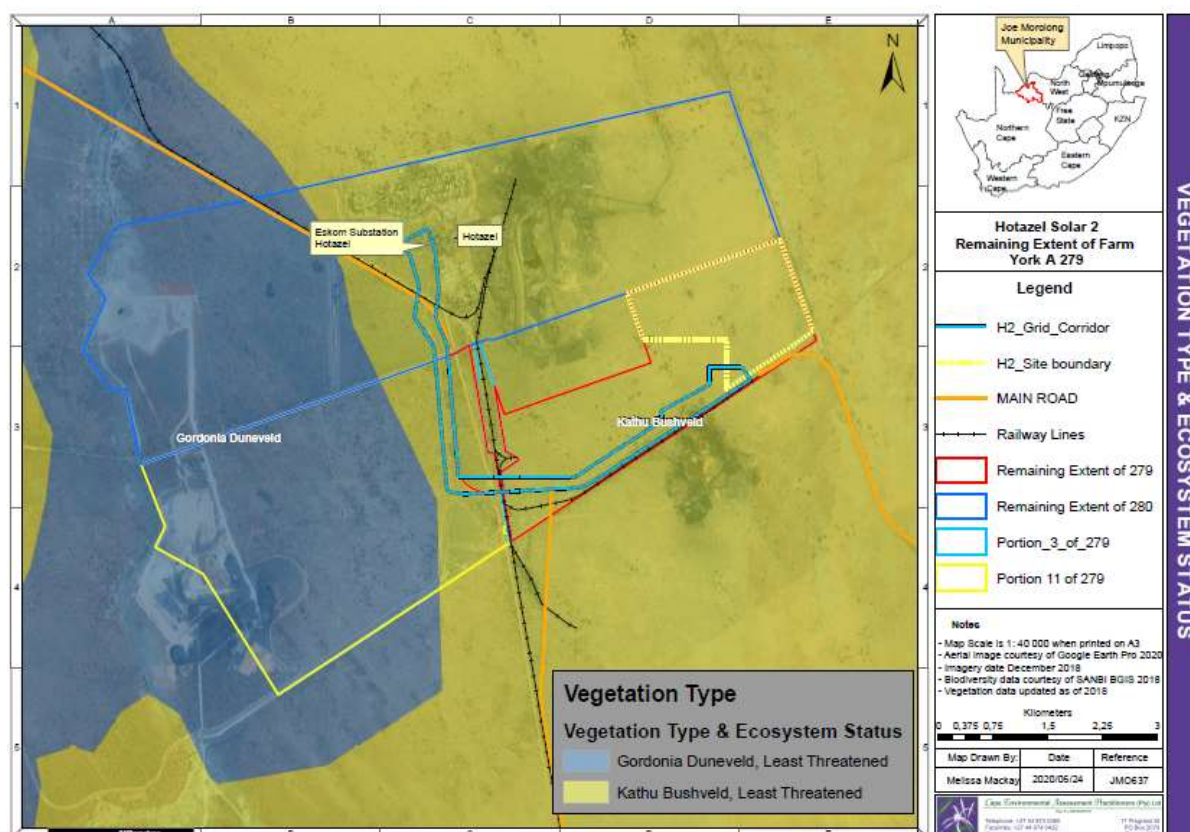
## 8.5 BOTANICAL COMPOSITION OF THE SITE

Mr Simon Todd undertook a site assessment of the entire property in order to develop a site sensitivity plan and to determine the baseline botanical composition of the site. Please refer to the Ecological Impact Assessment report attached in **Annexure E1**.

### 8.5.1 Broad-Scale Vegetation Patterns

According to the national vegetation map (Mucina & Rutherford, 2006 and SANBI, 2018), the site is restricted to the Kathu Bushveld vegetation type. This vegetation unit occupies an area of 7 443 km<sup>2</sup> and extends from around Kathu and Dibeng in the south, through Hotazel, and to the Botswana border between Van Zylsrus and McCarthysrus. In terms of soils, the vegetation type is associated with aeolian red sand and surface calcrete and deep sandy soils of the Hutton and Clovelly soil forms. The main land types are Ah and Ae with some Ag. The Kathu Bushveld vegetation type is still largely intact and less than 2% has been transformed by mining activity. Therefore, it has been classified as Least Threatened. It is however, poorly conserved and does not currently fall within any formal conservation areas. Although no endemic species are restricted to this vegetation type, a number of Kalahari endemics are known to occur in this vegetation type such as *Acacia luederitzii* var *luederitzii*, *Antheophora argentea*, *Megaloprotachne albescens*, *Panicum kalaharensis* and *Neuradopsis bechuanensis*. A more detailed site description of the vegetation is in the next section.

Other vegetation types that occur in the immediate area include Kuruman Thornveld to the east and Gordonia Duneveld to the west, neither of which is of conservation concern nor occur within the site.



**Figure 16:** Vegetation types and ecosystem types Hotazel 2.

## 8.5.2 Habitats & Plant Communities

The vegetation on the proposed property consists of Bushveld with a well-developed grass layer and a variable-density tree layer. A feature of the property, which is also clearly visible from the aerial imagery, is the presence of *Senegalia mellifera* subsp. *detinens* bush clumps. As this is a bush encroaching species, it is considered to represent a symptom of degradation and the aggregations of trees present are thus not considered sensitive. Apart from the *Senegalia mellifera* subsp. *detinens* bush clumps, *Vachellia erioloba* and *Vachellia haematoxylon* are also dominant species across large parts of the property. The density of these species increases towards the western boundary, however, this is outside of the proposed footprint for Hotazel 2. The grass layer is fairly homogenous across the site and there is not a lot a variation in the grass layer which can be ascribed to the consistent sandy substrate. Apart from the above dominant trees, other common woody species present at the site include *Zizyphus mucronata*, *Gymnosporia buxifolia*, *Senegalia haematoxylon* subsp. *detinens*, *Searsia ciliata*, *Ehretia rigida* subsp. *rigida*, *Diospyros lycioides* subsp. *lycioides* and *Grewia flava*. The grass layer is dominated by *Schmidtia pappophoroides*, *Aristida meridionalis*, *Aristida stipitata* subsp. *stipitata*, *Stipagrostis uniplumis* var. *uniplumis*, *Stipagrostis obtusa*, *Cynodon dactylon*, *Enneapogon desvauxii*, *Eragrostis lehmanniana* and *Aristida congesta* subsp. *congesta*. The density and diversity of shrubs is fairly low but includes *Asparagus laricinus*, *Asparagus retrofractus*, *Felicia muricata* subsp. *cinerascens*, *Pentzia calcarea*, *Vachellia hebeclada*, *Hermannia tomentosa*, *Gnidia polycephala* and *Lantana rugosa*. Due to the good rains preceding the site visit, forbs were abundant and included *Dicoma schinzii*, *Geigeria ornativa*, *Elephantorrhiza elephantina*, *Indigofera daleoides* var. *daleoides* and *Gisekia pharnacioides* var. *pharnacioides*.

## 8.5.3 Listed and Protected Plant Species

Two NFA-protected tree species occur at the site and within the Hotazel 2 footprint, *Vachellia erioloba* and *Vachellia haematoxylon*. The density of both species is fairly high across the whole site and it would not be possible to avoid impact on these species. Although *Vachellia erioloba* has a higher density in some parts of the site, *Vachellia haematoxylon* is widely distributed across the site and there are no areas where this species does not occur to some degree. The density of *Vachellia haematoxylon* at the site varies from less than 10 trees/ha to approximately 30 trees/ha in the higher density areas. The Hotazel 2 footprint is located within an area with below-average density of *Vachellia erioloba* and *Vachellia haematoxylon*. However, due to the consistent presence of these species across the site, a few thousand trees at minimum would likely be lost as a result of the development. Both *Vachellia erioloba* and *Vachellia haematoxylon* are however very common in the area and their loss from the development area would not compromise their local populations. Devils' Claw *Harpagophytum procumbens* is common at the site, especially in the west of the site. It is likely that several hundred individuals of this species would be affected as a result of the development of Hotazel 2, but as *H.procumbens* is common in the area, the local population would not be significantly affected by the development.

## 8.6 FAUNAL COMPONENT OF THE SITE

Mr Simon Todd undertook a site assessment of the entire property in order to develop a site sensitivity plan and to determine the baseline faunal composition of the site. Please refer to the Ecological Impact Assessment report attached in **Annexure E1**.

### 8.6.1 Mammals

The mammalian community at the site is likely to be of moderate diversity; although more than 50 species of terrestrial mammals are known from the wider area, the extent and habitat diversity of the site is too low to support a very wide range of mammals. Species observed or otherwise confirmed present at the site include Aardvark, Cape Porcupine, Spring Hare, South African Ground Squirrel, Scrub hare, Vervet Monkey, Small-spotted Genet, Yellow Mongoose, Slender Mongoose, Black-Backed

Jackal, Steenbok, Duiker and Kudu. Small mammals trapped in the area on the current or previous site visits include Desert Pygmy Mouse *Mus indutus*, Multimammate Mouse *Mastomys coucha*, Bushveld Gerbil *Tatera leucogaster*, Hairy footed Gerbil *Gerbillurus paeba*, Pouched Mouse *Saccostomus campestris* and Grey Climbing Mouse *Dendromus melanotis*.

Five listed terrestrial mammal species potentially occur in the area; these are the Brown Hyaena *Hyaena brunnea* (Near Threatened), Black-footed Cat *Felis nigripes* (Vulnerable), Leopard *Panthera pardus* (Vulnerable), Ground Pangolin *Smutsia temminckii* (Vulnerable), South African Hedgehog *Atelerix frontalis* (Vulnerable). The Leopard and Brown Hyaena are not likely to occur in the area on account of the agricultural land-use in the area which is not usually conducive to the persistence of large carnivores. The Black-footed Cat is a secretive species which occurs across most of the Northern Cape and as such is likely to be present in the broad area given that the habitat is seen as broadly suitable. The Hedgehog and Ground Pangolin may also occur in the area at typically low density. Given the extensive national ranges of these species, the impact of the development on habitat loss for these species would be minimal and a long-term impact on these species would be unlikely.

### 8.6.2 Reptiles

The Hotazel 2 site lies in or near the distribution range of more than 50 reptile species, although many of these are unlikely to occur on site, as it is restricted largely to sandy substrate and does not include rocky habitat or other habitats that are important for reptiles. No species of conservation concern are known to occur in the area. The habitat diversity within the study area is relatively low. As a result, the number of reptile species present within the site is likely to be relatively low.

Species observed at the site or in the area in the past include Serrated Tent Tortoise *Psammobates oculifer*, Cape Cobra *Naja nivea*, Ground Agama *Agama aculeata*, Spotted Sand Lizard *Pedioplanis lineocellata*, Variable Skink *Trachylepis varia*, Bibron's Blind Snake *Afrotyphlops bibronii*, Western Rock Skink *Mabuya sulcata sulcata*, Cape Gecko *Lygodactylus capensis capensis*, Speckled Rock Skink *Trachylepis punctatissima*, Striped Skaapsteker *Psammophylax tritaeniatus* and Boomslang *Dispholidus typus typus*. Impacts on reptiles are likely to be restricted largely to habitat loss within the development footprint. This is likely to be of local significance only as there are no very rare species or specialised habitats present within the proposed footprint.

### 8.6.3 Amphibians

The site lies within or near the range of 10 amphibian species, indicating that the site potentially has a moderately diverse frog community for an arid area. There is no natural permanent water or artificial earth dams within the site that would represent suitable breeding habitat for most of these species. The pans which are present at the site would occasionally contain sufficient water for breeding purposes for those species which do not require permanent water. Given the paucity of permanent water at the site, only those species which are relatively independent of water are likely to occur in the area. Species observed in the area include Eastern Olive Toad *Amietophrynus garmani* and Bushveld Rain Frog *Breviceps adspersus*, both of which are likely to occur at the site. There is no standing water on the site that could be used by amphibians for breeding purposes.

The only species of conservation concern which occurs in the wider area is the Giant Bullfrog *Pyxicephalus adspersus*. The site lies at the margin of the known distribution of this species and it has not been recorded from any of the quarter degree squares around the site, suggesting that it is unlikely to occur at the site. Impacts on amphibians are however likely to be low and restricted largely to habitat loss during construction.

## 8.7 AVIFAUNAL COMPONENT OF THE STUDY SITE

Mr Simon Todd and Mr Eric Herrmann undertook a site assessment of the entire property in order to develop a site sensitivity plan and to determine the baseline avifaunal composition of the site. Please refer to the Avifaunal impact assessment report attached in **Annexure E2**. The following baseline status of the avifaunal component of the site are summarised from this report.

An approximate total of 156 bird species are known to occur in the study area and surrounds, of which 59 species were recorded on site during the field survey. Six of these species are listed as threatened, one species is considered Near-Threatened, while a further three species (Endangered, Vulnerable and Near-Threatened) may likely occur within the area. Only two species are considered as true near-endemics to South Africa (Taylor *et al.*, 2015), while another three are considered as biome-restricted species (Marnewick *et al.*, 2015). A literature review indicates that there are no Important Bird Areas (IBAs), Coordinated Avifaunal Roadcounts (CAR) routes, or Coordinated Waterbird Counts (CWAC) wetlands in the vicinity of the study area.

The bird assemblage recorded within the study area is typical of the Kalahari bioregion. Of the 59 species recorded on site, 48 species were detected during walking transects. An average of 18.6 species were recorded per transect, with an average of 77.5 individual birds. Small passerine species made up the majority (37 species, 77%) of the species detected, compared to non-passerines (11 species, 23%). The two near-endemic species reported for the broader study area (Fiscal Flycatcher *Sigelus silens* and Karoo Thrush *Turdus smithi*) were not detected along the transects, although all three biome-restricted species were reported, namely, the Kalahari Scrub-robin *Cercotrichas paena*, Pale-winged Starling *Onychognathus nabouroup* and Burchell's Sandgrouse *Pterocles burchelli*.

The most abundant species was the Scaly-feathered Finch *Sporopipes squamifrons*, with a relative abundance of 25.0 birds/km. Other common species which occurred at significantly lower abundances included Black-chested Prinia *Prinia flavicans* (7.7 birds/km), Kalahari Scrub-robin (6.7 birds/km), and Chestnut-vented Warbler *Sylvia subcaeruleum* (6.1 birds/km). These three species were markedly more common than the next most abundant species such as Cape Turtle-dove *Streptopelia capicola*, Namaqua Dove *Oena capensis* and Fawn-coloured Lark *Calendulauda africanoides*. The remaining species all had relative abundances of less than two birds/km.

Some species showed rather clear preferences for parts of the study area. Northern Black Korhaan *Afrotis afraoides* was found exclusively in the eastern half of the site, which is less dense with fewer woody plant species and a more expansive grass layer. The Red-crested Korhaan *Lophotis ruficrista*, which prefers more closed woodland, showed the opposite trend, being detected only within the woodier western half of the site. Amongst the passerines, Desert Cisticola *Cisticola aridulus*, Fawn-coloured Lark *Calendulauda africanoides*, and White-browed Sparrow-weaver *Plocepasser mahali* also showed a distinct preference for the less woody eastern half of the site.

Red-listed species are considered fundamental to this study, because of their susceptibility to the various threats posed by solar facilities and associated infrastructures. Only six species that have been recorded in the area are threatened, while one other species is considered Near-Threatened. The most important of these is the Critically Endangered White-backed Vulture *Gyps africanus*, which has been recorded in the area previously during SABAP2 and hence has a high probability of occurring again. Two Red-listed species were recorded during the field survey, a pair of Verreaux's Eagle *Aquila verreauxii* (Vulnerable) and a single Lanner Falcon *Falco biarmicus* (Vulnerable). Both species were considered to have a high likelihood of occurring in the area. Another species of concern that may have a high probability of occurring in the study area is the Martial Eagle *Polemaetus bellicosus* (Endangered). The local populations of these species are, however, mostly of moderate importance, as the study site and surrounds most likely serve as only part of the foraging range of occasional individuals passing through.

An additional three species which have not yet been recorded in the area, but have a moderate probability of occurring, are also considered. These include the Tawny Eagle *Aquila rapax*



(Endangered), Secretarybird *Sagittarius serpentarius* (Vulnerable) and the European Roller *Coracias garrulus* (Near-Threatened). The Kori Bustard *Ardeotis kori* (Near-threatened) was recorded during SABAP1 and therefore has a moderate probability of occurring again, especially considering that the species favours open savanna as characterised by the study area.

Other red-listed species which may occur with negligible frequency and therefore are of less concern include the Vulnerable Black Stork *Ciconia nigra* and Burchell's Courser *Cursorius rufus*. The lack of suitable microhabitats such as water bodies and shrubland plains, respectively, will in all likelihood exclude these species from the site.

**Table 8:** Red-listed species recorded in the study area during SABAP1 (1987-1991), SABAP2 (2007 on-going) and the site visit.

English name	Taxonomic name	Red-list status	Estimated importance of local population	Preferred habitat	Probability of occurrence	Threats
Vulture, White-backed	<i>Gyps africanus</i>	Critically Endangered	Low	Savanna	High	Habitat loss/Disturbance Collisions/Electrocution
Eagle, Martial	<i>Polemaetus bellicosus</i>	Endangered	Moderate	Savanna & shrublands	High	Habitat loss/Disturbance Collisions/Electrocution
Eagle, Tawny	<i>Aquila rapax</i>	Endangered	Low	Savanna & Karoo plains	Moderate	Habitat loss/Disturbance Collisions/Electrocution
Courser, Burchell's	<i>Cursorius rufus</i>	Vulnerable	Low	Shrubland plains	Low	Habitat loss/Disturbance
Eagle, Verreaux's	<i>Aquila verreauxii</i>	Vulnerable	Moderate	Mountainous and rocky areas	Recorded	Habitat loss/Disturbance Collisions/Electrocution
Falcon, Lanner	<i>Falco biarmicus</i>	Vulnerable	Moderate	Widespread	Recorded	Habitat loss/Disturbance Collisions/Electrocution
Secretarybird	<i>Sagittarius serpentarius</i>	Vulnerable	Low	Open savanna & grassland	Moderate	Habitat loss/Disturbance Collisions
Stork, Black	<i>Ciconia nigra</i>	Vulnerable	Low	Water bodies	Low	Collisions
Bustard, Kori	<i>Ardeotis kori</i>	Near-threatened	Moderate	Open savanna	Moderate	Habitat loss/Disturbance Collisions
Roller, European	<i>Coracias garrulus</i>	Near-Threatened	Low	Open savanna	Moderate	Habitat loss/Disturbance

During the walking transects regular scans were made to detect any large flying birds to establish the presence of flight paths across the study area. Aside from the pair of Verreaux's Eagle seen soaring over the area at a height of approximately 150 to 200m, only Gabar Goshawk *Melierax gabar* was seen flying within the study area on one occasion. The Lanner Falcon was seen perched on the large power line on the southern boundary of the site, possibly using the pylons as vantage points during hunting forays. This power line was also observed from the study area at various times during the day on three

consecutive days to determine whether it is used by large raptors and vultures. No other red-listed species or any other large birds were seen using the pylon structures for roosting or hunting during the period of the site visit, although this does not exclude the possibility that birds may use these structures at other times of the year. No nest or communal nesting sites of red-listed species were found in the study area during the site visit, which could be due to the absence of suitably large trees in the area. These observations seem to suggest that red-listed or large communal species are not currently using the study area or parts thereof for roosting or nesting.

In essence, much of the avifauna within the study area appears similar to that found across the Kalahari bioregion of the Northern Cape. The apparent lack of red-listed species in the area could be attributed to their naturally low densities and large ranges (eagles and Secretarybird), the absence of suitable habitat (Black Stork and Burchell's Courser) and nesting/roosting trees (White-backed Vulture). However, certain species may use the study area on occasion as part of their large ranges, such as Martial Eagle and Kori Bustard, as well as the unreported Tawny Eagle and Secretarybird. However, since the study area appears not to directly support large and healthy populations of red-listed species, the sensitivity of the study area in general can be of medium significance with respect to avifauna.

## 9. IMPACT ASSESSMENT

This section of the report was completed in compliance with the approved plan of study for environmental impact assessment and with input from the following specialists:

- Ecology (Todd, 2021)
- Avifauna (Todd, 2021)
- Agricultural (Lubbe, 2021)
- Archaeology (Webley, 2021)
- Palaeontology (Almond, 2020)
- Visual (Stead, 2021)
- Freshwater (Colloty, 2020)
- Socio Economic (Savannah, 2021)

The impacts will firstly be discussed per specialist discipline and then summarised in the impact summary and statement below.

Please refer to **annexures E1 – E9** for copies of the full copies of all the specialist studies.

### 9.1 ASSESSMENT METHODOLOGY

All possible impacts are required to be assessed – the **direct, in-direct as well as cumulative impacts**. Impact criteria should include the following:

- **Nature of the impact:** impacts associated with the proposed Hotazel 2 have been described in terms of whether they are negative or positive and to what extent.
- **Duration of impacts: Impact were assessed in terms of their anticipated duration:**
  - Short term (e.g. during the construction phase)
  - Medium term (e.g. during part or all of the operational phase)
  - Permanent (e.g. where the impact is for all intents and purposes irreversible)
  - Discontinuous or intermittent (e.g. where the impact may only occur during specific climatic conditions or during a particular season of the year)
- **Intensity or magnitude: The size of the impact (if positive) or its severity (if negative):**

- Low, where the receiving environment (biophysical, social, economic, cultural etc) is negligibly affected or where the impact is so low that the remedial action is not required;
  - Medium, where the receiving environment (biophysical, social, economic, cultural etc) is altered, but not severely affected, and the impact can be remedied successfully; and
  - High, where the receiving environment (biophysical, social, economic, cultural etc) would be substantially (i.e. to a very large degree) affected. If a negative impact, could lead to irreplaceable loss of a resource and/or unacceptable consequences for human wellbeing.
- **Probability: Should describe the likelihood of the impact actually occurring indicated as:**
    - Improbable, where the possibility of the impact is very low either because of design or historic experience;
    - Probable, where there is a distinct possibility that the impact will occur;
    - Highly probable, where it is most likely that the impact will occur; or
    - Definite, where the impact will occur regardless of any prevention measures.
  - **Significance: The significance of impacts can be determined through a synthesis of the assessment criteria. Significance can be described as:**
    - Low, where it would have negligible effect on the receiving environment (biophysical, social, economic, cultural etc), and on the decision;
    - Medium, where it would have a moderate effect on the receiving environment (biophysical, social, economic, cultural etc), and should influence the decision;
    - High, where it would have, or there would be a high risk of, a large effect on the receiving environment (biophysical, social, economic, cultural etc). These impacts should have a major influence on the decision;
    - Very high, where it would have, or there would be a high risk of, an irreversible negative impact on the receiving environment (biophysical, social, economic, cultural etc) and irreplaceable loss of natural capital/resources or a major positive effect on human well-being. Impacts of very high significance should be a central factor in decision-making.
    - Provision should be made for with and without mitigation scenarios.
  - **Confidence: The level of confidence in predicting the impact can be described as:**
    - Low, where there is little confidence in the prediction, due to inherent uncertainty about the likely response of the receiving ecosystem, or inadequate information;
    - Medium, where there is a moderate level of confidence in the prediction, or
    - High, where the impact can be predicted with a high level of confidence
  - **Consequence: What will happen if the impact occurs**
    - Insignificant, where the potential consequence of an identified impact will not cause detrimental impact to the receiving environment;
    - Significant, where the potential consequence of an identified impact will cause detrimental impact to the receiving environment.
    - Provision must be made for with and without mitigation scenarios.

The impacts should also be assessed in terms of the following aspects:

- **Status of the impact**

The specialist should determine whether the impacts are negative, positive or neutral (“cost – benefit” analysis). The impacts are to be assessed in terms of their effect on the project and the environment. For example, an impact that is positive for the proposed development may be negative for the environment. It is important that this distinction is made in the analysis.

- **Cumulative impact**

Consideration must be given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts must be evaluated with an assessment of similar developments planned and already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

Care must be taken to ensure that where cumulative impacts can occur that these impacts are considered and categorised as **additive** (incremental or accumulative); **interactive**, **sequential** or **synergistic**.

Based on a synthesis of the information contained in the above-described procedure, the specialists assessed the potential impacts in terms of the following significance criteria:

- **No significance:** The impacts do not influence the proposed development and/or environment in any way.
- **Low significance:** The impacts will have a minor influence on the proposed development and/or environment. These impacts require some attention to modification of the project design where possible, or alternative mitigation.
- **Moderate significance:** The impacts will have a moderate influence on the proposed development and/or environment. The impact can be ameliorated by a modification in the project design or implementation of effective mitigation measures.
- **High significance:** The impacts will have a major influence on the proposed development and/or environment.

## 9.2 AGRICULTURAL IMPACTS

Mr Christo Lubbe, an agricultural specialist, undertook an agricultural impact assessment of the proposed Hotazel 2 from which the following is drawn. A full copy of the agricultural impact assessment is attached in **Annexure E3** of this report.

The objectives of Mr Lubbe’s study were to consider the possibility of temporary and permanent impacts, including the potential cumulative impact of multiple facilities, on agricultural production that may result from the construction and operation of Hotazel 2.

Geology and climate dictates the soil characteristics to be found in this location, which is a sandy textured soil with low cohesive structure. The soil will have a high base status due to low leaching that took place.

The soil and climate combination restricts cash crop production, due to low water retention, excessive drainage, low nutrient absorption with high fertilizer requirements and high susceptibility to wind erosion.

The arid conditions restrict choice of crops to be planted. Due to the limiting conditions set out above, including continual stock theft, the site is classified as Class VI capability, in terms of which it is unsuited for cultivation and restricts utilisation to grazing, woodland or wildlife.

The concentration of mines in the area increases the need for infrastructure to support the mining activities. These include urbanisation, railways, roads and electricity provision. These all impact on agricultural land.

Potential impacts of the PV development on the agricultural environment have been identified as:

- **Loss of agricultural land**

The total size of the farm is 636 ha. With a carrying capacity of 13 ha /LSU 48 large stock units are the maximum animals allowed for sustained grazing on the farm. The proposed PV facility will have a footprint of 230ha which means a loss of 18 large stock units. This is not considered to be a viable agricultural unit

- **Erosion and change of drainage patterns**

With the construction, the removal of vegetation makes the area vulnerable to wind erosion. Mitigating measures should be put in place to control possible erosion. Change of drainage patterns should be addressed, although the flat slope and high infiltration rate ensure a low risk for it to happen.

- **Pollution**

The construction of the facility may impact on the soil due to possible spillages of concrete and fuel. These three aspects will form the baseline of investigation during the impact assessment.

### 9.2.1 Construction Phase Agricultural Impacts

The table includes an assessment of the construction phase agricultural impacts associated with Hotazel 2 and its associated infrastructure.

**Table 9:** Assessment of potential agricultural impacts during the construction phase of Hotazel 2.

<b>Soil pollution:</b>	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.	
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Medium Term	Very short
<b>Magnitude</b>	Low	Minor
<b>Probability</b>	Probable	Probable
<b>Significance</b>	Low	Low
<b>Status (Positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partly reversible	Fully reversible
<b>Irreplaceable loss of Resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>	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 which drains to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.	
<b>Cumulative impacts:</b>	No cumulative impacts, all impact are limited to the impacted area.	
<b>Residual Risks:</b>	No.	

<b>Loss of agricultural land</b>	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 230 ha in size. This includes the area under PV panels, internal service roads and temporary laydown area.	
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local – Regional	Local

<b>Duration</b>	Long-term	Long-term
<b>Magnitude</b>	Moderate	Low
<b>Probability</b>	Probable	Improbable
<b>Significance</b>	Medium	Low
<b>Status (Positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of Resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>	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. Existing road alignments should be followed where possible.	
<b>Cumulative impacts:</b>	Impact is low due to the low agricultural potential of the area. However, with increasingly adding facilities, the impact may become more significant if the facilities don't adhere to mitigation measures.	
<b>Residual Risks:</b>	No, after decommissioning this impact will be reversed when rehabilitation has been completed.	

<b>Risk of erosion</b>	The construction of a PV Solar facility will cause impairment of the land capability with the potential risk of erosion.	
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Short term	Short term
<b>Magnitude</b>	Low	Low
<b>Probability</b>	Probable	Probable
<b>Significance</b>	Medium	Low
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>	Clear trees and bushes selectively, leaving grass un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.	
<b>Cumulative impacts:</b>	No cumulative impacts are expected to occur, as all impacts will be site bounded.	
<b>Residual Risks:</b>	No. Effected areas will be rehabilitated, as the impact will only be applicable during construction phase.	

<b>Change in drainage patterns</b>	The establishment of the PV Solar facility may alter drainage patterns with construction and cause erosion.	
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Long term	Long term
<b>Magnitude</b>	Low	Low
<b>Probability</b>	Probable	Probable
<b>Significance</b>	Low	Low
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>	Establish structures on the contour. Use grass strips to regulate flow speed	
<b>Cumulative impacts:</b>	No, all impacts will be site bounded.	
<b>Residual Risks:</b>	No. Effected areas will be rehabilitated when operation has ceased.	

## 9.2.2 Operational Phase Agricultural Impacts

The table includes an assessment of the operational phase agricultural impacts associated with Hotazel 2 and its associated infrastructure.

**Table 10:** Assessment of potential agricultural impacts during the operational phase of Hotazel 2.

<b>Soil pollution</b>	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.	
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Long Term	Long Term
<b>Magnitude</b>	Low	Minor
<b>Probability</b>	Probable	Probable
<b>Significance</b>	Low	Low
<b>Status (Positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partly reversible	Fully reversible
<b>Irreplaceable loss of Resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>	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.	
<b>Cumulative impacts:</b>	No, site-bound.	
<b>Residual Risks:</b>	Yes, It is impossible to clear the affected area completely.	

## 9.2.3 Decommissioning Phase Agricultural Impacts

All components of the facility should be dissembled and roads demolished. Rehabilitation should focus on:

- Demolish and removal of structures;
- Demolish related roads;
- Establish cultivation environment;
- Stabilisation of erosion; and
- Reinstall camp fences and stock watering

The table below includes an assessment of the decommissioning phase agricultural impacts associated with Hotazel 2 and its associated infrastructure.

**Table 11:** Assessment of potential agricultural impacts during the decommissioning phase of Hotazel 2.

<b>Soil pollution</b>	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.	
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Medium Term	Very short
<b>Magnitude</b>	Low	Minor
<b>Probability</b>	Probable	Probable
<b>Significance</b>	Low	Low
<b>Status (Positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partly reversible	Fully reversible
<b>Irreplaceable loss of Resources?</b>	Yes	Yes

<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>	All structures used to contain any fuels or Hazardous substances must be totally decommissioned / removed in compliance with the approved EMPr.	
<b>Cumulative impacts:</b>	No, site-bound.	
<b>Residual Risks:</b>	Yes, It is impossible to clear the affected area completely.	

### 9.2.4 Cumulative Agricultural Impacts

To assess the cumulative impacts, the specialist utilised an overview map showing the land capability, drainage and grazing capacity to identify possible impacts that may accumulate as similar developments are developed in a 30 km radius from this facility.

According to the specialist, consideration was given to seven PV power facilities within in a 30km radius, including the two on the current property

The following cumulative impacts on the agricultural environment were identified:

- Loss of agricultural land;
- Altering drainage patterns; and
- Changing agricultural character to industrial

These potential cumulative impacts are discussed separately below.

#### Loss of agricultural land

According to the screening report for the combined sensitivity relative to the agricultural theme within the strategic transmission corridor zone was medium.

The total area in which these facilities will be erected is classified as land only suitable for grazing, woodland or wildlife (Class VII). The suggested grazing capacity is 11-13 ha/Large Stock Unit.

With every additional facility, the loss in land use will increase with 220 ha or 20 LSU on average.

The land loss will only be temporary (for the time it is leased for the facility). Thereafter it will be returned to the owner, in a rehabilitated condition.

#### Altering drainage patterns

The facilities are located in a low rainfall area with level topography and on soil with a very fast infiltration rate, from which a low runoff is expected. The other facilities within 30km are positioned on the lowest point in the relief sequence and close to the river, therefore not effecting any drainage patterns. Hotazel 2 would also have no influence on the drainage patterns of the mines, due to the topography and their locality.

#### Changing agricultural character to industrial

The concentration of mines in the area increases the need for infrastructure to support the mining activities. These include urbanisation, railways, roads and electricity provision. These all impact on agricultural land. The agricultural character of the farm is already changed with all the industrial activities surrounding it and the site lies within the Strategic Transmission Corridor

### 9.2.5 Conclusion of Agricultural specialist

The agricultural specialist confirmed that the proposed PV facility is planned on a site with a high coincidence of natural and manmade features. Geology and climate dictates the soil characteristics, which is a sandy textured soil with low cohesive structure. The soil has a high base status due to low leaching.



The soil and climate combination restricts cash crop production, due to low water retention, excessive drainage and high susceptibility to wind erosion. The arid conditions also restrict the choice of crops to cultivate.

Due to the limiting conditions set out in this report, the site is classified as Class VII capability. In terms of this classification, it is unsuited for cultivation and restricts utilisation to grazing, woodland or wildlife.

The concentration of mines in the area increases the need for infrastructure to support the mining activities. These include urbanisation, railways, roads and electricity provision. These developments all affect agricultural land. The construction of Hotazel 2 in combination with Hotazel Solar, will occupy the whole of the Remaining Extent of farm York A 279. However, the farm is surrounded by mining activities and its supporting infrastructure, which handicapped the management of normal cattle farming activities. Simultaneously, the farm has a low agricultural potential.

Due to the low agricultural potential of the site, which makes it unsuitable for cultivation, the agricultural specialist concluded that Hotazel 2 can be authorised from an Agricultural Perspective.

### 9.3 TERRESTRIAL ECOLOGY IMPACTS

Mr. Simon Todd, of 3 Foxes Biodiversity Solutions, conducted a Terrestrial Ecology Sensitivity Analysis of the entire property as well as an impact assessment for the proposed Hotazel 2 (see **Annexure E1** for full report), from which the following is drawn.

The Terrestrial Ecology Specialist identified the following impacts associated with Hotazel 2.

#### Impacts on vegetation and protected plant species

Several protected species, which may be impacted by the development, occur at the site, most notably *Vachellia erioloba* and *V. haematoxylon*. Vegetation clearing during construction will lead to the loss of currently intact habitat within the development footprint and is an inevitable consequence of the development. This impact will be assessed for the construction phase as this is when the impact will occur, although the consequences will persist for a long time after construction.

#### Direct faunal impacts

Increased levels of noise, pollution, disturbance and human presence during construction will be detrimental to fauna. Sensitive and shy fauna would move away from the area during the construction phase as a result of the noise and human activities present. Some slow-moving species would not be able to avoid the construction activities and might be killed. Some impact on fauna is highly likely to occur during construction as well as operation of the facility. Therefore, this impact will be assessed for both the construction and operational phase.

#### Reduced ability to meet conservation obligations & targets

The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets. Although the receiving vegetation type in the study area is classified as Least Threatened and is still more than 98% intact, it is a relatively restricted vegetation type for an arid area and is therefore vulnerable to cumulative impact. This impact is therefore assessed in light of the current development as well as any other developments in the surrounding area which would also contribute to cumulative impacts.

#### Impact on broad-scale ecological processes

Transformation of intact habitat on a cumulative basis would contribute to the fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations. Due to the presence of a number of other renewable energy and mining developments in the area, this is a potential cumulative impact of the development that is assessed.

### 9.3.1 Construction Phase Ecological Impacts

The table below includes the assessment of Terrestrial Ecology impacts that were identified for the construction phase of Hotazel 2.

**Table 12:** Assessment of potential terrestrial ecology impacts during the construction phase of Hotazel 2

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		
Hotazel 2	Local	Long-Term	Medium	Definite	Low	Medium Negative	Medium Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> <li>• 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.</li> <li>• Vegetation clearing to commence only after walk through has been conducted and necessary permits obtained.</li> <li>• 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.</li> <li>• Environmental Control Officer (ECO) to provide supervision and oversight of vegetation clearing activities within sensitive areas.</li> <li>• Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.</li> <li>• All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the construction area.</li> <li>• Temporary lay-down areas should be located within previously transformed areas or areas that have been identified as being of medium sensitivity. These areas should be rehabilitated after use.</li> </ul>								

Nature of impact	Direct Faunal Impacts During Construction							
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
Without Mitigation						With Mitigation		
Hotazel 2	Local	Short-Term	Medium	High	High	Medium	Medium-Low Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> <li>• 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.</li> <li>• Any fauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.</li> <li>• All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.</li> </ul>								

- 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 13:** Assessment of potential terrestrial ecology impacts during the construction phase of Hotazel 2 Powerline

Nature of Impact								
Impacts on vegetation and listed or protected plant species resulting from power line construction activities								
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Grid Connection Alt 1 (Preferred)	Local	Long-Term	Moderate	High	Moderate	Medium-Low Negative	Low Negative	High
Grid Connection Alt 2	Local	Long-Term	Moderate	Low	High	Low Negative	Very Low Negative	High
Grid Connection Alt 3	Local	Long-Term	Moderate	Moderate	Moderate	Low Negative	Low Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> <li>• 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.</li> <li>• Construction and vegetation clearing to commence only after walk through has been conducted and necessary permits obtained.</li> <li>• 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>Vachellia erioloba</i> individuals. DAFF has a guideline available for tree clearing and trimming within power line servitudes which should serve as a guide.</li> <li>• 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.</li> <li>• 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.</li> <li>• Temporary lay-down areas should be located within previously transformed areas or areas that have been identified as being of medium sensitivity.</li> </ul>								

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 Alt 1	Local	Short-Term	Medium-Low	High	High	Medium-Low Negative	Low Negative	High

Grid Connection Alt 2	Local	Short-Term	Low	Low	High	Low Negative	Very Low Negative	High
Grid Connection Alt 3	Local	Short-Term	Low	Medium	High	Low Negative	Low Negative	High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>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.</li> <li>Any fauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.</li> <li>All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>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.</li> <li>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.</li> </ul>								

### 9.3.2 Operational Phase Ecological Impacts

The table below includes the assessment of Terrestrial Ecology impacts that were identified for the operational phase of Hotazel 2.

**Table 14:** Assessment of potential terrestrial ecology impacts during the operational phase of Hotazel 2

Nature of Impact	Faunal Impacts due to operational activities							
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Hotazel 2	Local	Long-term	Medium-Low	Moderate	High	Medium-Low Negative	Low-Negative	High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>Any potentially dangerous fauna such as snakes or fauna threatened by the maintenance and operational activities should be removed to a safe location.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>								

### 9.3.3 Decommissioning Phase Ecological Impacts.

The Decommissioning Ecological Impacts associated with Hotazel 2 are deemed to be the same as the construction phase impacts. Please refer to the table above for further information in this regard.

### 9.3.4 Cumulative Ecological Impacts

The following are the cumulative impacts that are assessed as being a likely consequence of the development of the Hotazel 2 Facility. These are assessed in context of the extent of the current site, other developments in the area as well as general habitat loss and transformation resulting from mining and other activities in the area.

The table below includes the assessment of Terrestrial Ecology impacts that are cumulatively applicable to Hotazel 2.

**Table 15:** Assessment of potential cumulative terrestrial ecology impacts for Hotazel 2

Nature of impact	Reduced ability to meet conservation obligations & targets due to cumulative habitat loss							
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
Without Mitigation						With Mitigation		
Hotazel 2	Regional	Long-Term	Low	Low	Moderate	Low Negative	Low Negative	Moderate-High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>The development footprint should be kept to a minimum and natural vegetation should be encouraged to return to disturbed areas.</li> <li>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.</li> </ul>								

Nature of Impact	Impact on broad-scale ecological processes due to cumulative loss and fragmentation of habitat							
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
Without Mitigation						With Mitigation		
Hotazel 2	Regional	Long-Term	Medium	Moderate	Low	Medium-Low Negative	Low Negative	Moderate-High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>Minimise the development footprint as far as possible. A cover of indigenous grasses should be encouraged and maintained within the facility. This prevents the invasion of weeds and is the easiest to manage in the long-term.</li> <li>The facility should be fenced off in a manner which allows small fauna to pass through the facility. 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.</li> </ul>								

### 9.3.5 Conclusion of Terrestrial Ecology Specialist

The Terrestrial Ecologist concluded the following in respect of the proposed Hotazel 2 and associated infrastructure.

The vegetation of the Hotazel 2 site consists of Kathu Bushveld with a relatively high abundance of *Vachellia erioloba* and *Vachellia haematoxylon*. Although relatively large numbers of *Vachellia haematoxylon* (3000-6000) would potentially be lost as a result of the development, the extent to habitat loss (230 ha) is not seen as being highly significant for this species and is of local relevance only. Therefore, it is not seen as sufficient to warrant an offset or other similar off-site mitigation measures.

Cumulative impacts in the area are a concern due firstly to the mining activity that characterises the area and secondly due to the proliferation of solar energy development in the wider Hotazel-Kathu area. In terms of habitat loss, the affected Kathu Bushveld vegetation type is still approximately 90% intact and while this is not a very extensive vegetation type, the loss of 230ha of habitat is not considered highly significant, especially given the spatial context of the site adjacent to mining, railway and road footprint areas. In terms of potential losses to landscape connectivity, the location of the site in an impacted area indicates that it is not likely to be important for faunal movement. As such, the overall cumulative impact of the development is considered likely to be low. This is also supported by the fact that the area has not been identified as being a CBA or NPAES Focus Area.

The on-site grid connection options with the loop-in loop-out connection to the 132kV line that traverses the site are preferable to the preferred connection to the Eskom Hotazel substation as the former would generate minimal ecological impact. There are however no impacts associated with the preferred grid connection that are considered to be of high significance and which cannot be mitigated to an acceptable level.

The development footprint of Hotazel 2 is restricted largely to low and moderately sensitive habitat typical of the wider Hotazel area. The affected area is considered suitable for development and there are no impacts associated with the Hotazel 2 facility that cannot be mitigated to a low level. As such, there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. Based on the layout provided for the assessment, Hotazel 2 can be supported from a terrestrial ecology point of view.

The Hotazel 2 Grid Connection with associated infrastructure is likely to generate low impacts on fauna and flora after mitigation. No high impacts that cannot be avoided were observed. Therefore, from a flora and terrestrial fauna perspective, there are no reasons to oppose the development of the grid connections and associated infrastructure.

## 9.4 AVIFAUNAL IMPACTS

Mr Simon Todd and Mr Eric Herrmann undertook a site assessment of the entire property in order to develop an avifaunal site sensitivity plan and to determine the baseline avifaunal composition of the site. An impact assessment was then undertaken for Hotazel 2 and the associated infrastructure. Please refer to the Avifaunal impact assessment report attached in **Annexure E2**.

According to a position statement by Birdlife South Africa, the main concerns with PV facilities are the following:

- Displacement or the exclusion of nationally and/or globally threatened, rare, endemic, or range-restricted bird species from important habitats.
- Loss of habitat and disturbance of resident bird species caused by construction, operation and maintenance activities.
- Collision with the solar panels, which may be mistaken for water bodies.

- Collision and electrocution caused when perching on or flying into associated power line infrastructure.
- Habitat destruction and disturbance/exclusion of avifauna through construction (short-term) and maintenance (long-term) of new power line infrastructure.
- Habitat destruction and disturbance of birds caused by the construction and maintenance of new roads and other infrastructure.

According to the avifaunal specialist, potential avifaunal impacts resulting from the development of the Hotazel 2 would stem from a variety of different activities and risk factors associated with the preconstruction, construction and operational phases of the project including the following:

#### Habitat loss and disturbance of small passerines

For the smaller passerine species the most important impacts will involve displacement from the area encompassed by the development footprint as a result of habitat destruction. The loss of habitat will be permanent while disturbance may be continuous during the operational phase of the solar facility. Other impacts such as disturbances caused by reflective panels and grid connecting power lines are not likely to have any appreciable impact on these small species. The impacts in general can be expected to be minimal as these smaller species are far less susceptible to the associated impacts than larger species.

#### Habitat loss, disturbance and collision risk of medium terrestrial birds and raptors

Small to medium sized non-passerines that may be impacted to some extent due to habitat loss and displacement include resident raptors such as Gabar Goshawk *Micronisus gabar*, Pale Chanting Goshawk *Melierax canorus*, Greater Kestrel *Falco rupicoloides*, and the ground-dwelling Burchell's Sandgrouse *Pterocles burchelli*, Northern Black Korhaan *Afrotis afroides*, and Red-crested Korhaan *Lophotis ruficrista*. These species may also be susceptible to collisions with associated infrastructure such as the PV panels and power lines, but this is not expected to have a major impact on most of these species. Northern Black Korhaan, Red-crested Korhaan, and potentially unrecorded francolin species may, however, be at more risk based on the recent research (Visser, 2016).

#### Habitat loss, disturbance and collision risk of large terrestrial birds and raptors

The group of primary concern is the medium to large non-passerines, which include the large terrestrial birds and diurnal raptors. Many of these are also red-listed, such as White-backed Vulture, Martial eagle, Verreaux's Eagle, Kori Bustard, Secretarybird and Tawny Eagle. Besides the loss of habitat that these species will experience, disturbances during construction and maintenance of the facility are also expected to have a negative impact. In addition, most of these species are also highly susceptible to collisions with power lines owing to reduced ability to see the power lines and reduced manoeuvrability in flight to avoid collisions (Martin & Shaw, 2010; Jenkins *et al.*, 2010). A high number of large terrestrial birds, including the red-listed species, are killed in substantial numbers by existing and newly erected power lines in the country (Jenkins *et al.*, 2010; Jenkin *et al.*, 2011; Shaw, 2013). An additional threat faced by the large raptors is electrocution when perched or attempting to perch on power line structures (Lehman *et al.*, 2007).

### 9.4.1 Construction Phase Avifaunal Impacts

The table below includes the assessment of Avifaunal impacts that were identified for the construction phase of Hotazel 2.

**Table 16:** Assessment of potential Avifaunal impacts during the construction phase of Hotazel 2

Nature of impact	Direct Avifaunal Impacts During Construction – habitat loss and disturbance						Significance and Status	Confidence level
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Without Mitigation		

Hotazel 2	Local	Short-Term	Medium	High	High	Medium Negative	Medium-Low Negative	High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>The destruction of habitat during construction should be strictly contained within the development footprint.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>Sensitive microhabitats should be avoided, such as nesting sites during the breeding season of large terrestrial birds (generally summer; Hockey <i>et al.</i>, 2005).</li> <li>Any avifauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.</li> <li>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.</li> <li>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.</li> </ul>								

**Table 17:** Assessment of potential Avifaunal impacts during the construction phase of Hotazel 2 grid connection

Impact Nature		Direct Avifaunal Impacts During Construction						
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Grid Connection Alt 1	Local	Short-Term	Medium-Low	High	High	Medium-Low Negative	Low Negative	High
Grid Connection Alt 2	Local	Short-Term	Low	Low	High	Low Negative	Very Low Negative	High
Grid Connection Alt 3	Local	Short-Term	Low	Medium	High	Low Negative	Low Negative	High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>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.</li> <li>Any avifauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.</li> <li>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.</li> <li>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.</li> </ul>								



- 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 line 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.

**9.4.2 Operational Phase Avifaunal Impacts**

The table below includes the assessment of Avifaunal impacts that were identified for the operational phase of Hotazel 2.

**Table 18:** Assessment of potential Avifaunal impacts during the operational phase of Hotazel 2

Nature of Impact	Avifaunal Impacts due to operational activities – disturbance and collisions with PV panels							
	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Hotazel 2	Local	Long-term	Medium-Low	Moderate	High	Medium-Low Negative	Low-Negative	High
Mitigation/Management Actions								
<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• All food waste and litter at the site should be placed in bins with lids and removed from the site on a regular basis.</li> <li>• 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.</li> </ul>								

**Table 19:** Assessment of potential Avifaunal impacts during the operational phase of Hotazel 2 Grid Connection

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	
Content for Table 19 is not provided in the image									

Grid Connection Alt 1	Local	Long-Term	Medium-Low	High	High	Medium-Low Negative	Low Negative	High
Grid Connection Alt 2	Local	Long-Term	Low	Low	High	Low Negative	Very Low Negative	High
Grid Connection Alt 3	Local	Long-Term	Low	Low	High	Low Negative	Very Low Negative	High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>								

### 9.4.3 Decommissioning Phase Avifaunal Impacts.

The Decommissioning Avifaunal Impacts associated with Hotazel 2 are deemed to be the same as the construction phase impacts. Please refer to the tables above for further information in this regard.

### 9.4.4 Cumulative Avifaunal Impacts

The following are the cumulative impacts that are assessed as being a likely consequence of the development of the Hotazel 2 Facility. These are assessed in context of the extent of the current site, other developments in the area as well as general habitat loss and transformation resulting from mining and other activities in the area.

**Table 20:** Assessment of Cumulative Avifaunal Impacts.

<b>Nature of Impact</b>	Broad-scale avifaunal impacts due to cumulative loss and fragmentation of habitat							
Alternative	Spatial Extent	Duration	Intensity	Probability	Reversibility	Significance and Status		Confidence level
						Without Mitigation	With Mitigation	
Hotazel 2	Regional	Long-Term	Medium	Moderate	Low	Medium-Low Negative	Medium Low Negative	Moderate-High
<b>Mitigation/Management Actions</b>								
<ul style="list-style-type: none"> <li>Minimise the development footprint as far as possible.</li> <li>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, 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.</li> </ul>								

### 9.4.5 Conclusion of Avifaunal Specialist

The study area lies within the Kalahari bioregion and supports the typical avifaunal assemblage expected for the area. Although six threatened and one near-threatened species are known to occur within the broader study area, most of these are not common in the area and probably occur in low numbers. Furthermore, the vegetation of the study area supports few species or features of concern present across most of the site, such as nesting or roosting sites of red-listed species. Impacts on avifauna with the development on this site are likely to be medium-low and no high post-mitigation impacts are likely.

The expected impacts of the proposed solar development area will include the following, 1) habitat loss and fragmentation associated with transformation and loss of the *Acacia haematoxylon* savanna within the development footprint, 2) disturbance and displacement caused during the construction and maintenance phases, and 3) direct mortality of avifauna colliding with solar panels and associated power line structures, as well as electrocutions with power line infrastructure, and 4) a cumulative habitat loss at a broader scale from development impacts in the broader area. Habitat loss and disturbance during the construction phase of the development will impact mostly small passerine species and medium-sized non-passerines, with consequences restricted to the local area only. Impacts related to collisions with PV panels and associated infrastructure (such as fencing) will impact mostly medium-sized non-passerines (e.g. korhaans, francolin and thick-knees). Red-listed species will be impacted by the loss of foraging habitat and disturbances, and potentially by collisions and electrocutions with power line infrastructure. However, given the extensive national ranges of these species, the impact of the development on habitat loss for these species would be minimal and a long-term impact unlikely given the proximity of the site to existing mining disturbances.

Several mitigation measures can be implemented during the construction and maintenance phase of the proposed development to reduce the impacts on the avifauna. During the construction phase, mitigation measures may assist in reducing displacement and disturbance by restricting habitat loss and disturbance strictly to within the footprint of the development. Impacts associated with the power line, such as collisions and electrocutions, should be mitigated where necessary through regular monitoring to determine high risk areas where bird diversions (e.g. bird flappers) should be located along the power line route. However, if the loop-in loop-out option is used to connect the facility to the Eskom line passing south of the site, impacts on avifauna related to the grid connection would be reduced to a very low level. With the implementation of the mitigation measures, the impact of the development can be reduced to an acceptable level and as such there are no fatal flaws associated with the development.

Cumulative impacts in the area are a concern due firstly to the mining activity that characterises the area and secondly due to the proliferation of solar energy development in the wider Hotazel/Kathu area. The current development would contribute approximately 230ha of habitat loss within an area considered to be of relatively low avifaunal significance and which does not lie within a likely avifaunal movement corridor or along an important environmental gradient that would be regularly or seasonally used by avifauna. As such, the overall cumulative impact of the development on avifauna is considered likely to be low.

The on-site grid connection options including the loop-in loop-out connection to the 132kV line that traverses the site are preferable to the 6km connection to the Hotazel substation as the former would generate minimal avifaunal impact. There are however no impacts associated with the development that are considered to be of high significance and which cannot be mitigated to an acceptable level.

The development footprint of Hotazel 2 is considered suitable for development. There are no avifaunal impacts associated with Hotazel 2 that cannot be mitigated to an acceptable level. As such there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. Based on the layout provided for the assessment, Hotazel 2 can be supported from an avifaunal point of view.

## 9.5 FRESHWATER IMPACTS

Dr Brian Colloty was appointed to assess the potential impact of Hotazel 2 on the aquatic environment. A copy of his findings are included in **Annexure E6**.

The specialist reviewed the available biodiversity assessments, project information, and has conducted assessments within the region in the recent past (July 2014- October 2017).

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

## 9.6 VISUAL IMPACTS

Mr Stephen Stead of Visual Resource Management Africa undertook a visual study of the proposed development from which the following is drawn. Please refer to **Annexure E8** for a full copy of this specialist report.

The Nature of the Visual Impact of the PV facility is rated **Negative**. The proposed PV landscape has the potential to generate strong levels of colour, form, texture and line contrast to the existing rural landscape. The following visual impacts could take place during the lifetime of the **proposed PV** facility:

The specialist identified the following visual impacts applicable to the construction phase of Hotazel 2.

- Loss of site landscape character due to the removal of vegetation and the construction of the PV structures and associated infrastructure.
- Wind-blown dust due to the removal of large areas of vegetation.
- Windblown litter from the laydown and construction sites.

The specialist identified the following visual impacts applicable to the operational phase of Hotazel 2.

- Massing effect in the landscape from a large-scale modification.
- On-going soil erosion.
- On-going windblown dust.

The specialist identified the following visual impacts applicable to the decommissioning phase of Hotazel 2.

- Movement of vehicles and associated dust.
- Wind-blown dust from the disturbance of cover vegetation / gravel.

In addition to the impacts listed above, the following cumulative impacts were considered and assessed by the visual specialist.

- A long term change in landuse setting a precedent for other similar types of solar energy projects.
- Change to local sense of place from cumulative inter-visibility of multiple PV projects.

### 9.6.1 Construction Phase Visual Impacts.

The table below includes an assessment of the visual impacts applicable to the construction phase of Hotazel 2

**Table 21:** Assessment of Visual Impacts during the construction phase of Hotazel 2.

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
PV Sites and Structures	Without	Negative	Local	Short	Med	Probable	Medium	
	With	Negative	Local	Short	Low	Probable		Low
<b>Mitigation Measures</b>								
<ul style="list-style-type: none"> <li>Bushveld trees that do not create shade or fire risk, between the proposed PV site and the R31 Road, should be retained for visual intervisibility screening.</li> <li>The laydown area should be set back as much as possible from the R31 Road and any trees located between the laydown and the road should initially be retained as much as possible.</li> <li>Topsoil from the footprints of the road and structures should be dealt with in accordance with EMP.</li> <li>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.</li> <li>Signage on the R31 should be moderated.</li> <li>Lights at night have the potential to significantly increase the visual exposure of the proposed project, therefore it is recommended that mitigations be implemented to reduce light spillage (refer to Annexure 3 for general guidelines).</li> </ul>								

**Table 22:** Assessment of Visual Impacts during the construction phase of Hotazel 2 Grid Connection

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
Option 1 (Preferred):	Without	Negative	Local	Short	Very Low	Probable	Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
Option 2	Without	Negative	Local	Short	Very Low	Probable	Very Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
Option 3	Without	Negative	Local	Short	Very Low	Probable	Very Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
<b>Mitigation</b>								
<ul style="list-style-type: none"> <li>Integration planning with Eskom if required.</li> <li>Soil erosion management to be implemented where required.</li> <li>Strict litter control.</li> </ul>								

### 9.6.2 Operational Phase Visual Impacts.

The table below includes an assessment of the visual impacts applicable to the operational phase of Hotazel 2.

**Table 23:** Assessment of Visual Impacts during the operational phase of Hotazel 2.

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
PV Sites and Structures	Without	Negative	Local	Long	Medium	Probable	Med	
	With	Negative	Local	Long	Low	Probable		Low
<b>Mitigation</b>								

- Light spillage management to ensure that security lighting at night is not visually intrusive. Lighting for security should be downward and inward facing and not include overhead security lighting options. Control of lights at night to allow only local disturbance to the current dark sky night landscape (refer to Annexure 3 of the Visual Impact Assessment for general guidelines).
- Continued erosion control and management of dust.

**Table 24:** Assessment of Visual Impacts during the operational phase of Hotazel 2 Grid Connection

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
Option 1 (Preferred):	Without	Negative	Local	Short	Very Low	Probable	Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
Option 2	Without	Negative	Local	Short	Very Low	Probable	Very Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
Option 3	Without	Negative	Local	Short	Very Low	Probable	Very Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
<b>Mitigation</b>								
<ul style="list-style-type: none"> <li>• On-going erosion control monitoring by the ECO</li> </ul>								

### 9.6.3 Decommissioning Phase Visual Impacts

The table below includes an assessment of the visual impacts applicable to the decommissioning phase of Hotazel 2.

**Table 25:** Assessment of Visual Impacts during the decommissioning phase of Hotazel 2.

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
PV Sites and Structures	Without	Negative	Local	Short	Med	Probable	Med	
	With	Negative	Local	Short	Low	Probable		Low
<b>Mitigation</b>								
<ul style="list-style-type: none"> <li>• All structures should be removed and where possible, recycled.</li> <li>• Building structures should be broken down (including foundations).</li> <li>• The rubble should be managed according to NEMWA and deposited at a registered landfill if it cannot be recycled or reused.</li> <li>• All compacted areas should be rehabilitated according to a rehabilitation specialist.</li> <li>• Monitoring for soil erosion should be undertaken on a routine basis</li> </ul>								

**Table 26:** Assessment of Visual Impacts during the decommissioning phase of Hotazel 2 Grid Connection

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
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Option 1 (Preferred):	Without	Negative	Local	Short	Very Low	Probable	Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
Option 2	Without	Negative	Local	Short	Very Low	Probable	Very Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
Option 3	Without	Negative	Local	Short	Very Low	Probable	Very Low	
	With	Negative	Local	Short	Very Low	Probable		Very Low
<b>Mitigation</b>								
<ul style="list-style-type: none"> <li>Removal of all structures and recycling of the structure and cables.</li> <li>Removal of any foundations and filling of holes created and shaped to appear natural.</li> <li>Rehabilitation and restoration of the footprint and track according to a rehabilitation specialist recommendations.</li> </ul>								

#### 9.6.4 Cumulative Visual Impacts

The negative cumulative effects of the project are mainly related to the change in local sense of place in a currently rural landscape. There are also other PV projects proposed in the vicinity that will result in some inter-visibility. Due to the adjacent Hotazel Solar facility, visual massing effects could take place. In these instances along the R31 road, the change to the rural sense of place in the landscape can be visually dominating. However, the R31 has moderate to low levels of scenic quality, and none of the visual resources are utilised for eco-tourism activities where landuse conflict can occur. The Hotazel area is an established mining area with four large mining landscapes. These landscapes include waste rock dumps, mine headgear as well as large structures. Within the proposed project zone of visual influence, the landscape character is mainly dominated by Bushveld vegetation and the two adjacent mining sites. Due to the Bushveld trees surrounding the proposed PV development sites in the area, inter-visibility potential is significantly reduced.

The table below includes an assessment of the cumulative visual impacts applicable to Hotazel 2.

**Table 27:** Assessment of cumulative visual impacts for Hotazel 2.

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
Cumulative Impacts	Without	Negative	Local	Long	Med	Probable	Med	
	With	Negative	Local	Long	Med	Probable		Med

**Table 28:** Assessment of Cumulative Visual Impacts of Hotazel 2 Grid Connection

Impact Activity	Mitigation	Nature	Extent	Duration	Severity	Probability	Significance without	Significance with
Option 1 (Preferred):	Without	Negative	Local	Short	Very Low	Probable	Low	
	With	Negative	Local	Short	Very Low	Probable		Low
Option 2	Without	Negative	Local	Short	Very Low	Probable	Low	
	With	Negative	Local	Short	Very	Probable		Low

					Low			
Option 3	Without	Negative	Local	Short	Very Low	Probable	Low	
	With	Negative	Local	Short	Very Low	Probable		Medium

### 9.6.5 Conclusion of Visual Specialist

As the visual significance of the proposed Hotazel 2 facility is unlikely to result in significant degradation of the surrounding visual resources, the conclusion of this visual impact assessment is that Hotazel 2 should be authorised with mitigation. Due to the limited space available for an alternative, the No-go was assessed. While the site does add value to the local environment in terms of sense of place, the mining landscape context of the adjacent mines is a main feature in the local landscape. As such, the value of maintaining the status quo of the property is rated Low. Economic benefits for maintaining the status quo would not be comparable given the urgent need to move towards renewable energy.

Hotazel 2 and its associated grid connection will undoubtedly have a visual impact on the landscape. However, this impact should be considered within the context of the following:

- The visual impacts are generally considered Low with cumulative impacts being moderate;
- The landscape can be restored through rehabilitation after decommissioning;
- Certain recommended measures can be implemented can to mitigate the impacts to some extent;
- The proposed grid connection follows an existing Eskom power line; and
- The landscape of the study area is not pristine or of scenic value and has been transformed by mining activities, powerlines and railway infrastructure.

The specialist concluded that the potential visual impacts do not represent a fatal flaw to the project.

## 9.7 HERITAGE IMPACTS

Dr Lita Webley of ACO associates undertook an Archaeological Impact Assessment of the proposed Hotazel 2. Please refer to the Archaeology Impact Assessment attached in **Annexure E4**.

In addition to the Archaeology Impact Assessment, Dr John Almond from Natura viva undertook a desktop paleontological assessment of the proposed Hotazel 2. A copy of this assessment is included in **Annexure E5**.

These two assessments along with the Draft Environmental Impact Report will be loaded onto the SAHRIS website in order to facilitate a comment in terms of Section 38 of the National Heritage Resources Act.

The archaeology specialist undertook a detailed foot survey of the footprint and powerline corridor in order to identify the potential impacts of Hotazel 2 on archaeological resources.

The survey identified a spread of black, iron rich material lying above the red aeolian sands along the R31 road, and under the existing 132 kV and 66 kV powerlines which run along the road. This material however originated from mining activities on adjacent portions.





**Figure 17:** The stockpile of BIF material which has been dumped on York A 279, near to the worker's cottage.

A total of six (6) stone artefacts were identified in two clusters, in loose aeolian sands, on the track between the farmhouse of York and the worker's cottage. According to the paleontologist, the artefacts are "most likely to be a Precambrian iron ore of some sort and may be derived from a BIF outcrop area.

Four of the pieces are irregular cores, there is a chunk with some notching, and a single flake with retouch along its margin. It is not possible to clearly identify these artefacts to a single stone industry. The location of the small scatter of stone tools, in close proximity to the stockpile of BIF, and the widespread distribution of BIF along the R31, suggests that the artefacts have been introduced to the site by mining companies from elsewhere. They have clearly not been flaked in situ.



**Figure 18:** Example of artefacts found in the spoiled BIF material

The main cause of impacts to archaeological sites is direct, physical disturbance of the material itself and its context. This impact occurs during the construction phase only and as such impacts assessed below are only applicable to the construction phase of the Development.

The survey identified a small scatter of banded ironstone artefacts (of unknown affiliation), near the York farmhouse. They fall outside the study area. It has been concluded that they are not in situ, and that they have been introduced from elsewhere. Their origins are unknown, but they were probably brought in with the stock pile of BIF which is found on the site. They have been assigned a "Generally Protected C" grading, which means that they may be destroyed. No further recording is required.

The following impacts were identified by the Archaeology Specialist.

#### Impacts on Colonial Period Heritage

The 1:50 000 maps and Google imagery confirm that there are no farm buildings or structures on the land identified for the solar facility. The farmhouse of York A 279, located on the R31, is of recent history and no historical archaeological material was identified during the survey. It is not anticipated that there will be any impacts to the Built Environment.

#### Impacts on Cemeteries and Graves

No isolated graves or cemeteries were identified during the survey. However, the possibility of unmarked archaeological and/or historical graves cannot be excluded. The landowner was interviewed with respect to graveyards on the property and confirmed that none were present.

#### Impacts of the Powerline and Access Roads

Potential impacts caused by a 132kV powerline and the power line access roads are likely to be limited and local. The access road required for a 132kV powerline is likely to be a 'two-track' which generally only requires limited physical disturbance of the ground surface. Due to the very loose sands in the area, Eskom as resorted to distributing a layer of BIF on the surface which will protect any archaeological material which may occur beneath the soil surface.

### 9.7.1 Construction Phase Archaeological Impacts.

The table below includes an assessment of the Archaeological Impacts of Hotazel 2 and its associated Grid connection.

**Table 29:** Assessment of Archaeological Impacts of Hotazel 2 and Associated Infrastructure.

<b>Nature of Impact:</b>	Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.	
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Nature/Type</b>	Negative & Direct	Positive
<b>Extent</b>	Local	On-site
<b>Duration</b>	Permanent	Long-term
<b>Magnitude</b>	Low	Low
<b>Probability/likelihood</b>	Improbable	Improbable
<b>Significance</b>	Minor	Minor
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>	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)	

### 9.7.2 Operational Phase Archaeology Impacts

All potential impacts on Archaeological resources will occur during the construction phase of the development. No additional impacts are expected during the operational phase of Hotazel 2.

### 9.7.3 Decommissioning Phase Archaeology Impacts

All potential impacts on Archaeological resources will occur during the construction phase of the development. No additional impacts are expected during the decommissioning phase of Hotazel 2.

### 9.7.4 Cumulative Archaeological Impacts

A number of solar facilities have been proposed for this general area, these include the Hotazel Solar Park facility about 4 km south of Hotazel (Orton 2016/2017), the Kagiso Solar Power Plant some 8km south and the Adams Solar PV project some 21 km south of Hotazel. However, the extensive manganese mining in the area is considered to have the same cumulative impacts to archaeology as the various solar facilities which have been proposed. Since archaeological resources occur so infrequently in the region, cumulative impacts are considered to be of no concern.

### 9.7.5 Palaeontology Impacts

The Hotazel 2 project area on the Remaining Extent of York A 279, as well as the associated 132 kV distribution line corridor options, are all situated in very flat-lying, sandy, semi-desert terrain at c. 1070 m above mean sea level. They lie within the southern Kalahari Region between the Korannaberg in the west and the Kurumanheuwels in the East. The sandy terrain here is fairly featureless Kalahari thorn veld. This region is drained by the Ga-Mogara River, a southern tributary of the Kuruman River that runs c. 5 km to the west of the project area, and by its tributaries. In general, bedrock exposure is extremely limited in the region due to the thick cover by Kalahari Group sediments. Existing manganese mines are situated to the northwest and south of the PV facility project area.

The geology of the area around and to the southeast of Hotazel is outlined on the 1: 250 000 scale geological map 2722 Kuruman. A brief sheet explanation is printed on the map. The Hotazel 2 Facility project area (including the overhead distribution line corridor options) is entirely underlain by Pleistocene to Recent aeolian sands of the Gordonia Formation (Kalahari Group). The geological map as well as recent field studies in the region (Almond 2013a, 2013b) show that the Kalahari sands here are extensively underlain by hardpan calcretes, some of which at least can be assigned to the Mokalanen Formation of the Kalahari Group. Subdued linear sand dunes trending NW-SE as well as pale calcrete exposures along the Ga-Mogara River and nearby pans are clearly visible outside the present project area on satellite images. No major drainage lines or pans are visible on satellite images within the present project area but calcretes are expected here at depth beneath the cover sands.

The following account of the geology of the Hotazel region has largely been abstracted from previous PIA reports by Almond (2013a, 2013b, 2016). Ancient bedrocks of the Transvaal Supergroup and other Precambrian sediments in the Hotazel area are mantled by a thick succession of superficial sediments of probable Late Cenozoic (i.e. Late Tertiary or Neogene to Recent) age, most of which are assigned to the Kalahari Group. The geology of the Late Cretaceous to Recent Kalahari Group is reviewed by Thomas (1981), Dingle et al. (1983), Thomas & Shaw 1991, Haddon (2000) and Partridge et al. (2006). Other superficial sediments whose outcrop areas are often not indicated on geological maps include colluvial or slope deposits (scree, hillwash, debris flows etc), sandy, gravelly and bouldery river alluvium, surface gravels of various origins, as well as spring and pan sediments. The colluvial and alluvial deposits may be extensively calcretised (i.e. cemented with pedogenic limestone), especially in the neighbourhood of dolerite intrusions or overlying Ghaap Group carbonate rocks.

Calcretes or surface limestones in the southern Kalahari Region are pedogenic limestone deposits that reflect seasonally arid climates in the region over the last five or so million years. They are briefly described by Truter et al. (1938) as well as Visser (1958) and Bosch (1993). The surface limestones may reach thicknesses of over 20 m, but are often much thinner, and are locally conglomeratic with clasts of reworked calcrete as well as exotic pebbles. The limestones may be secondarily silicified and incorporate blocks of the underlying Precambrian carbonate rocks. The older, Pliocene - Pleistocene calcretes in the broader Kalahari region, including sandy limestones and calcretised conglomerates, have been assigned to the Mokalanen Formation of the Kalahari Group and are possibly related to a globally arid time period between 2.8 and 2.6 million years ago, i.e. late Pliocene (Partridge et al. 2006).

Large areas of unconsolidated, reddish-brown to grey aeolian (i.e. wind-blown) sands of the Quaternary Gordonia Formation (Kalahari Group) are mapped in the southern Kalahari study region. According to Bosch (1993) the Gordonia sands in the Kimberley area reach thicknesses of up to eight meters and consist of up to 85% quartz associated with minor feldspar, mica and a range of heavy minerals. The Gordonia dune sands are considered to range in age from the Late Pliocene / Early Pleistocene to Recent, dated in part from enclosed Middle to Later Stone Age stone tools (Dingle et al., 1983, p. 291). Note that the recent extension of the Pliocene - Pleistocene boundary from 1.8 Ma back to 2.588 Ma would place the Gordonia Formation almost entirely within the Pleistocene Epoch. Reworked and diagenetically altered sands of probable aeolian origin in the Kimberley area are often referred to as Hutton Sands.

The palaeontological record of the rock units represented in the Hotazel region has been reviewed by Almond (2013a, 2013b) as well as in the desktop study by Groenewald (2013). Fossil biotas recorded from each of the main rock units mapped here are briefly reviewed in Table 1 in the Palaeontology Statement (based largely on Almond & Pether (2008) and references therein) where an indication of the inferred palaeontological sensitivity of each rock unit is also given. Pervasive calcretisation and chemical weathering of many near-surface bedrocks in the Northern Cape has compromised their original fossil heritage in many areas.

Fossils within the Kalahari Group: The fossil record of the Kalahari Group is generally sparse and low in diversity. The Gordonia Formation dune sands were mainly active during cold, drier intervals of the Pleistocene Epoch that were inimical to most forms of life, apart from hardy, desert-adapted species.

Porous dune sands are not generally conducive to fossil preservation. However, mummification of soft tissues may play a role here and migrating lime-rich groundwaters derived from the underlying bedrocks (including, for example, dolerite) may lead to the rapid calcretisation of organic structures such as burrows and root casts. Occasional terrestrial fossil remains that might be expected within this unit include calcretized rhizoliths (root casts) and termitaria (e.g. *Hodotermes*, the harvester termite), ostrich egg shells (*Struthio*) and shells of land snails (e.g. *Trigonephrus*) (Almond 2008, Almond & Pether 2008). Other fossil groups such as freshwater bivalves and gastropods (e.g. *Corbula*, *Unio*) and snails, ostracods (seed shrimps), charophytes (stonewort algae), diatoms (microscopic algae within siliceous shells) and stromatolites (laminated microbial limestones) are associated with local watercourses and pans. Microfossils such as diatoms may be blown by wind into nearby dune sands (Du Toit 1954, Dingle et al., 1983). These Kalahari fossils (or subfossils) can be expected to occur sporadically but widely, and the overall palaeontological sensitivity of the Gordonian Formation is therefore considered to be low. Underlying calcretes of the Mokolanen Formation might also contain trace fossils such as rhizoliths, termite and other insect burrows, or even mammalian trackways. Mammalian bones, teeth and horn cores (also tortoise remains, and fish, amphibian or even crocodiles in wetter depositional settings such as pans) may be occasionally expected within Kalahari Group sediments and calcretes, notably those associated with ancient, Plio-Pleistocene alluvial gravels.

Palaeontological fieldwork at several sites some 10 to 15 km south of Hotazel (Almond 2013a, 2013b) indicated that the Gordonian sands and underlying calcretes here are very sparsely fossiliferous. The only fossil remains recorded from these sediments in the wider study region are locally abundant, low-diversity invertebrate burrows as well as casts of plant rootlets and of reedy vegetation preserved in subsurface calcrete hardpans. These trace fossils were probably associated with damp vleis settings within largely abandoned river channels. Such trace fossils are of widespread occurrence within the Kalahari region so impacts on fossil heritage here are likely to be of low conservation significance and special mitigation measures to protect them are not considered warranted.

The overall palaeontological sensitivity of the entire Hotazel 2 project area 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.

The overall palaeontological sensitivity of the entire Hotazel 2 site, including the various 132kV overhead powerline corridors, is assessed as **Low**

### 9.7.6 Conclusion of Archaeology and Palaeontology Specialists.

There are no river systems or drainage lines in the study area which might have encouraged settlement in the area. The survey did not identify any archaeological material, with the exception of approximately six (6) stone artefacts made on a black banded ironstone. The location of the small scatter of stone tools, in close proximity to the stockpile of BIF, and the widespread distribution of BIF along the R31, suggests that the artefacts have been introduced to the site from elsewhere. They have clearly not been flaked in situ. Their significance is therefore considered to be LOW (Generally Protected C). The impact of the proposed SEF is likely to be very low.

The foot survey confirmed that there are no archaeological resources were identified along the route of the proposed 132kV powerline. The spread of BIF may have introduced archaeological material from elsewhere, but this will be secondary deposition.

Indications are that in terms of archaeological heritage, impacts are expected to be negligible.

The study area is considered to be of very low heritage significance. It is recommended that from an archaeological perspective, the project be authorised with the following conditions included in the EMP:

- If during ground clearance or construction, any archaeological material or human graves are uncovered, work in that area should be stopped immediately and the ECO should report this to

SAHRA (Tel: 021 462 4502). The heritage resource may require inspection by the heritage authorities and it may require further mitigation in the form of excavation and curation in an approved institution.

The following mitigation measures were suggested by the specialist to safeguard fossils exposed on site during the construction phase of the development:

- The ECO responsible for the development must remain aware that all sedimentary deposits have the potential to contain fossils and he/she should thus monitor all deeper (> 1 m) excavations into sedimentary bedrock for fossil remains on an on-going basis. If any substantial fossil remains (e.g. vertebrate bones, teeth) 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). This is necessary so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented, at the developer's expense.
- 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:
  - 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 further mitigation measures proposed by the palaeontologist; and
  - Allowing work to resume only once clearance is given in writing by the relevant authorities.
- During maintenance and servicing of infrastructure, if excavation is required, it shall be limited to the disturbed footprint as far as practicable. Should bulk works exceed the existing disturbed footprint, SAHRA shall be notified.
- The palaeontologist concerned with mitigation work will need a valid collection permit from SAHRA. All work would have to conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere to the minimum standards for Phase 2 palaeontological studies recently published by SAHRA (2013).

The above-mentioned recommendations of the palaeontology specialist and the archaeology specialist must be incorporated into the EMPr.

## 9.8 SOCIAL IMPACTS

During the scoping phase, a number of social impacts were identified by the social specialist, Savannah Environmental. The assessment of these impacts is included in the sections below.

### 9.8.1 Construction Phase Social Impacts

The following impacts associated with the construction and planning phases of the development were identified and assessed by the specialist.

#### IMPACT 1: Direct and indirect employment opportunities and skills development

It is anticipated that at its peak the construction of the proposed project will result in the creation of approximately 300 to 400 employment opportunities. Of those employment opportunities likely to be generated, approximately 60% (i.e. 180 to 240) will accrue to low skilled workers, 25% (i.e. 75 to 100) to semi-skilled workers, and 15% (i.e. 45 to 60) to skilled workers. Employment opportunities generated as a result of the project will be temporary in nature, and will last for the duration of the construction

period (i.e. approximately 12 to 18 months), while the skills developed through experience in the construction of the project will be retained by the community members involved. The project proponent anticipates that the majority of the general labour force will as far as possible be sourced from the local labour pool. Where relevant skills are unavailable from the local labour pool, these would need to be sought elsewhere. Solar PV projects make use of large numbers of unskilled and semi-skilled labour so there will be good opportunity to use local labour. The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area.

In addition to direct employment opportunities associated with the construction of the project, a number of indirect employment opportunities will also be created. Indirect employment opportunities will predominantly be created in the service industry, through the opportunity for the provision of secondary services to the construction team. Services may include for example accommodation, catering, and laundry services. Indirect employment opportunities created as a result of the construction of the project would also be temporary in nature and would last for the duration of the construction period (i.e. approximately 12 to 18 months). While difficult to quantify, indirect employment opportunities are significant in that they provide greater opportunity for women to be included and benefitted, albeit indirectly. Other indirect employment opportunities that will be created during construction relate to increased demand for transportation, equipment rental, sanitation and waste removal etc. which may benefit local service providers.

The creation of employment opportunities is considered to be of moderate magnitude given the levels of unemployment within the area, the low average income, and the fact that the majority of employment within the surrounding area is of a seasonal nature as it is associated with the agricultural sector.

**Table 30:** Impact assessment on direct and indirect employment opportunities

<b>Nature:</b>		
The creation of direct and indirect employment opportunities during the construction phase of the project.		
	<b>Without enhancement</b>	<b>With enhancement</b>
<b>Extent</b>	Local-Regional	Local-Regional
<b>Duration</b>	Short term	Short term
<b>Magnitude</b>	Minor	Moderate
<b>Probability</b>	Highly probable	Definite
<b>Significance</b>	Low	Medium
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Enhancement:</b>		
<ul style="list-style-type: none"> <li>• A local employment policy should be adopted to maximise opportunities made available to the local labour force.</li> <li>• 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.</li> <li>• Where feasible, training and skills development programmes should be initiated prior to the commencement of the construction phase.</li> <li>• As with the labour force, suppliers should also as far as possible be sourced locally.</li> <li>• As far as possible local contractors that are compliant with Broad-Based Black Economic Empowerment (B-BBEE) criteria should be used.</li> <li>• The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.</li> </ul>		
<b>Cumulative impacts:</b>		
<ul style="list-style-type: none"> <li>• Opportunity to decrease the local unemployment levels and increase the levels of income and spending power within the region.</li> <li>• Opportunity to upgrade and improve skills levels in the area.</li> </ul>		

<ul style="list-style-type: none"> <li>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).</li> </ul>
<b>Residual impacts:</b>
<ul style="list-style-type: none"> <li>Improved pool of skills and experience in the local area.</li> <li>Economic growth for small-scale entrepreneurs.</li> <li>Temporary employment during the construction phase will result in job losses and struggles for construction workers to find new employment opportunities.</li> </ul>

### IMPACT 2: Economic multiplier effects

There are likely to be opportunities for local businesses and service providers to provide services and materials for the construction phase of the proposed project. The economic multiplier effects from the use of local goods and services will include, but is not limited to, the provision of construction materials and equipment, and workforce essentials such as catering services, trade clothing, safety equipment, ablution, accommodation, transportation and other goods. In addition, off-site accommodation may be required in nearby towns such as Hotazel for contract workers and certain employees. The increase in demand for goods and services may stimulate local business and local economic development (however locally sourced materials and services may be limited due to availability). There is likely to be a direct increase in industry and indirect increase in secondary businesses.

In terms of business opportunities for local companies, expenditure during the construction phase will create business opportunities for the regional and local economy. The increase in demand for new materials and services in the nearby area may stimulate local business and local economic development. There is likely to be a direct increase in industry and indirect increase in secondary businesses. The project proponent should source services needed from the local area as much as possible. These necessities should be sourced from nearby towns and local service providers. Potential opportunities for local economies, a decrease in current level of unemployment, and an increase in incomes will in turn stimulate further expenditure and sales within the local economies.

The injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area. Through the stimulation of employment and income, new demand may be created within local and regional economies. With increased income comes additional income for expenditure on goods and services supplied. Indirect impacts would occur as a result of the new economic development, and would include new jobs at businesses that may support the construction workforce or provide project materials, and associated income. The intention should therefore be to maximise local labour employment opportunities, which is likely to have a positive impact on local communities and downstream benefits with regards to household income, education and other social aspects. Such benefits may however be limited given the short construction period (i.e. approximately 12 to 18 months).

**Table 31:** Economic multiplier effects impact assessment

<b>Nature:</b>		
Significance of the impact from the economic multiplier effects from the use of local goods and services.		
	<b>Without enhancement</b>	<b>With enhancement</b>
<b>Extent</b>	Local-Regional	Local-Regional
<b>Duration</b>	Short term	Short term
<b>Magnitude</b>	Low	Moderate
<b>Probability</b>	Highly probable	Definite
<b>Significance</b>	Medium	Medium
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	

<b>Enhancement:</b>
<ul style="list-style-type: none"> <li>• It is recommended that a local procurement policy is adopted to maximise the benefit to the local economy.</li> <li>• 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.</li> <li>• 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.</li> </ul>
<b>Cumulative impacts:</b>
Opportunity for local capital expenditure, potential for the local service sector.
<b>Residual impacts:</b>
Improved local service sector, growth in local business.

### IMPACT 3: Influx of jobseekers and change in population

Construction projects have the potential to attract jobseekers which may move into an area in search of employment opportunities. An influx of people looking for employment or other economic opportunities could result in increased pressure being placed on economic and social infrastructure, and a change in the local population. Population change refers to the size, structure, density as well as demographic profile of the local community.

An influx of jobseekers into an area, could lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services. This includes municipal services such as sanitation, electricity, water, waste management, health facilities, transportation and the availability of housing. It could also potentially create conflict between locals and outsiders due to potential differences in racial, cultural and ethnic composition. A further negative impact that could result due to an influx of jobseekers into an area is an increase in unemployment levels due to an oversupply of available workforce, particularly with respect to semi and unskilled workers.

Given the relatively small labour force required for the project (i.e. approximately 300 to 400 opportunities at the peak of construction comprising 180 to 240 opportunities for low skilled workers, 75 to 100 opportunities for semi-skilled workers, and 45 to 60 opportunities for skilled workers), the short duration of the construction period (i.e. approximately 12 to 18 months), and the close proximity of the site to the town of Hotazel (from which the majority of labour is likely to be sourced), the construction of the project is not anticipated to result in changes to the population within the site or its surrounds. In addition, due to the fact that no man camps will be established on site, the potential for an influx of people into the area or change in population demographics is anticipated to be minimal. The labour force is therefore also not anticipated to place significant pressure on local resources and social networks, or existing services and infrastructure, as they would already be accessing services at their places of residence.

**Table 32:** Assessment of impacts from an influx of jobseekers and change in population in the study area

<b>Nature:</b>		
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.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Short-term	Short-term
<b>Magnitude</b>	Moderate	Low
<b>Probability</b>	Improbable	Improbable
<b>Significance</b>	Low	Low
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	



<b>Can impacts be mitigated?</b>	Yes
<b>Mitigation:</b>	
<ul style="list-style-type: none"> <li>• Develop and implement a local procurement policy which prioritises “locals first” to prevent the movement of people into the area in search of work.</li> <li>• Engage with local community representatives prior to construction to facilitate the adoption of the locals first procurement policy.</li> <li>• 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.</li> <li>• Working hours should be kept between daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities.</li> <li>• Compile and implement a grievance mechanism.</li> <li>• Appoint a Community Liaison Officer (CLO) to assist with the procurement of local labour.</li> <li>• Prevent the recruitment of workers at the project site.</li> <li>• 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.</li> <li>• Establish clear rules and regulations for access to the proposed site.</li> <li>• Appoint a security company and implement appropriate security procedures to ensure that workers do not remain onsite after working hours.</li> <li>• Inform local community organisations and policing forums of construction times and the duration of the construction phase.</li> <li>• Establish procedures for the control and removal of loiterers from the construction site.</li> </ul>	
<b>Cumulative impacts</b>	
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.	
<b>Residual impacts:</b>	
Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure, resources and services.	

#### IMPACT 4: Safety and security impacts

The commencement of construction activities can be associated with an increase in crime within an area. The perceived loss of security during the construction phase of a project due to an influx of workers and / or outsiders to the area (as in-migration of newcomers, construction workers or jobseekers are usually associated with an increase in crime), may have indirect effects such as increased safety and security concerns for neighbouring properties, damage to property, increased risk of veld fire, stock theft, poaching, crime and so forth.

Given the fact that the labour force will not permanently reside within the area or have any reason to be onsite after hours, it is anticipated that the probability and significance of such safety and security impacts occurring will be reduced.

The project proponent should strive to develop and maintain good relationships and ongoing and open communication with neighbouring landowners. Suitable grievance control mechanisms must be developed and implemented, and the local community informed of the grievance mechanism to be followed. In addition, a security company must be appointed and appropriate security measures implemented prior to the commencement of construction activities onsite

**Table 33:** Assessment of safety and security impacts

<b>Nature:</b>		
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Short term	Short term
<b>Magnitude</b>	High	Moderate
<b>Probability</b>	Probable	Improbable
<b>Significance</b>	Medium	Low
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	

<b>Can impacts be mitigated?</b>	Yes
<b>Mitigation:</b>	
<ul style="list-style-type: none"> <li>Working hours should be kept within daylight hours during the construction phase, and / or as any deviation that is approved by the relevant authorities.</li> <li>Provide transportation for workers to prevent loitering within or near the project site outside of working hours.</li> <li>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.</li> <li>The appointed EPC Contractor must appoint a security company to ensure appropriate security procedures and measures are implemented.</li> <li>Access in and out of the construction site should be strictly controlled by a security company appointed to the project.</li> <li>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.</li> <li>The EPC Contractor should implement a stakeholder management plan to address neighbouring farmer concerns regarding safety and security.</li> <li>The project proposed must prepare and implement a Fire Management Plan; this must be done in conjunction with surrounding landowners.</li> <li>The EPC Contractor must prepare a Method Statement which deals with fire prevention and management.</li> </ul>	
<b>Cumulative impacts:</b>	
<ul style="list-style-type: none"> <li>Possible increase in crime levels (with influx of people) with subsequent possible economic losses.</li> <li>Increased risk of veld fires if vegetation clearing is not appropriately implemented, monitored and maintained.</li> </ul>	
<b>Residual impacts:</b>	
None anticipated.	

#### IMPACT 5: Impacts on daily living and movement patterns

Increased traffic due to construction vehicles could cause disruptions to road users, the local community and increase safety hazards, especially on the main road that will be utilised. The use of local roads and transport systems may cause road deterioration and congestion. An increase of traffic from the rise in construction vehicles is a safety concern for other road users and local communities in the area. Impacts will be magnified since farm roads are not designed to carry heavy traffic and are prone to erosion. Noise, vibrations, dust and visual pollution from heavy vehicle traffic during the construction phase could also negatively impact local residents and road users.

The upgrading of access roads may damage the fences along the access road. Infrastructure such as roads and fencing should be maintained in the present condition and repaired immediately, if damaged as a result of construction activities. The contractor should be responsible for managing this impact on private property.

There are a few and sparsely populated homesteads or residents living in the nearby area, which will be impacted by the project.

**Table 34:** Assessment of impacts on daily living and movement patterns.

<b>Nature:</b>		
Temporary increase in traffic disruptions and movement patterns during the construction phase.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local-Regional	Local-Regional
<b>Duration</b>	Short term	Short term
<b>Magnitude</b>	High	Moderate
<b>Probability</b>	Probable	Probable
<b>Significance</b>	Medium	Medium
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>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.</li> </ul>		

<ul style="list-style-type: none"> <li>• Heavy vehicles should be inspected regularly to ensure their road worthiness.</li> <li>• 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.</li> <li>• Implement penalties for reckless driving as a way to enforce compliance to traffic rules.</li> <li>• Avoid heavy vehicle activity during “peak” hours (when children are taken to school, or people are driving to work).</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul>
<b>Cumulative impacts:</b>
Possible increased traffic and traffic disruptions impacting local communities.
<b>Residual impacts:</b>
None anticipated.

#### IMPACT 6: Nuisance impacts (noise & dust)

Impacts associated with construction related activities include noise, dust, and possible disruption to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties. The movement of heavy construction vehicles and construction activities and equipment also have the potential to create noise at the project site, as well as along the National Road other local access roads. The primary sources of noise during construction would be from construction equipment, vehicle / truck traffic, and ground vibration. Noise levels can be audible over a large distance however are generally short in duration. Dust would be generated from construction activities as well as trucks / vehicles driving on gravel access roads. This impact will negatively impact sensitive receptors, and could also potentially negatively impact surrounding land users. The impact of noise and dust on surrounding land users and local farmsteads can be reduced through the application of appropriate mitigation measures.

**Table 35:** Assessment of nuisance impacts (noise and dust)

<b>Nature:</b>		
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (2)	Short-term (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Probability</b>	Highly probable (4)	Probable (3)
<b>Significance</b>	Medium (44)	Low (27)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods where feasible.</li> <li>• 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.</li> <li>• Ensure all vehicles are road worthy, drivers are qualified and are made aware of the potential noise and dust issues.</li> <li>• 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.</li> </ul>		
<b>Cumulative impacts:</b>		
<ul style="list-style-type: none"> <li>• 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.</li> </ul>		

<ul style="list-style-type: none"> <li>Other construction activities in the area will heighten the nuisance impacts, such as noise, dust and wear and tear on roads.</li> </ul>
<b>Residual impacts:</b>
Only damage to roads that is not fixed could affect road users.

#### IMPACT 7: Visual and sense of place impacts

Intrusion impacts such as aesthetic pollution (i.e. building materials, construction vehicles, etc.), noise and light pollution, and impacts on the rural nature of the site will impact the “sense of place” for the local community. Construction related activities have the potential to negatively impact a local area’s “sense of place”. The alteration of the sense of place in view of the local residents and road users will start during the construction phase and remain for the project’s operational lifetime.

Given the nature of the surrounding area within which the project is proposed, the number of PV projects already authorised in the area, and the limited visual impact the project is anticipated to have (i.e. most significantly within 2km of the site) it can be anticipated that the visual and sense of place impacts associated with the construction of the facility will be of low significance.

**Table 36:** Assessment of impacts on the sense of place

<b>Nature:</b>		
Intrusion impacts from construction activities will have an impact on the area’s “sense of place”.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Short-term	Short-term
<b>Magnitude</b>	Low	Low
<b>Probability</b>	Highly probable	Probable
<b>Significance</b>	Low	Low
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	Yes
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Implement mitigation measures identified in the Visual Impact Assessment (VIA) prepared for the project.</li> <li>Limit noise generating activities to normal daylight working hours and avoid weekends and public holidays.</li> <li>The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods where feasible.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>		
<b>Cumulative impacts:</b>		
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’.		
<b>Residual impacts:</b>		
None anticipated.		

### 9.8.2 Operation Phase Social Impacts

The following impacts associated with the construction and planning phases of the development were identified and assessed by the specialist.

Hotazel 2 is anticipated to operate for a minimum of 20 years. The facility will operate continuously, 7 days a week. While the SEF will be largely self-sufficient, monitoring and periodic maintenance activities will be required. Key elements of the O&M plan include monitoring and reporting the performance of

the solar facility, conducting preventative and corrective maintenance, receiving visitors, and maintaining security.

The potential positive and negative social impacts which could arise as a result of the operation of the proposed project include the following:

#### IMPACT 1: Direct and indirect employment opportunities and skills development

It is anticipated that the operation of the project is likely to create a maximum of approximately 60 employment opportunities, comprising approximately 42 low-skilled, approximately 15 semi-skilled, and approximately 3 skilled opportunities. Employment opportunities include safety and security staff, operation and monitoring, and maintenance crew. Maintenance activities will be carried out throughout the lifespan of the project, and will include washing of solar panels, vegetation control, and general maintenance around the SEF. The employment opportunities generated as a result of the project will be long term and will last for the duration of operation (i.e. approximately 20 years). None of the employment opportunities will be permanently stationed onsite. In addition to the direct employment opportunities it is anticipated that additional indirect employment opportunities will be generated during the operation of the project.

**Table 37:** Assessment of impacts on employment opportunities and skills development

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

#### IMPACT 2: Development of non-polluting, renewable energy infrastructure

South Africa currently relies predominantly on coal-generated electricity to meet its energy needs. As a result, the country's carbon emissions are considerably higher than those of most developed countries partly because of the energy-intensive sectors which rely heavily on low quality coal, which is the main contributor to GHG emissions. The use of solar technology for power generation is considered a non-consumptive use of a natural resource which produces zero GHG emissions during its operation. The generation of RE utilising solar power will contribute positively to South Africa's electricity market. Given South Africa's reliance on Eskom as a power utility, the benefits associated with a REIPPP Programme

are regarded as an important contribution, and the advancement of RE has been identified as a priority for South Africa.

Increasing the contribution of the RE sector to the local economy would contribute to the diversification of the local economy and provide greater economic stability. The growth in the RE sector as a whole could introduce new skills and development into the area. This is especially true with regards to solar power specifically considering the number of other solar power projects proposed within the broader area.

The development of RE projects have the potential to contribute to the stability of the economy, and could contribute to the local economy through employment generation (direct, indirect, and local service providers) and revenue generation for the LM. While the overall contribution of the project to South Africa's total energy requirements is small, the SEF will also contribute towards offsetting the total carbon emissions associated with energy generation in South Africa. It should however be noted that such a benefit is associated with all RE projects and not only solar power projects in particular.

**Table 38:** Assessment of the development of non-polluting, renewable energy infrastructure

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

### IMPACT 3: Contribution to Local Economic Development (LED) and social upliftment

Projects which form part of the DoE's REIPPP Programme are required, as part of their bidding requirements, to contribute towards LED and social upliftment initiatives within the area in which they are proposed. In addition, they are required to spend a percentage of their revenue on socio-economic and enterprise development, as well as allocate ownership shares to local communities that benefit previously disadvantaged communities around the project. A portion of the dividends generated by each development also need to be invested into LED projects and programmes. The proposed development therefore has the potential to contribute positively towards socio-economic development and improvements within the local area.

Socio-economic spin-offs from the proposed development could therefore contribute towards better infrastructure provision, and the investment in education and skills development. An in-depth Community Needs Assessment (CNA) is required to ensure that the beneficiary community's needs are understood and sufficiently addressed by the proposed development programmes in order to contribute

meaningfully towards local economic growth and development. It should be noted however that such a benefit would be associated with all RE projects and not just solar power projects in particular.

**Table 39:** Assessment of the contribution to LED and social upliftment

<b>Nature:</b>		
Contribution to LED and social upliftment during the operation of the project.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local-Regional-National	Local-Regional-National
<b>Duration</b>	Long term	Long term
<b>Magnitude</b>	Moderate	High
<b>Probability</b>	Highly probable	Highly probable
<b>Significance</b>	Medium	High
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• A CNA must be conducted to ensure that the LED and social upliftment programmes proposed by the project are meaningful.</li> <li>• 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.</li> <li>• 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).</li> </ul>		
<b>Cumulative impacts:</b>		
Significant LED and social upliftment of the local communities as a result of other IPP projects within the area.		
<b>Residual impacts:</b>		
Social upliftment of the local communities through the development and operation of the project.		

#### IMPACT 4: Visual and sense of place impacts

An area's sense of place is created through the interaction of various characteristics of the environment, including atmosphere, visual resources, aesthetics, climate, lifestyle, culture, and heritage. An area's sense of place is however subjective and largely dependent on the demographics of the population residing within the area and their perceptions regarding trade-offs. For example, while some individuals may prefer not to see any form of infrastructure development, others may have an interest in large-scale infrastructure, or engineering projects, and the operation of such facilities, and consider the impact to be less significant. Such a scenario may especially be true given that the project comprises a RE project, and could therefore be seen as benefitting the local environment, when compared to non-renewable energy generation projects.

An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The social impacts associated with the impact on sense of place relate to the change in the landscape character and visual impact of Hotazel 2. The area surrounding the project site is characterised by existing mining activities and electricity infrastructure (including substations, power lines and authorised solar facilities). Considering this, it can be anticipated that the visual and sense of place impacts associated with the operation of the facility will be of low significance.

**Table 40:** Assessment of the visual impact and impacts on sense of place

<b>Nature:</b>
Visual impacts and sense of place impacts associated with the operation phase of Hotazel 2.

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

#### IMPACT 5: Impacts associated with the loss of agricultural land

The development of the proposed project on an agricultural property would result in the area of land required to support the development footprint being removed from potential agricultural production. This could have negative implications in terms of food production and security, and could also threaten jobs of workers employed in the agricultural activities. This is not seen as an issue on this property however as it is currently not utilised for any agricultural activities.

**Table 41:** Assessment on the loss of agricultural land and overall productivity

<b>Nature:</b>		
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
<b>Extent</b>	Site	Site
<b>Duration</b>	Long term	Long term
<b>Magnitude</b>	Moderate	Low
<b>Probability</b>	Not probable	Improbable
<b>Significance</b>	Low	Low
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	Reversible
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Implement the mitigation measures detailed in the Agricultural Impact Assessment</li> </ul>		
<b>Cumulative impacts:</b>		
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.		
<b>Residual impacts:</b>		
Economically unviable portions of agricultural land which may reduce overall productivity.		



### 9.8.3 Decommissioning Phase Social Impacts

The decommissioning phase social impacts are deemed to be the same as the construction phase social impacts. Please refer to the assessments in section 9.8.1 above for further information in this regard.

### 9.8.4 Cumulative Social Impacts

The following cumulative social impacts were identified and assessed by the social specialist.

#### IMPACT 1: Cumulative impact from employment, skills and business opportunities

Hotazel 2 and the establishment of other SEFs within the area have the potential to result in significant positive cumulative impacts, specifically with regards to the creation of a number of socio-economic opportunities for the region, which in turn, can result in positive social benefits. The positive cumulative impacts include creation of employment, skills development and training opportunities, and downstream business opportunities. The cumulative benefits to the local, regional, and national economy through employment and procurement of services are more considerable than that of Hotazel 2 alone.

**Table 42:** Cumulative impacts of employment opportunities, business opportunities and skills development

<b>Nature:</b>		
An increase in employment opportunities, skills development and business opportunities with the establishment of more than one SEF.		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local-Regional	Local-Regional
<b>Duration</b>	Long term	Long term
<b>Magnitude</b>	Low	Moderate
<b>Probability</b>	Highly probable	Highly Probable
<b>Significance</b>	Medium	Medium
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	
<b>Irreplaceable loss of resources?</b>	N/A	
<b>Can impacts be mitigated?</b>	Yes	
<b>Confidence in findings</b>	High	
<b>Enhancement:</b>		
The establishment of a number of solar power projects under the REIPPP Programme in the area has the potential to have a positive cumulative impact on the area in the form of employment opportunities, skills development and business opportunities. The positive benefits will be enhanced if local employment policies are adopted and local services providers are utilised by the developers to maximise the project opportunities available to the local community.		
<b>Residual impacts:</b>		
<ul style="list-style-type: none"> <li>• Improved pool of skills and experience in the local area.</li> <li>• Economic growth for small-scale entrepreneurs.</li> </ul>		

#### IMPACT 2: Cumulative impact with large scale in-migration of people

While the development of a single solar power project may not result in a major influx of people into an area, the development of several projects may have a cumulative impact on the in-migration and movement of people. In addition, the fact that the project is proposed within an area characterised by good levels of solar irradiation suitable for the development of commercial SEFs implies that the surrounding area is likely to be subject to considerable future applications for SEFs. Levels of unemployment, and the low level of earning potential may attract individuals to the area in search of better employment opportunities and higher standards of living.

It is very difficult to control an influx of people into an area, especially in a country where unemployment rates are high. It is therefore important that the project proponent implement and maintain strict adherence with a local employment policy in order to reduce the potential of such an impact occurring.

**Table 43:** Cumulative impact with large-scale in-migration of people

<b>Nature</b>		
Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
<b>Extent</b>	Local	Local-Regional
<b>Duration</b>	Short-term	Long term
<b>Magnitude</b>	Low	Moderate
<b>Probability</b>	Very Improbable	Probable
<b>Significance</b>	Low	Medium
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Confidence in findings</b>	High	
<b>Enhancement</b>		
<ul style="list-style-type: none"> <li>• Develop a recruitment policy / process (to be implemented by contractors), which will source labour locally.</li> <li>• Work together with government agencies to ensure service provision is in line with the development needs of the local area.</li> <li>• Where possible form joint ventures with community organisations which can provide local communities with benefits, such as employment opportunities and services.</li> </ul>		
<b>Residual impacts</b>		
Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure, services and poverty problems.		

### 9.8.5 Conclusion of Social Specialist

There are some vulnerable communities within the project area that may be affected by the development of Hotazel 2 and its associated infrastructure. Traditionally, the construction phase of a PV SEF is associated with the majority of social impacts. Many of the social impacts are unavoidable and will take place to some extent, but can be managed through the careful planning and implementation of appropriate mitigation measures. A number of potential positive and negative social impacts have been identified for the project, however an assessment of the potential social impacts indicated that there are no perceived negative impacts that are sufficiently significant to allow them to be classified as “fatal flaws”.

Based on the social Impact Assessment, the following general conclusions and findings can be made:

- The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focussed on the construction of solar PV projects (these relate to an influx of non-local workforce and jobseekers, intrusion and disturbance impacts (i.e. noise and dust, wear and tear on roads) and safety and security risks), and could be reduced with the implementation of the mitigation measures proposed. The significance of such impacts on the local communities can therefore be mitigated.
- The development will introduce employment opportunities during the construction phase (temporary employment) and a limited number of permanent employment opportunities during operation phase.
- The proposed project could assist the local economy in creating entrepreneurial growth and opportunities, especially if local business is involved in the provision of general material, goods

and services during the construction and operational phases. This positive impact is likely to be compounded by the cumulative impact associated with the development of several other solar facilities within the surrounding area, and as a result of the project's location within an area which is characterised by high levels of solar irradiation and which is therefore well suited to the development of commercial solar energy facilities.

- The proposed development also represents an investment in infrastructure for the generation of non-polluting RE, and represents a positive social benefit for society as a whole.
- When considering Hotazel 2, it is also important to consider the cumulative social impacts that may arise with other proposed solar PV projects in the area.
- It should be noted that the perceived benefits associated with the project, which include RE generation and local economic and social development, outweigh the perceived Negative impacts associated with the project.

The proposed project and associated infrastructure is unlikely to result in permanent damaging social impacts. From a social perspective it is concluded that the project should be developed subject to the implementation of recommended mitigation measures and management actions identified for the project.

## 9.8 TRAFFIC IMPACTS

A Traffic Impact Assessment was undertaken by Amory le Roux-Arries Knight Piesold Consulting Engineers. A copy of the Traffic impact assessment is attached in Annexure E12

### 9.8.1 Construction Phase Traffic Impacts.

It is estimated that the total number of heavy vehicle trips for a 100MW installation would vary between 4 500 and 6 000. These trips would be made over an estimated construction period of between 12 and 18 months. During the peak of construction the calculated number of heavy vehicle trips would be between 15 and 25 daily of which the impact on the road network would be negligible, as the additional peak hourly traffic would be 2 trips at most. This low volume of construction traffic will have no significant impact on the existing traffic service levels.

During the peak of the construction phase, it is estimated that approximately 400 workers would be employed on the project site. Where possible, these employees will be sourced from within 50km to 100km from the site. The nearest towns include Hotazel (3km), Deben (41km), Kathu (86km) and Kuruman (72,6km). Employees will need to be transported from the towns to site by bus or taxi. This would equate to 5-7 additional trips during the peak hours, if transported by 60-seater busses, or 20-27 additional trips if 15-seater minibus taxis are used. This may result in slight delays at the entrance to the proposed site.

### 9.8.2 Operational Phase Traffic Impacts

The proposed solar facility is expected to operate for a minimum period of 20 years and will operate 7 days a week, during daylight hours. It is assumed that once the plant is fully operational, it will employ a staff compliment of approximately 60 workers. It is also assumed that the managers, supervisors, and skilled staff will constitute 30% of the permanent workforce. This workforce will travel to work by private vehicles. Assuming vehicle occupancy of 1.2 persons per vehicle, the total trips generated per peak hour are calculated as below:

- Trips per peak hour = (60 employees x 30%) / 1.2 persons per vehicle = 15 trips per hour
- The total trips per day is equal to 30.

The unskilled employees will therefore constitute 70% of the total workforce. These employees will travel to work by bus or minibus taxi. Assuming vehicle occupancy of 15 persons per taxi, then the total trips generated will be calculated as follows:

- Trips per peak hour = (60 employees x 70%) / 15 persons per vehicle = 3 trips per hour

- The total trips per day is equal to 6.

During the operational phase, the total number of trips generated by the permanent workforce during the AM and PM hourly peak periods are therefore 18 trips per hour, respectively. No other daily trips are expected to be generated by the PV plant during the operation phase.

### 9.8.3 Decommissioning phase Traffic Impacts

The decommissioning phase traffic impacts associated with Hotazel 2 are deemed to be the same as those as those for the construction phase. Please refer to section 9.8.1 above for the assessment of these impacts.

### 9.8.4 Conclusion of Traffic Specialist

It was observed during the site inspection that the R31 road within the study area is functioning at an acceptable level of service, while the R380 which also leads to site is in very poor to bad condition. Therefore, the R380 should not be used for heavy vehicle transport.

No congestion problems, queue delays and delays were evident on the surrounding network. The surrounding network has the capacity to accommodate the additional volumes of 2 trips per hour for the construction vehicles, as well 15 to 25 bus trips required to transport employees during peak hours.

The additional 18 trips during the operational phase of this proposed development can also be accommodated. If minibux taxis are used for the transportation of employees instead of buses, the additional trips generated will then increase to between 20 and 27 during the peak period. The mitigation measure for this would be to create bus drop-off points at the mine dumps located on the R31.

Dust could pose a potential health risk to people as well as animals in the vicinity of the site during the construction phase of the development and must be addressed in the risk assessment during each phase of the project.

## 9.9 CUMULATIVE IMPACTS

This section is summarised from the cumulative impact assessments that took place by each of the participating specialists. For further details in this regard, the reader is referred to the specialist assessments contained in Appendix E.

Where appropriate, certain specialists (particularly agriculture) did include a cumulative assessment of a much wider area than the accepted 30km radius.

No potentially fatal flaws have been identified associated with cumulative impacts. The most significant cumulative impact is deemed to be the failure to meet conservation targets as a result of all the developments combined. The ecology specialist rated this impact as a low negative (with local significance only).

The 2014 EIA Regulations (GNR 326) define a cumulative impact as follows:

*“Cumulative impact in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.”*

There are a number of other renewable energy facilities in the vicinity of the proposed Hotazel 2 as detailed in the table below.

**Table 44:** Other SEFs approved within proximity of Hotazel 2 (SIA, Savannah, 2021)

Project Name	Location	Approximate distance from Hotazel 2	Project Status
Adams PV SEF	Remainder of the Farm Adams No. 328	15km south	Constructed
Mount Ropers Solar Plant	Farm Mt. Roper No. 321	22km south-east	Approved
SEF on the Farm Rhodes	Remainder of the Farm Rhodes No. 269	7km north	Approved
Rhodes 2 Solar Park Project	Remainder of the Farm Rhodes No. 269	7km north	Approved
SEF on the Farm East 270	Portion 02 and Remainder of the Farm East No. 270	4.5km north	In process
East 2 and East 3 Solar Parks	Portion 02 and Remainder of the Farm East No. 270	4.5km north	Approved
SEF on Farm Shirley No. 367	Portion 01 of the Farm Shirley No. 367	19km south	Approved
Perth-Kuruman Solar Farm	Remainder of the Farm Perth No. 276	2.6km south	Approved
Perth-Hotazel Solar Farm	Remainder of the Farm Perth No. 276	2.6km south	Approved
Kagiso Solar Power Plant	Remainder of the Farm Perth No. 276	2.6km south	Approved
Tshepo Solar Power Plant	Remainder of the Farm No. 275	2.6km south-east	Approved
Hotazel Solar Park	Remainder of the Farm Annex Langdon No. 278	Immediately south	Approved
Hotazel Solar	Remaining extent of York A 279	On same property	Approved

Cape EAPrac does not have details on the exact configuration of these facilities, however, based on the assumption that each facility on average will result in the transformation of approximately 230ha, one can assume the following transformation of the two vegetation types associated with the greater area (Gordonia Duneveld and Kathu Bushveld).

**Table 45:** Potential habitat transformation proximity to Hotazel 2.

Status	Transformation Area in Hectares
In operation	230
Under construction	0
Authorised	2530
EIA in Progress	460

It is impossible to foresee how many of these projects will reach preferred bidder status in terms of the REIPPPP and will eventually be constructed. As a worst case scenario one can assume a total transformation of 3220 hectares in the surrounding area.

Potential cumulative impacts identified for the project include various negative impacts such as loss of habitat, visual massing, loss of agricultural land an influx jobseekers and change in the area's sense of place, but also include positive cumulative impacts on the economy, business development, and employment.

From an ecological perspective, cumulative impacts associated with the development are a concern. However, the loss of the habitat within the preferred alternative is not considered highly significant, given the degraded nature of the areas surrounding the site and the location and ecological context of the site. As a result, the overall cumulative impact of the development is considered likely to be low.

From an ecological perspective, cumulative impacts in the area are a concern due firstly to the mining activity that characterises the area and secondly due to the proliferation of solar energy development in the wider Hotazel-Kathu area. In terms of habitat loss, the affected Kathu Bushveld vegetation type is still approximately 90% intact and while this is not a very extensive vegetation type, the loss of 230ha of habitat is not considered highly significant, especially given the spatial context of the site adjacent to mining, railway and road footprint areas. In terms of potential losses to landscape connectivity, the location of the site in an impacted area indicates that it is not likely in an area that is important for faunal movement. As such, the overall cumulative impact of the development is considered likely to be low.

This is also supported by the fact that the area has not been identified as being a CBA or NPAES Focus Area.

From a social perspective the project is deemed to have a Medium positive cumulative impact from employment, skills and business opportunities and skills development and a Low negative cumulative impact from large-scale in-migration of people.

From a visual perspective, the cumulative visual risk to scenic resources was rated medium negative. Retaining the bushveld vegetation around the proposed PV areas will retain the surrounding agricultural sense of place, and further localise the combined zone of visual influence. With successful rehabilitation of the area back to an agricultural land use on closure, the cumulative visual risk could be reduced to negligible in the long term.

The summary of the cumulative impacts assessed by the participating specialists are included in the table below.

**Table 46:** Summary of cumulative impacts of Hotazel 2 and Associated Infrastructure.

Impact	Significance (Post Mitigation) and Status
<b>Cumulative Agricultural Impacts</b>	
Loss of agricultural land	Low Negative
Altering drainage patterns	Low Negative
Changing agricultural character to industrial	Very Low Negative
<b>Cumulative Terrestrial Ecology Impacts</b>	
Reduced ability to meet conservation obligations & targets due to cumulative habitat loss.	Low Negative
Impact on broad-scale ecological processes due to cumulative loss and fragmentation of habitat	Low negative
<b>Cumulative Avifaunal Impacts</b>	
Broad-scale avifaunal impacts due to cumulative loss and fragmentation of habitat	Medium – Low Negative
<b>Cumulative Visual Impacts</b>	
Cumulative Visual Impact of PV sites and structures	Medium Negative
Cumulative Visual Impact of Grid connection option 1	Low Negative
Cumulative Visual Impact of Grid connection option 2	Low Negative
Cumulative Visual Impact of Grid connection option 3	Medium Negative
<b>Cumulative Archaeological Impacts</b>	
Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.	Low Negative
<b>Cumulative Social Impacts</b>	
An increase in employment opportunities, skills development and business opportunities with the establishment of more than one SEF.	Medium Negative
Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area.	Medium Negative

## 9.10 IMPACT SUMMARY

The table below summarises the significance (with mitigation) of all impacts assessed in the sections above<sup>16</sup>.

For ease of easy references, impacts are visually reflected using the following colour scheme<sup>17</sup>.

All positive impacts (regardless of their significance)



<sup>16</sup> To attain these outcomes, the mitigation measures reflected in section 10 of the report need to be implemented.

<sup>17</sup> Where specialist ratings fall across 2 of the groups, the worst case is reflected in the quick reference.

Neutral or Negligible negative impacts  
 Very Low and Low negative impacts  
 Medium negative impacts  
 Medium – High, High and Very High negative impacts



**Table 47:** Summary of post mitigation impacts of Hotazel 2 and Associated Infrastructure.

Impact	Significance (Post Mitigation) and Status
<b>Agricultural Impacts</b>	
<b>Construction Phase Agricultural Impacts</b>	
Soil pollution	Low Negative
Loss of agricultural land	Low Negative
Risk of erosion	Low Negative
Change in drainage patterns	Low Negative
<b>Operational Phase Agricultural Impacts</b>	
Soil pollution	Low Negative
Loss of agricultural land.	Low Negative
<b>Decommissioning Phase Agricultural Impacts</b>	
Soil pollution	Low Negative
<b>Cumulative Agricultural Impacts</b>	
Loss of agricultural land	Low Negative
Altering drainage patterns	Low Negative
Changing agricultural character to industrial	Very Low Negative
<b>Terrestrial Ecology Impacts</b>	
<b>Construction Phase Terrestrial Ecology Impacts</b>	
Impacts on vegetation and listed or protected plant species resulting from construction activities	Medium Negative
Direct Faunal Impacts During Construction	Medium – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 1 construction activities	Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 2 construction activities	Very – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 3 construction activities	Low Negative
Direct Faunal Impacts During Construction for grid connection option 1	Low Negative
Direct Faunal Impacts During Construction for grid connection option 2	Very Low Negative
Direct Faunal Impacts During Construction for grid connection option 3	Low Negative
<b>Operational Phase Terrestrial Ecology Impacts</b>	
Faunal Impacts due to operational activities	Low Negative
<b>Decommissioning Phase Terrestrial Ecology Impacts</b>	
Impacts on vegetation and listed or protected plant species resulting from decommissioning activities	Medium Negative
Direct Faunal Impacts during decommissioning	Medium – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 1 decommissioning activities	Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 2 decommissioning activities	Very – Low Negative
Impacts on vegetation and listed or protected plant species resulting from power line option 3 decommissioning activities	Low Negative
Direct Faunal Impacts during decommissioning of grid connection option 1	Low Negative
Direct Faunal Impacts during decommissioning of grid connection option 2	Very Low Negative
Direct Faunal Impacts during decommissioning of grid connection option 3	Low Negative
<b>Cumulative Terrestrial Ecology Impacts</b>	
Reduced ability to meet conservation obligations & targets due to cumulative habitat loss.	Low Negative

Impact	Significance (Post Mitigation) and Status
Impact on broad-scale ecological processes due to cumulative loss and fragmentation of habitat	Low negative
<b>Avifaunal Impacts</b>	
<b>Construction Phase Avifaunal Impacts</b>	
Avifaunal Impacts During Construction – habitat loss and disturbance	Medium - Low
Direct Avifaunal Impacts During Construction Grid connection option 1	Low Negative
Direct Avifaunal Impacts During Construction Grid connection option 2	Very Low Negative
Direct Avifaunal Impacts During Construction Grid connection option 3	Low Negative
<b>Operational Phase Avifaunal Impacts</b>	
Avifaunal Impacts due to operational activities – disturbance and collisions with PV panels	Low Negative
Avifaunal Impacts due to operational activities – disturbance and collisions with PV panels	Low Negative
Operational phase power line electrocution and collision risk of large terrestrial birds and raptors – Powerline Option 1	Low Negative
Operational phase power line electrocution and collision risk of large terrestrial birds and raptors – Powerline Option 2	Very Low Negative
Operational phase power line electrocution and collision risk of large terrestrial birds and raptors – Powerline Option 3	Low Negative
<b>Decommissioning Phase Avifaunal Impacts</b>	
Avifaunal Impacts during decommissioning – habitat loss and disturbance	Medium - Low
Direct Avifaunal Impacts during decommissioning Grid connection option 1	Low Negative
Direct Avifaunal Impacts during decommissioning Grid connection option 2	Very Low Negative
Direct Avifaunal Impacts during decommissioning Grid connection option 3	Low Negative
<b>Cumulative Avifaunal Impacts</b>	
Broad-scale avifaunal impacts due to cumulative loss and fragmentation of habitat	Medium – Low Negative
<b>Freshwater Aquatic Impacts</b>	
Impact on surface water resources	None
<b>Visual Impacts</b>	
<b>Construction Phase Visual Impacts</b>	
Visual exposure of Hotazel 2	Low Negative
Visual exposure of Grid connection option 1	Very Low Negative
Visual exposure of Grid connection option 2	Very Low Negative
Visual exposure of Grid connection option 3	Very Low Negative
<b>Operational Phase Visual Impacts</b>	
Operational Visual Impact of PV sites and structures	Low Negative
Operational Visual exposure of Grid connection option 1	Very Low Negative
Operational Visual exposure of Grid connection option 2	Very Low Negative
Operational Visual exposure of Grid connection option 3	Very Low Negative
<b>Decommissioning Phase Visual Impacts</b>	
Decommissioning Phase Visual Impact of PV sites and structures	Low Negative
Decommissioning Phase Visual Impact of Grid connection option 1	Very Low Negative
Decommissioning Phase Visual Impact of Grid connection option 2	Very Low Negative
Decommissioning Phase Visual Impact of Grid connection option 3	Very Low Negative
<b>Cumulative Visual Impacts</b>	
Cumulative Visual Impact of PV sites and structures	Medium Negative
Cumulative Visual Impact of Grid connection option 1	Low Negative
Cumulative Visual Impact of Grid connection option 2	Low Negative
Cumulative Visual Impact of Grid connection option 3	Medium Negative
<b>Archaeological Impacts</b>	
<b>Construction Phase Archaeological Impacts</b>	
Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.	Low Negative
<b>Operational Phase Archaeological Impacts</b>	
No Impacts on Archeology resources are expected during operations	None
<b>Decommissioning Phase Archaeology Impacts</b>	



Impact	Significance (Post Mitigation) and Status
No Impacts on Archeology resources are expected during decommissioning	None
<b>Cumulative Archaeology Impacts</b>	
Clearing and levelling the ground for solar panels, access roads, cabling, substation and powerlines may impact archaeological resources.	Low Negative
<b>Social Impacts</b>	
<b>Construction Phase Social Impacts</b>	
The creation of direct and indirect employment opportunities during the construction phase of the project.	Medium Positive
Significance of the impact from the economic multiplier effects from the use of local goods and services.	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
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.	Low Negative
Temporary increase in traffic disruptions and movement patterns during the construction phase.	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
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Low Negative
<b>Operational Phase Social Impacts</b>	
The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy.	Medium Positive
Development of non-polluting, renewable energy infrastructure	Medium Positive
Contribution to LED and social upliftment during the operation of the project.	High Positive
Visual impacts and sense of place impacts associated with the operation phase of Hotazel 2.	Low Negative
Loss of agricultural land and overall productivity as a result of the operation of the proposed project on an agricultural property.	Low Negative
<b>Decommissioning Phase Social Impacts</b>	
The creation of direct and indirect employment opportunities during the decommissioning phase of the project.	Medium Positive
Significance of the impact from the economic multiplier effects from the use of local goods and services.	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
Temporary increase in safety and security concerns associated with the influx of people during the decommissioning phase.	Low Negative
Temporary increase in traffic disruptions and movement patterns during the decommissioning phase.	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
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Low Negative
<b>Cumulative Social Impacts</b>	
An increase in employment opportunities, skills development and business opportunities with the establishment of more than one SEF.	Medium Negative
Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area.	Medium Negative
<b>Traffic Impacts</b>	
<b>Construction Phase Traffic Impacts</b>	
Impacts on existing traffic levels as a result of construction traffic	Negligable
<b>Operational Phase Traffic Impacts</b>	
Impacts on existing traffic levels as a result of operational traffic	Negligable
<b>Decommissioning Phase Traffic Impacts</b>	

Impact	Significance (Post Mitigation) and Status
Impacts on existing traffic levels as a result of Decommissioning traffic	Negligible

As can be seen from the table above, all impacts range from High Positive to Medium negative and no Impacts remain high, or very high after mitigation.

### 9.11 IMPACT STATEMENT

None of the participating specialists identified any impacts that remain high after mitigation. All impacts assessed range from very high positive to medium negative after mitigation.

The interconnection powerline has also been aligned along existing servitudes and does not traverse any highly sensitive features.

From an ecological perspective the development footprint of Hotazel 2 will not result in major fragmentation of the landscape. The affected area is considered suitable for development and there are no impacts associated with Hotazel 2 that cannot be mitigated to a medium or low level. As such there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. Based on the layout provided for the assessment, the Hotazel 2 can be supported from a terrestrial and avifaunal ecology point of view. The proposed grid connection with associated infrastructure is likely to generate low impacts on fauna and flora after mitigation. No high impacts that cannot be avoided were observed and from a flora and terrestrial fauna perspective, there are no reasons to oppose the facility (including the grid connection and associated infrastructure).

From a heritage point of view, all impacts on heritage resources are deemed to be low to negligible. Social impact range from very high positive to medium negative.

A map showing the proposed activity in relation to the key sensitive features is in attached in Appendix D. All sensitive features along with their appropriate buffers are shown in this plan. As required by the EMP, all areas outside of the proposed development footprint are to be demarcated as no go areas.

## 10. MITIGATION AND MANAGEMENT MEASURES

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac. This table summarises the mitigations, and details whether they should be included as conditions of approval, or whether they have been included as actions in the EMP. The table furthermore reflects to which stage of the development the proposed mitigation measures are applicable. In instances where suggested mitigations have already been incorporated into the design phase, they have been reflected as such.

**Table 48:** Recommended mitigation measures required for the construction, operation and decommissioning of the Hotazel 2 Solar PV development.

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
<b>Terrestrial Ecology</b>					
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓	✓	✓	✓	✓
As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores.		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Avoid sensitive features and habitats when locating infrastructure		✓	✓		
No mass clearing of vegetation for the PV arrays should be allowed. Vegetation to be brush cut and only in exceptional circumstances completely cleared.	✓	✓	✓		
Compile a Rehabilitation Plan		✓	✓	✓	✓
Compile an Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas.		✓	✓	✓	✓
Where possible, access roads should be located along existing farm, access and district roads		✓	✓		
Access to sensitive areas outside of development footprint should not be permitted during construction.		✓	✓		
Undertake monitoring to evaluate whether further measures would be required to manage impacts.		✓	✓	✓	
Undertake a biodiversity walkthrough of the site prior to construction.	✓	✓	✓		
A detailed pre-construction walk-through survey will be required during a favourable season to locate any additional individuals of protected plants. This survey must cover the footprint of all approved infrastructure, including internal access roads.	✓	✓	✓		
If possible, plants should be conserved in situ, along with an appropriate buffer zone around them		✓	✓		
Plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect		✓	✓		
A Plant Rescue Plan must be compiled to be approved by the appropriate authorities.		✓	✓		
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓		✓		
No speeding on access roads – install speed control measures, such as speed humps, if necessary		✓	✓		
No hunting of protected species.		✓	✓		
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species.		✓	✓		
Report any sightings to conservation authorities		✓	✓	✓	
Undertake dust fall-out monitoring and manage, where necessary	✓	✓	✓		
Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. This should include any areas within proximity to the project that may be affected by the project, or that could have an influence on invasion by alien invasive plants into the property		✓	✓	✓	
Undertake regular monitoring to detect alien invasions early so that they can be controlled.		✓	✓	✓	
Avoid development of designated sensitive habitats		✓	✓		
Appropriate lighting should be installed to minimize impacts on nocturnal animals.		✓	✓	✓	
Construction activities should not be undertaken at night.		✓	✓		
Compile and implement a stormwater management plan, which highlights control priorities and areas and provides a programme for long-term control		✓	✓		
Undertake regular monitoring to detect erosion features early so that they can be controlled		✓	✓	✓	
Avoid building on or near steep or unstable slopes.		✓	✓		
No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities		✓		✓	
Additional infrastructure to be located adjacent to existing infrastructure		✓		✓	
No driving of vehicles off-road		✓		✓	
No illegal collecting of any individual fauna or flora		✓	✓	✓	

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
No hunting of protected species or hunting of any other species without a valid permit.		✓	✓	✓	
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species		✓	✓	✓	
<b>Avifaunal</b>					
Activity should as far as possible be restricted to the footprint of the infrastructure.		✓	✓		✓
Measures to control noise and dust should be applied according to current best practice in the industry.		✓	✓		✓
Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.		✓	✓		✓
Access to the rest of the property must be restricted.		✓	✓		
A single perimeter fence should be used .		✓		✓	
With regards to the infrastructure within the substation yard and inverter station, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively.		✓		✓	
<b>Palaeontology</b>					
Implementation of a chance find procedure		✓	✓		
<b>Visual</b>					
Investigate the possibility of undertaking screening		✓	✓		
Plan to maintain the height of structures as low as possible;		✓	✓		
Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development		✓	✓		
Reinstate any areas of vegetation that have been disturbed during construction		✓	✓		
Remove all temporary works		✓		✓	
Monitor rehabilitated areas post-construction and implement remedial actions;		✓		✓	
Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area.		✓		✓	
Remove infrastructure not required for the post-decommissioning use of the site		✓			✓
All alien plant re-growth must be monitored and should these alien plants reoccur these plants should be re-eradicated. The scale of the development does however not warrant the use of a Landscape Architect and / or Landscape Contractor.		✓	✓		
It is further recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset to ensure a net benefit to the environment within all areas that will remain undisturbed.		✓	✓	✓	
Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off		✓	✓		
Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment. Suitable dust and erosion control mitigation measures should be included in the EMP to mitigate these impacts.		✓	✓		
Any stormwater within the development area 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 (e.g. water used when washing the PV Panels).		✓	✓	✓	
Suitable stormwater management features with erosion control measures (gabions) should also be installed in areas where concentrated flows are anticipated		✓	✓		
Strict use and management of all hazardous materials used on site.		✓	✓		
Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / banded areas		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Containment of all contaminated water by means of careful run-off management on site.		✓	✓		
Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated water courses or the buffers shown		✓	✓		
Strict control of the behaviour of construction workers.		✓	✓		
Appropriate waste management		✓	✓		
Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced.		✓	✓		
<b>Agriculture</b>					
Installation of proper Erosion control, and drainage on the access road.		✓	✓		
Dust control on the access road during construction.		✓	✓		
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. Existing road alignments are followed and roads upgraded for use during the live span of facility. With the appropriate planning, the same live style can be achieved during the lease period of the facility from the land so occupied by the facility.		✓	✓		
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.		✓	✓		
Ensure that most infrastructure features are erected on transformed or non-arable land. Implement stormwater management as an integral part of planning and as a guideline for the positioning of structures. Use existing roads and conservation structures to the maximum in the planning and operation phases. Rehabilitate disturbed areas as soon as possible after construction.		✓	✓		
Erosion and sediment control with proper water run-off control planning.		✓	✓		
Appropriate handling and storage of chemicals and hazardous substances and waste should be done.		✓	✓		
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.		✓	✓		
Clear trees and bushes selectively, leaving grass un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.		✓	✓		
Establish structures on the contour. Use grass strips to regulate flow speed		✓	✓		
<b>Social</b>					
Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		✓	✓		
Before the construction phase commences the proponent should meet with representatives from the JMLM to establish the existence of a skills database for the		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
area. If such as database exists it should be made available to the contractors appointed for the construction phase.					
Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;		✓	✓		
The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		✓	✓		
Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase		✓	✓		
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		✓	✓		
The JMLM in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.		✓	✓		
Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;		✓	✓		
The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local JMLM Councillor for Ward 2, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers;		✓	✓	✓	
The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation;		✓	✓	✓	
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;		✓	✓		
The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area;		✓	✓		
The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.		✓	✓		
Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks;		✓	✓		
The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end;		✓	✓		
It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		✓	✓		
The proponent should implement a policy that no employment will be available at the gate.		✓	✓		
The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area;		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
The proponent must enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences;		✓	✓		
Traffic and activities should be strictly contained within designated areas		✓	✓		
Strict traffic speed limits must be enforced on the farm		✓	✓		
All farm gates must be closed after passing through		✓	✓		
Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties		✓	✓		
The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below)		✓	✓		
The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested		✓	✓		
Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.		✓	✓		
Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation		✓	✓		
The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated;		✓	✓		
Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;		✓	✓		
Smoking on site should be confined to designated areas;		✓	✓		
Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle;		✓	✓		
Contractor to provide fire-fighting training to selected construction staff		✓	✓		
Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.		✓	✓		
All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits		✓	✓		
An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase;		✓	✓		
All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase		✓	✓		
The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed		✓	✓		
The implementation of the Rehabilitation Programme should be monitored by the ECO		✓	✓		
Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members; Maximise opportunities for local content, procurement and community shareholding		✓	✓		
The JMLM should liaise with the proponents of other renewable energy projects in the area to investigate how best the Community Trusts can be established and managed		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
so as to promote and support local, socio-economic development in the region as a whole.					
The JMLM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the GLM that should be consulted include the Municipal Managers Office, IDP Manager and LED Manager		✓	✓		
Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community;		✓	✓		
Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from the SEF plant.		✓	✓		
The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.		✓	✓		
All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning		✓	✓		
Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.		✓	✓		
Traffic					
Stagger component delivery to site .		✓	✓		✓
Reduce the construction period		✓	✓		✓
The use of mobile batch plants and quarries in close proximity to the site		✓	✓		✓
Staff and general trips should occur outside of peak traffic periods.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓
Dust Suppression of gravel roads during the construction phase, as required.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓

## 11. PUBLIC PARTICIPATION PROCESS

Section 41 in Chapter 6 of regulation 982 details the public participation process that has to take place as part of an environmental process. The table below provides a quick reference to show how this environmental process has or intends to comply with these legislated requirements relating to public participation.

**Table 49:** Public participation requirements in terms of Section 41 of R982

Regulated Requirement	Description
(1) If the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.	Proof of landowner consent for the PV facility is attached in <b>Annexure G2</b> .
(2) Subregulation (1) does not apply in respect of-	The proposed grid connection is deemed to constitute a linear activity and as such not required to obtain landowner consent.
(a) linear activities;	Land-owners of the properties affected by the proposed grid connection have been automatically registered as interested and affected parties and have been given an opportunity to comment on the scoping report. The applicant is currently in the process of negotiating servitudes with these landowners.



Regulated Requirement	Description
The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by -	
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -  (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and  (ii) any alternative site;	A site notice was placed along the R31.  Please refer to <b>Annexure F3</b> for photographic evidence.
(b) giving written notice, in any of the manners provided for in section 47D of the Act, to -	
(i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	The existing homestead on the property has been excluded from the development footprint.
(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	Owners of adjacent properties have been notified of this environmental process. Such owners have been requested to inform the occupiers of the land of this environmental process. These notifications are included in <b>Annexure F4</b> .
(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;	The ward councillor has been notified of this environmental process.  These notifications are included in <b>Annexure F4</b> .
(iv) the municipality which has jurisdiction in the area;	The Joe Morolong municipality (Planning and Technical Services) have been notified of this environmental process.  Please refer to <b>Annexure F4</b> for copies of these notifications.
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	Please refer to section 12.1 below showing the list of organs of state that were notified as part of this environmental process.  These notifications are included in <b>Annexure F4</b> .
(vi) any other party as required by the competent authority;	DEFF were given an opportunity to comment on the Draft Scoping Report and any other requirements highlighted by them will be complied with.
(c) placing an advertisement in -  (i) one local newspaper; or  (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	An advert calling for registration of I&APs was placed in the Kathu Gazette.  A copy of the advertisement is included in <b>Annexure F3</b> .  There is currently no official Gazette that has been published specifically for the purpose of providing public notice of applications
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);and	Adverts were not placed in provincial or national newspapers, as the potential impacts will not extend beyond the borders of the municipal area.
(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person	Notifications have included provision for alternative engagement in the event of illiteracy, disability or any other disadvantage. In such instances, Cape EAPrac will engage

Regulated Requirement	Description
<p>is desirous of but unable to participate in the process due to -</p> <ul style="list-style-type: none"> <li>(i) illiteracy;</li> <li>(ii) disability; or</li> <li>(iii) any other disadvantage.</li> </ul>	<p>with such individuals in such a manner as agreed on with the competent authority.</p>
<p>(3) A notice, notice board or advertisement referred to in subregulation (2) must -</p> <ul style="list-style-type: none"> <li>(a) give details of the application or proposed application which is subjected to public participation; and</li> <li>(b) state - <ul style="list-style-type: none"> <li>(i) whether basic assessment or S&amp;EIR procedures are being applied to the application;</li> <li>(ii) the nature and location of the activity to which the application relates;</li> <li>(iii) where further information on the application or proposed application can be obtained; and</li> <li>(iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made.</li> </ul> </li> </ul>	<p>Photographic records of the site notices are included in <b>Annexure F3</b>.</p>
<p>(4) A notice board referred to in subregulation (2) must -</p> <ul style="list-style-type: none"> <li>(a) be of a size at least 60cm by 42cm; and</li> <li>(b) display the required information in lettering and in a format as may be determined by the competent authority.</li> </ul>	<p>Photographic records of the site notice are included in <b>Annexure F3</b>.</p>
<p>(5) Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that -</p> <ul style="list-style-type: none"> <li>(a) such process has been preceded by a public participation process which included compliance with subregulation (2)(a), (b), (c) and (d); and</li> <li>(b) written notice is given to registered interested and affected parties regarding where the - <ul style="list-style-type: none"> <li>(i) revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b);</li> <li>(ii) revised environmental impact report or EMPr as contemplated in regulation 23(1)(b); or</li> <li>(iii) environmental impact report and EMPr as contemplated in regulation 21(2)(d);</li> </ul> </li> </ul> <p>may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.</p>	<p>The utilisation of this regulation was not exercised, as there are not significant changes to the Final Scoping Report.</p>
<p>(6) When complying with this regulation, the person conducting the public participation process must ensure that -</p>	<p>All reports that are submitted to the competent authority will be subject to a public participation process. These include:</p> <ul style="list-style-type: none"> <li>- Draft Scoping Report</li> </ul>

Regulated Requirement	Description
<p>(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and</p> <p>(b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.</p> <p>(7) Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.</p>	<ul style="list-style-type: none"> <li>- Plan of Study for Environmental Impact Report</li> <li>- Draft Environmental Impact Report</li> <li>- Draft Environmental Management Plan</li> <li>- All specialist reports that form part of this environmental process.</li> </ul>

## 11.1 REGISTRATION OF KEY STAKEHOLDERS

A number of key stakeholders were automatically registered and have been given an opportunity to comment on the Draft Scoping Report and will be given a further opportunity to comment on the Draft Environmental Impact Report. Copies and proof of these notifications are attached in **Annexure F4**. A list of key stakeholders registered for this process is included in the table below.

**Table 50:** Key Stakeholders automatically registered as part of the Environmental Process

Stakeholders Registered		
Neighbouring property owners	Department of Environmental Affairs and Nature Conservation	Department of Water and Sanitation
All parties registered as having prospecting rights on Remainder of Farm 279	Joe Morolong Municipality: Municipal Manager	Department of Science and Technology
Joe Morolong: Ward 4 Councillor	South African National Roads Agency Limited	The Council for Scientific and Industrial Research
South African Heritage Resources Agency	Department of Transport and Public Works	The South African Square Kilometre Array
Northern Cape Heritage Resources Authority	Department of Health	The South African Civil Aviation Authority
Department of Agriculture, Forestry and Fisheries	Department of Minerals and Energy	Department of Science and Technology
Provincial Department of Agriculture	Eskom	Department of Communications
Endangered Wildlife Trust	Department of Mineral Resources	SENTECH
Department of Environmental Affairs, Biodiversity Directorate.	Birdlife Africa.	Land Owner of the Remainder of Farm 280
Land Owner of Portion 11 of Farm 279	Land owner Remaining Extent of Portion 3 of the Farm York 279	SARAO

## 11.2 NOTIFICATION OF AVAILABILITY OF DRAFT SCOPING REPORT

All registered I&AP's as well as those who responded to the Advert or Site notice were notified of the availability of the Draft Scoping Report for review and comment. Copies of the written notifications are attached in **Annexure F4** and copies of the two advertisements placed are included in **Annexure F3**.

acted in secrecy where municipalities spend them clandestinely and spend government funds.

Glenfield Office Park, Block E  
381 Oberon Street  
FAERIE GLEN  
P.O. Box 34 PRETORIA 0001  
e-mail: ahd@weirid.co.za  
Reference: Mrs Swan/57224142

**age**

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**Cape EAPrac**

**PUBLIC PARTICIPATION PROCESS**

**HOTAZEL SOLAR & HOTAZEL 2**

Application for amendment and Scoping & EIR Process

Notice is hereby given of a Public Participation Process in terms of the National Environmental Management Act (Act No 107 of 1998) and the National Heritage Resources Act (NHRA) (No. 25 of 1998).

An Application for a Scoping & Environmental Impact Reporting (S&EIR) process for Hotazel 2 as well as an application for amendment of Hotazel Solar has been submitted to the national Department of Environment, Forestry and Fisheries (DEFF).

**Proponent:** ABO Wind Hotazel PV (Pty) Ltd (amendment process) and Hotazel Solar Facility 2 (Pty) Ltd (S&EIR). Environmental Consultant: Cape EAPrac

**Location:** Farm York A 279, situated South of Hotazel in the Northern Cape.

**Proposal:** It is the intention of the proponent, as a Renewable Energy Independent Power Producer (REIPP) to amend the existing environmental authorisation and to develop a second 100MW (MegaWatt) Solar Photovoltaic (PV) Facility, with associated infrastructure on the abovementioned property.

The procedures for the amendment of an existing environmental authorisation and for a Scoping & Environmental Impact Reporting (S&EIR) process in terms of the 2014 Regulations are being followed for this project. The following activities, in terms of Government Notice R983, R984 & R985 may be applicable: GN R983: 11(i), 19(j), 12(xii)(a)(c) GN R984: 1, 2 & 15 GN R985: 4(a)(i)(aa) & 18(a)(i)(aa)

In order to be registered as an Interested and Affected Party (I&AP), individuals are requested to respond to this notice by submitting their complete contact details and any comment to Cape EAPrac in writing (to address below). Online registration forms are available on the Cape EAPrac website: [www.cape-eaprac.co.za](http://www.cape-eaprac.co.za)

Cape EAPrac (Attention: Mr Dale Holder)  
P O Box 2070, George 6530 | Telephone: 044 874 0365 | Facsimile: 044 874 0432  
Email: [dale@cape-eaprac.co.za](mailto:dale@cape-eaprac.co.za)

**REGISTRATION REQUESTS AND COMMENTS MUST BE SUBMITTED IN WRITING**

Figure 19: Initial call for registration as published in the Kathu Gazette.



**Cape EAPrac**

**PUBLIC PARTICIPATION PROCESS**

**HOTAZEL 2**

**Scoping & EIR Process**

Notice is hereby given of a Public Participation Process in terms of the National Environmental Management Act (Act No 107 of 1998) and the National Heritage Resources Act (NHRA) (No. 25 of 1998).

An Application for a Scoping & Environmental Impact Reporting (S&EIR) process for Hotazel 2 Solar Development has been submitted to the national Department of Environment, Forestry and Fisheries (DEFF).

**Proponent:** Hotazel Solar Facility 2 (Pty) Ltd.  
**Environmental Consultant:** Cape EAPrac

**Location:** Farm York A 279, situated South of Hotazel in the Northern Cape.

**Proposal:** It is the intention of the proponent, as a Renewable Energy Independent Power Producer (REIPP) to develop a 100MW (MegaWatt) Solar Photovoltaic (PV) Facility, with associated infrastructure on the abovementioned property.

The procedures for a Scoping & Environmental Impact Reporting (S&EIR) process in terms of the 2014 Regulations are being followed for this project. The following activities, in terms of Government Notice R983, R984 & R985 may be applicable: GN R983: 11(i), 19(j), 12(xii)(a)(c) GN R984: 1, 2 & 15 GN R985: 4(a)(i)(aa) & 18(a)(i)(aa)

In order to be registered as an Interested and Affected Party (I&AP), individuals are requested to respond to this notice by submitting their complete contact details and any comment to Cape EAPrac in writing (to address below). Online registration forms and copies of the Draft Scoping Report are available on the Cape EAPrac website: [www.cape-eaprac.co.za](http://www.cape-eaprac.co.za)

Cape EAPrac (Attention: Mr Dale Holder)  
P O Box 2070 George 6530  
Telephone: 044 874 0365 Facsimile: 044 874 0432  
Email: [dale@cape-eaprac.co.za](mailto:dale@cape-eaprac.co.za)

**ANY COMMENTS ON THE DRAFT SCOPING REPORT MUST BE SUBMITTED IN WRITING BY NO LATER THAN 16 NOVEMBER 2020**

therefore, urging anyone with information regarding any Covid-19



SAPS gets relig

**SIYATHEME**

**During the national Police Prayer Day service, Colonel Mc addressed the different stakeholders and members of the**

**T**he JTG District's Police Prayer Day service was held at the Assembly of God church in Siyathemba on 06 October 2020 to honour police officers for going the extra mile to curb the level of crime within our communities.

The religious event is an annual affair nationwide with the intention for SAPS members to seek God's intervention to receive heavenly protection. The event was organised by the Crime Prevention Forum in Siva-

Figure 20: Call for registration and Availability of the Draft Scoping Report as published in the Kathu Gazette.

### 11.3 COMMENTS AND RESPONSES ON DRAFT SCOPING REPORT

All comments received on the Draft Scoping Report have been considered, responded to and included in the Final Scoping Report that was submitted to DEFF for decision making. Copies of all comments received are included in **Annexure F5** and the comments & responses trail report is included in **Annexure F2**.

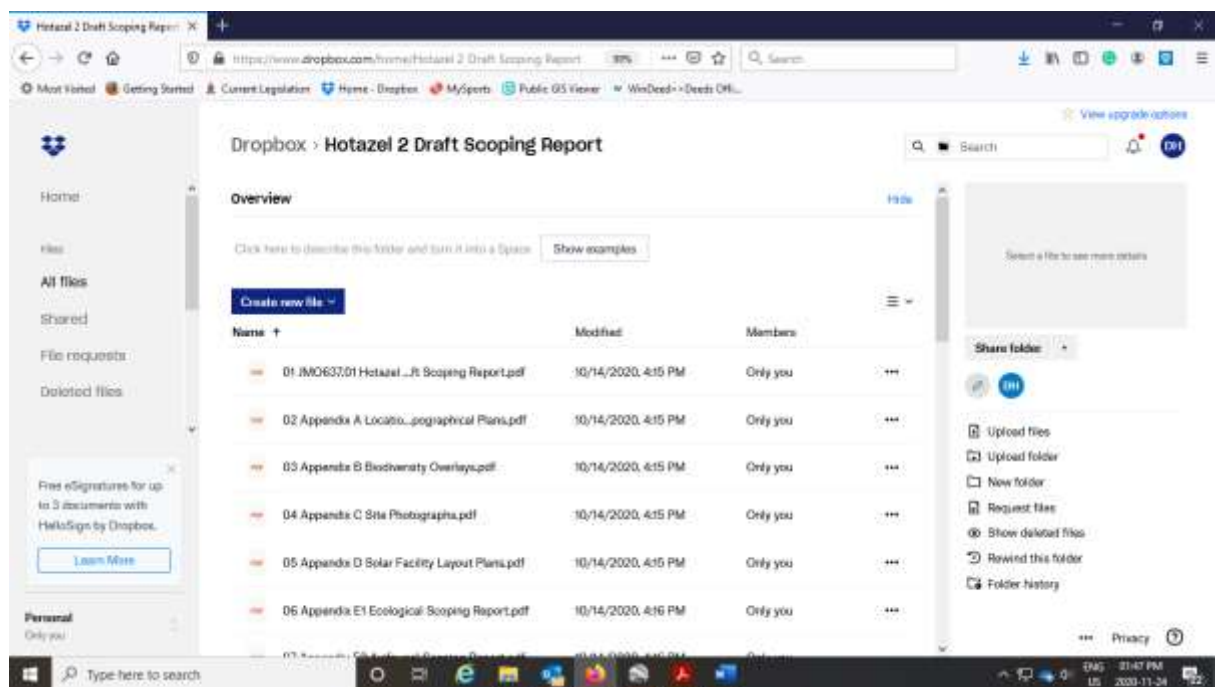
During the comment period on the Draft Scoping Report, comments were received from the following Parties:

- Department of Environment, Forestry and Fisheries, Directorate: Integrated Environmental Authorisations (the competent authority).
- Department of Environment, Forestry and Fisheries, Directorate: Biodiversity and Conservation.
- Eskom
- G7 Renewable Energies (Registration only)
- Sue Parkin – Specifying Techniques (Registration Only)

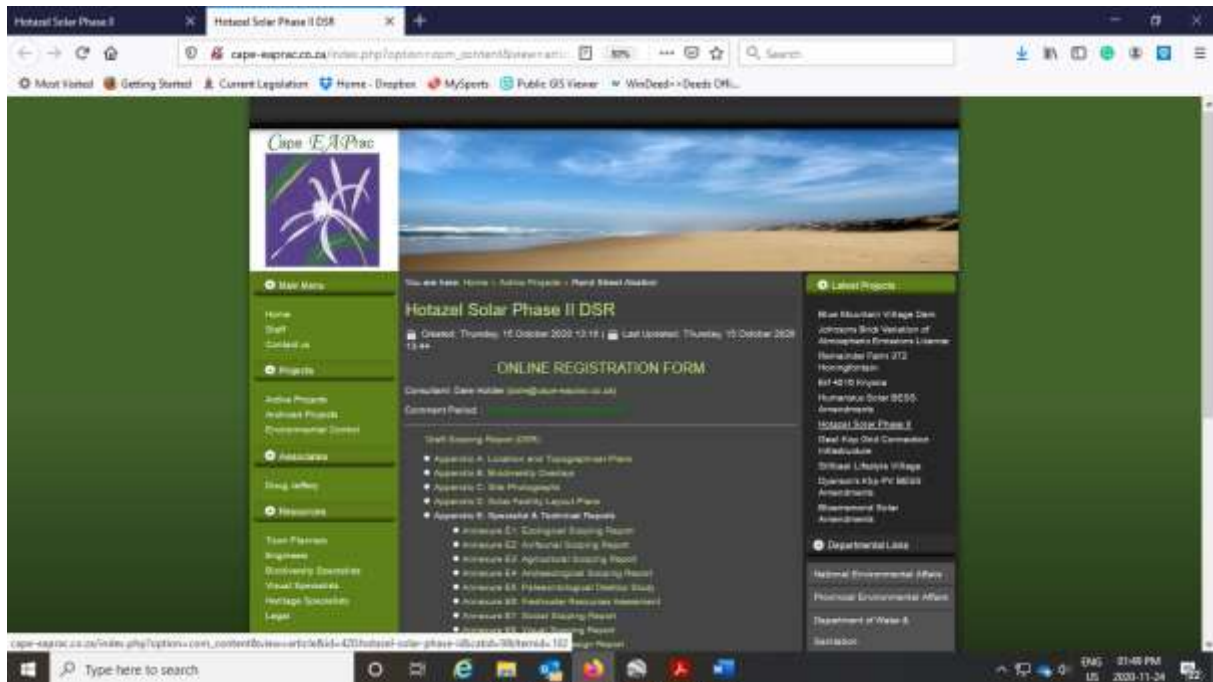
### 11.4 AVAILABILITY OF DRAFT SCOPING REPORT

The Draft Scoping Report was made available for a 30-day comment period extending from **14 October 2020 – 16 November 2020**. In compliance with the approved Public Participation Plan, copies of the report were available at the following locations:

- Cape EAPrac Website: [www.cape-eaprac.co.za](http://www.cape-eaprac.co.za)
- Dropbox and Sharepoint download links.



**Figure 21:** Hotazel 2 Draft Scoping Report as available on a dedicated dropbox download link.



**Figure 22:** Draft Scoping Report as available on the Cape EAPrac website.

## 11.5 NOTIFICATION OF AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACTS REPORT.

All I&APs that registered during the preceding scoping process will be provided with a further opportunity to comment on the Draft Environmental Impact Report.

This Draft Environmental Impact Report is available for a 30 day review and comment period extending from 01 March 2021 – 06 April 2021. All comments received during this period will be incorporated into the Final Environmental Impact Report that will be submitted to the competent authority for decision making.

## 12. CONCLUSION & RECOMMENDATIONS

This environmental process is currently being undertaken to present proposals to the public and potential Interested and Affected Parties (I&APs) and to identify and assess environmental impacts, issues and concerns raised as a result of the proposed development alternatives.

This will allow I&APs, authorities, the project team, as well as specialists to provide input and raise issues and concerns, based on studies undertaken. Hotazel 2 has been analysed from Ecological, Avifaunal, Agricultural, Heritage (including Archaeology and Palaeontology), Freshwater, Social and Visual perspectives, and site constraints and potential impacts identified and assessed.

Cape EAPrac is of the opinion that the information contained in this Draft EIR and the documentation attached hereto is sufficient to allow I&AP's and the competent authority to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for. This environmental process has not identified any fatal flaws with the proposal and as such it is our reasoned view that the project should be considered for authorisation. All specialists concur that the development as proposed can be considered for approval and that there are no reasons why the development should not be implemented. All impacts range from high positive to medium - low negative and all high negative impacts have been avoided or effectively mitigated.

All stakeholders are requested to review the Draft Environmental Impact Report and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified 30-day comment period.

It is Cape EAPrac's considered opinion that the Hotazel 2 PV facility and Grid Connection Alternative 1 can be considered for approval.

### **12.1 REMAINDER OF ENVIRONMENTAL PROCESS.**

The following process is to be followed for the remainder of the environmental process:

- The Draft EIR is herewith available to all registered I&AP's for review and comment;
- All comments received will be considered, responded to and incorporated into the Final EIR;
- The Final EIR will be submitted to the DEA for consideration and decision-making; and
- The DEA's decision on the Final EIR will be communicated with all registered I&APs.

### 13. 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
CEMP <sub>r</sub>	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
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 Meridien; "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

## 14. REFERENCES

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<sup>18</sup> This reference list excludes specialist studies that form part of this environmental process and which are contained in Annexures E1 – E12

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