



BIO THERM ENERGY (PTY) LTD

75MW SOLAR PHOTOVOLTAIC (PV) ENERGY FACILIT – TLISITSENG PV 1 PROJECT

Heritage Impact Assessment – Supplementary Report
Cumulative Assessment Summary

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1 CUMULATIVE IMPACTS

The DEA have accepted the Final Scoping Report for the proposed Tlisitseng Solar PV Energy Facility near Lichtenburg in the North West Province. One of the DEAs requirements in their acceptance letter was that *“the EIA phase specialist studies must provide proof of how the specialist’s recommendations, mitigation measures and conclusions from various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusions and mitigation measures were drafted for this project.”*

This supplementary report provides an assessment of the cumulative effects on heritage resources associated with the Tlisitseng 1 project.

1.1 Cumulative Assessment

The area has seen some interest from developers of various renewable energy projects, which could be associated with the wind and solar energy resource potential found in the region, proximity to the existing sub-station and its evacuation capacity, as well as other factors. Such developments, whether already approved or only proposed, need to be considered as they have the potential to create numerous cumulative impacts, whether positive or negative, if implemented.

Table 1 lists the projects that will need to be considered when examining the cumulative impacts; their location relative to the project under review is illustrated in **Figure 1**.

Table 1: Proposed renewable energy projects in the area

Proposed Development	DEA Reference Number	Current Status of EIA	Proponent	Proposed Capacity	Farm Details
Thlitseng 2	14/12/16/3/3/2/890	EIA ongoing	BioTherm Energy	75MW	Portion 25 of the Farm Houthaalboomen No 31
Lichtenburg Solar Park	14/12/16/3/3/3/270	Project has received environmental authorisation	Matrigenix (Pty) Ltd	70MW	A portion of portion 10 of the Farm Lichtenburg Town and Townlands No. 27
Watershed Solar Energy Facility Phase 1	14/12/16/3/3/2/556	Project has received environmental authorisation	FVR Energy South Africa (Pty) Ltd	75MW	Portions 1, 9, 10 and 18 of the Farm Houthaalboomen No. 31
Watershed Solar Energy Facility Phase 2	14/12/16/3/3/2/557	Project has received environmental authorisation	FVR Energy South Africa (Pty) Ltd	75MW	Portions 1, 9, 10 and 18 of the Farm Houthaalboomen No. 31
Hibernia PV Solar Energy Facility	14/12/16/3/3/2/1062	Project has received environmental authorisation	Megawatt One Photovoltaic (Pty) Ltd	5MW	Portions 9 and 31 of the Farm Hibernia No. 52

This section evaluates the possible cumulative impacts (CI) on heritage resources with the addition of the Thlitseng 1 Project. The CI on heritage resources evaluated a 20-kilometer radius (Figure 1). It must further be noted that the evaluation is based on available heritage studies and cannot take the findings of outstanding studies on current ongoing EIA's in consideration (Refer to Section 2 on the availability of reports on other projects in the region).

The following must be considered in the analysis of the cumulative effect of development on heritage resources:

- **Fixed datum or dataset:** There is no comprehensive heritage data set for the Copperton region and thus we cannot quantify how much of a specific cultural heritage element is present in the region. The region has never been covered by a heritage resources study that can account for all heritage resources. Further to this none of the heritage studies conducted can with certainty state that all heritage resources within the study area has been identified and evaluated;
- **Defined thresholds:** The value judgement on the significance of a heritage site will vary from individual to individual and between interest groups. Thus implicating that

heritage resources' significance can and does change over time. An so will the the tipping threshold for impacts on a certain type of heritage resource;

- **Threshold crossing:** In the absence of a comprehensive dataset or heritage inventory of the entire region we will never be able to quantify or set a threshold to determine at what stage the impact from developments on heritage resources has reached or is reaching the danger level or excludes the new development on this basis. (Godwin, 2011)

Keeping the above short comings in mind, the methodology in evaluating cumulative impacts on heritage resources has been as follows.

The analysis of the competed studies as listed in **Table 2**, took in to account the findings and recommendation of each of the four evaluated HIA's. The cumulative impact on the cultural landscape was discounted as the HIA's, in most cases, did not address this and the Visual Impact Assessment covers such analysis in detail.

The overall findings of the four studies all concur that the area is characterised by a low density of Stone Age findspots and a low palaeontological significance baring the Tlisitseng 2 project site.

This cumulative assessment has also not addressed the possible cumulative impacts on the heritage landscape. The evaluated studies have in most cases not addressed or quantified the possible impact on the cultural landscape.

Table 3 provides an analysis of the projected cumulative impact this project will add to impact on heritage resources.

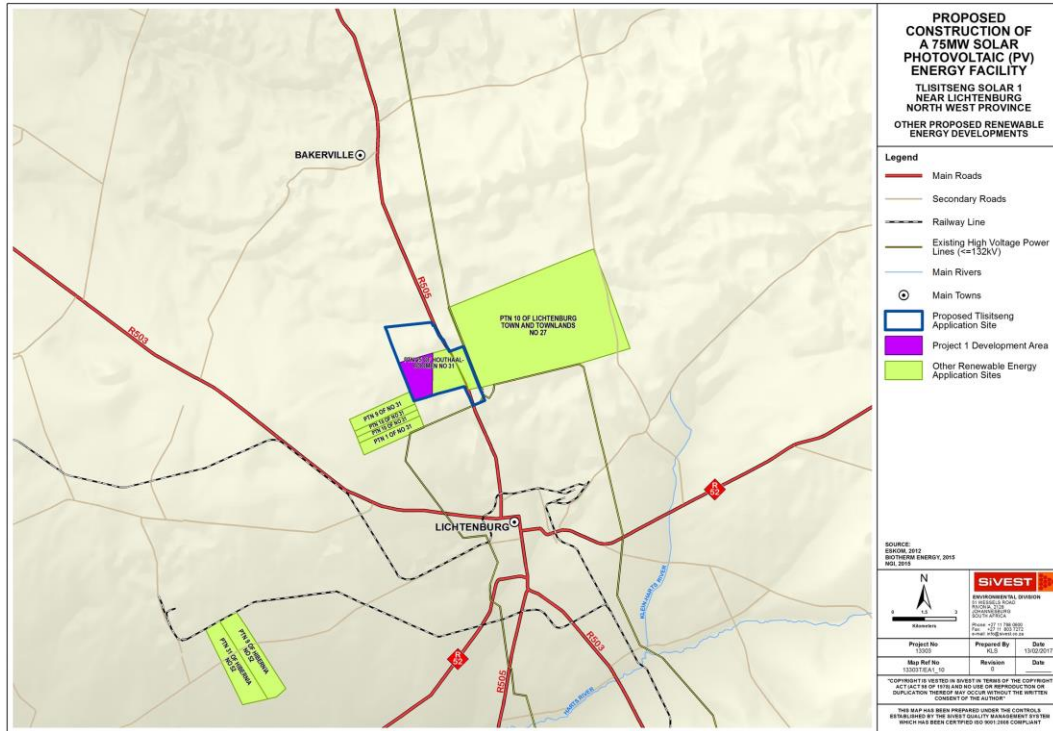


Figure 1: Other RE developments in relation to the Tlitseng 1PV application area

Table 2: Regional HIA's conducted		
Study	Findings	Recommendation
<p>Tlisitseng 2 <i>Fourie, W. 2016. Heritage Impact Assessment for the Tlisitseng 2 PV Project.</i></p> <p><i>Groenewald, G. 2016 palaeontological Impact Assessment for the Tlisitseng PV 2 Project.</i></p>	<p>During the fieldwork 3 heritage resources were identified in or close to the footprint area of the PV site.</p> <p>Local scree material and blocks of dolomite were inspected for fossils and all finds(stromatolites) were recorded as photographic records. No outcrop of bedrock with fossils was recorded and sites with cave breccia were recorded inside the PV 2 footprint, in areas where chert breccia was obviously present in the loose material. Final identification of possible sites where significant cave breccia will occur will only be identified after completion of the geotechnical surveys.</p>	<ul style="list-style-type: none"> ▪ One heritage site to be documented before destruction Post mitigation impact Low positive ▪ Due to the large number of boulders with stromatolites present on site it is recommended that an palaeontologist be appointed to monitor geotechnical investigations as part of a watching brief. The aim being the identification and mitigation of any newly discovered palaeontological sites; Post mitigation impact Low negative
<p>Lichtenburg Solar Park <i>Hutten, M. 2012. Heritage Impact Assessment for the Lichtenburg Solar Park.</i></p> <p><i>Rubidge, B. 2012. Palaeontological Impact Assessment for the Lichtenburg Solar Park.</i></p>	<p>No heritage resources were identified during the HIA.</p> <p>The PIA found that it is very unlikely that fossils will be uncovered by the proposed construction activities</p>	<ul style="list-style-type: none"> ▪ No further action required

Table 2: Regional HIA's conducted		
Study	Findings	Recommendation
<p>Watershed Solar Energy Facility Phase 1</p> <p><i>Van der Walt, J. 2013. Archaeological Impact Assessment and Palaeontological Exemption for the Watershed Solar Energy Facility Phase 1.</i></p> <p><i>No palaeontological study</i></p>	<p>Two low density MSA scatters were identified during the fieldwork. These sites were grades as having a medium heritage significance by generally protected.</p>	<ul style="list-style-type: none"> ▪ A surface collection at the two identified site swere recommended along with ECO monitoring during earth moving.
<p>Watershed Solar Energy Facility Phase 2</p> <p><i>Van der Walt, J. 2013. Archaeological Impact Assessment for Watershed Solar Energy Facility Phase 2.</i></p> <p><i>No palaeontological study</i></p>	<p>The original surveyed area showed only a background scatter of LSA material. The layout has however changed and new fieldwork was recommended.</p>	<ul style="list-style-type: none"> ▪ Additional fieldwork was recommended as the layout changed. No further work was recorded after this recommendation.

Table 2: Regional HIA's conducted		
Study	Findings	Recommendation
<p>Hibernia PV Solar Energy Facility</p> <p><i>Van der Walt, J. 2013. Archaeological Impact Assessment for the Hibernia PV Solar Energy Facility.</i></p> <p><i>Almond, J. 2012. Palaeontological Exemption for the Hibernia PV Solar Energy Facility.</i></p>	<p>A single MSA occurrence was noted in the study area.</p> <p>No palaeontological significant resources were identified and exemption from further work was recommended</p>	<ul style="list-style-type: none"> ▪ No further action required

Table 3: Impact rating – Cumulative

IMPACT TABLE		
Environmental Parameter	Heritage Resources	
Issue/Impact/Environmental Effect/Nature	The extent that the addition of this project will have on the overall impact of developments in the region on heritage resources	
Extent	Regional	
Probability	Possible	
Reversibility	Non- renewable.	
Irreplaceable loss of resources	The nature of heritage resources is that they are non-renewable. The proper mitigation and documentation of these resources can however preserve the data for research	
Duration	Permanent	
Cumulative effect	It is my considered opinion that this additional load on the overall impact on heritage resources will be low. With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate.	
Intensity/magnitude	Low	
Significance Rating	Negative medium impact before mitigation and low negative after mitigation.	
	Pre-mitigation impact rating	Post mitigation impact rating
Extent	4	4
Probability	2	1
Reversibility	4	4
Irreplaceable loss	4	4
Duration	4	4
Cumulative effect	1	1
Intensity/magnitude	1	1
Significance rating	-19 (Negative Low impact)	-18 (Low negative)
Mitigation measures	Implementation of the recommended mitigation measures as per the Tlisitseng 1 project management measures will ensure the management of the envisaged cumulative impact.	

It is my considered opinion that this additional load on the overall impact on heritage resources will be low. With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate.

2 CUMULATIVE ASSESSMENT – MOTIVATION FOR LACK OF INFORMATION

Based on the DEA's acceptance of the Final Scoping Report (FSR), the DEA requested that a cumulative environmental impact assessment be conducted including a literature review of other specialist assessments / studies on the neighbouring adjacent properties in order to ascertain any additional cumulative impacts that should be taken into consideration.

In an effort to meet this requirement SiVEST undertook every effort to obtain the information (including specialist studies, BA / EIA / Scoping and EMP Reports) for the above mentioned developments. The steps taken to acquire the relevant documents for the above mentioned projects is detailed below:

Table 4: Proposed renewable energy projects in the area, steps taken to obtain the relevant information and documents obtains.

Proposed Development	EAP	Steps taken to obtain relevant documents	Documents Obtained
Tlitseng 2	SiVEST SA (Pty) Ltd	SiVEST is the EAP for the proposed development. The proposed development Final Scoping Report (FSR) has been accepted by the DEA. Additionally, the specialist impact assessments have been conducted to form part of the Draft Environmental Impact Assessment Report (DEIAR). All the relevant documents were therefore available for the cumulative assessment.	<ul style="list-style-type: none"> ▪ Biodiversity Impact Assessment Report; ▪ Avifaunal Impact Assessment Report; ▪ Surface Water Impact Assessment Report; ▪ Soils and Agricultural potential Impact Assessment Report; ▪ Visual Impact Assessment Report; ▪ Heritage Impact Assessment Report; ▪ Socio-economic Impact Assessment Report; ▪ Geotechnical Impact Assessment Report; and ▪ Traffic Impact Assessment Report
Lichtenburg Solar Park	Africa Geo-Environmental Services (AGES)	<ul style="list-style-type: none"> ▪ Google Search for PV facilities near Lichtenberg North West Province; ▪ Proposed Development was found on Leads 2 Business website (www.l2b.co.za/project-region/North-West). ▪ Google search of the proposed development project name was undertaken. ▪ Consulted the SAHRA Website for Heritage and PIA Report (http://sahra.org.za/sahris/cases/lichtenburg-solar-park). ▪ Attempted to download reports from the AGES Website (http://ages-group.com/) 	<ul style="list-style-type: none"> ▪ Archaeological Impact Assessment Report ▪ Heritage Impact Assessment Report

		<ul style="list-style-type: none"> ○ Reports were not available for publically available to download ▪ Contacted AGES in an effort to obtain outstanding specialist reports that were not available for public download. <ul style="list-style-type: none"> ○ AGES responded to SiVEST request for the FBAR and specialist reports noting that the proposed development has not been awarded preferred Bidder Status in terms on the DoE's IPP programme. ○ AGES further stated that they are not in a position to send any of the reports through to SiVEST. However, they were able to provide SiVEST with the locality map for the proposed Lichtenburg Solar Park as well as layout plans. ▪ Additionally, SiVEST attempted to contact the developers of the proposed development, however contact details were not publically available. 	
Watershed Solar Energy Facility Phase 1	Savannah Environmental (Pty) Ltd	<ul style="list-style-type: none"> ▪ Google Search for PV facilities near Lichtenberg North West Province; ▪ The proposed Development was found on Leads 2 Business website (www.l2b.co.za/project-region/North-West). ▪ Google search of the proposed development project name was undertaken. FEIR (excluding appendices) was able to be downloaded as a PDF. ▪ Consulted the SAHRA Website for Heritage Report (http://sahra.org.za/sahris/heritage-reports/heritage-report-watershed-solar-facility). 	<ul style="list-style-type: none"> ▪ Watershed PV (phase I and II) FEIR ▪ Visual Scoping Report ▪ Social Scoping report ▪ Draft EMPr (Phase 1) ▪ Draft EMPr (Phase 2) ▪ Archaeological Impact Assessment Report ▪ Background Information Documents ▪ EAs
Watershed Solar Energy Facility Phase 2	Savannah Environmental (Pty) Ltd		

		<ul style="list-style-type: none"> ▪ From the SAHRA website other documents were available to be downloaded. (http://sahra.org.za/sahris/cases/watershed-solar-energy-facilities-556-557). ▪ Attempted to download reports from the Savannah Environmental Website <ul style="list-style-type: none"> ○ Reports were not publically available to download. ▪ Contacted Savannah Environmental in an effort to obtain outstanding specialist reports that we not available for public download. <ul style="list-style-type: none"> ○ Savannah Environmental noted that the project has already been archived and handed over to the developers. ○ Savannah Environmental noted that it is against their company policy to give out developers contact details. However, they were able to provide SiVEST with the EA's for the proposed development. 	
Hibernia PV Solar Energy Facility	Savannah Environmental (Pty) Ltd	<ul style="list-style-type: none"> ▪ Google Search for PV facilities near Lichtenberg North West Province; ▪ The proposed Development was found on Leads 2 Business website (www.l2b.co.za/project-region/North-West). ▪ Google search of the proposed development project name was undertaken. BID was able to be downloaded as a PDF. ▪ Consulted the SAHRA Website for Heritage Report (http://sahra.org.za/sahris/heritage-reports/aia-paleo-reports-hibernia). 	<ul style="list-style-type: none"> ▪ Heritage Assessment Report ▪ Final BAR ▪ BID

		<ul style="list-style-type: none"> ▪ From the SAHRA website other documents were available to be downloaded. FEIR (excluding appendices) was able to be downloaded as a PDF. http://sahra.org.za/sahris/cases/hibernia-solar-facility-1062). ▪ Attempted to download reports from the Savannah Environmental Website <ul style="list-style-type: none"> ○ Reports were not publically available to download ▪ Contacted Savannah Environmental in an effort to obtain outstanding specialist reports that were not available for public download. <ul style="list-style-type: none"> ○ Savannah Environmental noted that the project has already been archived and handed over to the developers. ○ Savannah Environmental noted that it is against their company policy to give out developers contact details. However, they were able to provide SiVEST with the EA's for the proposed development. ▪ Additionally, SiVEST attempted to contact the developers of the proposed development, however contact details were not publically available. 	
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Some of the project sites are at a very advanced stage, and the initial studies were undertaken in 2012. As a result, many of the documents are not currently publically available to download. Nonetheless, SiVEST was able to source some of information that was available. The information (including specialist studies, EIA / Scoping and EMPr Reports) that could be obtained for the surrounding renewable energy sites planned that were taken into account by the various specialists is elaborated on below.