THE DEVELOPMENT OF THE 100MW LICHTENBURG 3 PHOTOVOLTAIC SOLAR ENERGY FACILITY AND ITS ASSOCIATED INFRASTRUCTURE NEAR LICHTENBURG, NORTH WEST PROVINCE

Motivation for Amendment of Environmental Authorisation

DFFE Ref.: 14/12/16/3/3/1/1093

savannah environmental

t +27 (0)11 656 3237
f +27 (0)86 684 0547
e info@savannahsa.com
w www.savannahsa.com

Prepared for:

ABO Wind Lichtenburg 3 PV (Pty) Ltd
P.O. Box 51060
Waterfront
8002

Prepared by:

savannah environmental
t +27 (0)11 656 3237 f +27 (0)86 684 0547 e info@savannahsa.com w www.savannahsa.com
First Floor, Block 2, 5 Woodlands Drive Office Park, Cnr Woodlands Drive & Western Service Road, Woodmead, 2191

PROJECT DETAILS

Title	:	The development of the 100MW Lichtenburg 3 Photovoltaic Solar Energy Facility and its associated infrastructure near Lichtenburg, within Ditsobotla Local Municipality, North West Province
Authors	:	Savannah Environmental (Pty) Ltd Tebogo Mapinga Jo-Anne Thomas
Specialist Consultants	:	Gerhard Botha of Nkurenkuru Ecology & Biodiversity Lukas Niemand of Pachnoda Consulting CC Jenna Lavin of CTS Heritage Lourens du Plessis of LOGIS
Client	:	ABO Wind Lichtenburg 3 PV (Pty) Ltd
Report Status	:	Revision 0 – First issue: Draft for Public Review

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PURPOSE OF THE REPORT

ABO Wind Lichtenburg 3 PV (Pty) Ltd (hereafter 'ABO') received an Environmental Authorisation (EA) on 03 July 2019[1] (DFFE Ref.: 14/12/16/3/3/1/1093) from the Department of Forestry, Fisheries and the Environment (DFFE) for the development of the Lichtenburg 3 PV Solar Energy Facility is located 10km north of Lichtenburg and 7km south-east of Bakerville in the North West Province. The project is located within Ward 16 of the Ditsobotla Local Municipality and the Ngaka Modiri Molema District Municipality in the North West Province. The development footprint of the solar energy facility is located on the Remaining Extent of Portion 2 of Farm Zamenkomst No. 04.

The original EA dated 03 July 2019 (DFFE Ref.: 14/12/16/3/3/1/1093) however states powerline Alternative 1, on-site substation alternative 1 as the approved alternatives on Portion 2 of Farm Zamenkomst No. 4. ABO is now requesting the DFFE to amend the EA dated 18 May 2015 (DFFE Ref.: 14/12/16/3/3/1/1/1093) as follows:

- A change in the location of the authorised on-site/step-up substation to a new location within the authorised footprint of Lichtenburg 3 PV.
- A change in the capacity of the step-up/on-site substation from 88/132kV to 33/132kV.
- Amendment of the preferred power line corridor to allow connection of Lichtenburg 3 PV (and the collector substation complex) to the existing Eskom Watershed Substation – Alternative 2 as assessed in the EIA process.

It should be noted that the Lichtenberg 3 PV project has been selected as Preferred Bidder in a private Power Purchase Agreement (PPA). The original Eskom Cost Estimate Letters (CELs) were issued separately for each project within the larger cluster (Lichtenberg 1 PV, 2 PV and 3 PV). When considering the three projects together, Eskom has advised the following:

- The existing power line approved for LILO (Alternative 1 as authorised) does not have sufficient capacity.
- One power line to Watershed for all three projects from a central collector substation is preferred.

The proposed location of the Collector (step-up/on-site) Substation Complex and extension to the grid connection corridor Alternative 2 for Lichtenburg 3 PV falls within an area that was assessed by Specialists for the placement of infrastructure during the EIA process. The reason for the extension of the corridor is on the basis that the location of the step-up/on-site substation for Lichtenburg 3 PV is being moved from its authorised location to a new location within the authorised footprint of the project as part of the Collector Substation Complex for all 3 projects. The change in the location of the substation is to collect the electricity from each of the three PV projects within the larger cluster at one location (with a combined footprint of 6.92 ha), the Collector Substation Complex from which electricity will be transmitted to the Eskom Watershed Substation via a 132kV overhead power line.

The proposed amendment in itself does not trigger any new listed activity as the proposed amendment is within the originally assessed grid corridor and development area and does not exceed any thresholds for activities already authorised.

In terms of Condition 5 of the original EA and Chapter 5 of the EIA Regulations of December 2014 (as amended on 07 April 2017 and 13 July 2018), it is possible for an applicant to apply, in writing, to the competent authority for a change or deviation from the project description to be approved.

[1] Subsequent amendments of the EA were issued on the 25 July 2019 and 25 March 2021.

Savannah Environmental (Pty) Ltd (hereafter 'Savannah Environmental') has been appointed to undertake an amendment application process in this regard and has prepared this Draft Motivation Report in support of this amendment application on behalf of ABO. This report aims to provide details pertaining to the significance and impacts of the proposed change to the project description in order for Interested and Affected Parties (I&APs) to be informed of the proposed amendment and provide comments, and for the competent authority to be able to reach a decision in this regard. This report is supported by specialist studies in order to inform the final conclusion regarding the proposed amendment (refer to **Appendix A to D** of this report). This main report must be read together with these specialist studies in order to obtain a complete understanding of the proposed amendment and the implications thereof.

The Draft Motivation Report has been made available to registered I&APs on the Savannah Environmental Website (https://savannahsa.com/public-documents/energy/) for a 30-day review and comment period from **Thursday, 14 April 2022 to Thursday, 19 May 2022.** The availability of the Draft Motivation Report has been advertised in Die Noordwester Newspaper on **Thursday, 14 April 2022**.

To obtain further information, register on the project database, or submit written comment, please contact:

Lehlogonolo Mashego of **Savannah Environmental**
Post: PO Box 148, Sunninghill, 2157 Johannesburg
Tel: 011 656 3237
Cell: 060 978 8396
Fax: 086 684 0547
Email: publicprocess@savannahsa.com
www.savannahsa.com

All comments received during the review period will be included within a Comments and Responses Report to be submitted to the DFFE with the Final Motivation Report for decision making purposes.

1. OVERVIEW OF THE PROJECT

1.1. Location

The authorised project is located 10km north of Lichtenburg and 7km south-east of Bakerville in the North West Province. The project is located within Ward 16 of the Ditsobotla Local Municipality and the Ngaka Modiri Molema District Municipality in the North West Province. The development footprint of the solar energy facility and associated infrastructure is located on the Remaining Extent of Portion 2 of Farm Zamenkomst No. 04. It is within this property that the project will be constructed and operated (refer to **Figure 1.1**).

1.2. Potential Environmental Impacts as determined through the BA process

From the specialist investigations undertaken within the Environmental Impact Assessment (EIA) process for the development of the 100MW Lichtenburg 3 PV Facility and its associated infrastructure, the following environmental impacts were identified:

- Potential ecological impacts;
- Potential impacts on avifauna;
- Potential impacts on heritage resources; and
- Areas of visual impact.

Key conclusions and recommendations of the original EIA pertinent to this application, as reported in the final EIA Report (Savannah Environmental (Pty) Ltd, 2019) are detailed below.

1.2.1. Summary of environmental findings

From the specialist investigations undertaken as part of the EIA process for the development of the 100MW Lichtenburg 3 PV Facility and its associated infrastructure, no environmental fatal flaws were identified to be associated with the construction of the proposed Project and/or the assessed alternatives. The significance levels of the majority of identified negative impacts can generally be reduced to acceptable levels through implementation of the recommended mitigation measures.

The following summaries were provided for the specialist studies at submission of the final EIA Report (2019):

1.2.1 Results of the Ecological Impact Assessment

The entire Lichtenburg 3 project site has been identified as being of a medium ecological sensitivity based on the presence of Savanna Grassland throughout the project site and power line corridor alternatives. Other areas of medium sensitivity are also present throughout the project site and the power line corridor alternatives which relates to the presence of Palaeo-Drainage Grassland and Depression "Pan" Wetland (no development must be undertaken within the wetland or its associated 35m buffer area). Both on-site substation alternatives are located within the Savanna Grassland. Areas of low ecological sensitivity relate to current and historically disturbed areas.

It must be noted that during the scoping phase of the project two wetland features were identified within the project site on a desktop level. These features included the Depression "Pan" Wetland, as mentioned above, and another wetland feature located within the western corner of the project site. During the EIA phase a field survey was undertaken within the project site by the ecologist to scrutinise the results of the desktop identified features undertaken during the scoping phase. The results of the field survey identified that there was only one small depression/pan wetland present within the project site (as per the abovementioned description). Therefore, the area associated with the wetland feature located within the western corner of the project site has been confirmed as suitable for development due to the lack of physical characteristics and indicators of a depression wetland.

From the overall findings of the Ecological and Hydrological Impact Assessment, it can be concluded that no impacts of high ecological or hydrological significance were identified which would hinder the development of Lichtenburg 3 and its associated infrastructure within the project site. The proposed development is considered to be appropriate and acceptable from an ecological and surface hydrological perspective and will not result in detrimental impacts to ecosystems and habitat features present within the project site and within the surrounding properties. The specialist has therefore indicated that the development may be authorised, constructed and operated, subject to the implementation of the recommended mitigation measures.

1.2.2 Results of the Avifauna Impact Assessment

The Avifauna Impact Assessment was based on the findings of point count sampling techniques applied during two site visits undertaken in July 2018 and October 2018 (i.e. wet and dry season site visits). Areas of moderately high sensitivity represent habitat or areas where a high number of bird species were recorded, but also include direct observations of collision-prone bird species. Therefore, displacement potential of birds at these areas is regarded to be higher when compared to other areas. It includes mainly dense bush clumps, the home ranges of the Northern Black Korhaan (*Afrotis afraoides*) and also habitat which serves as roosting platforms for vultures. Although these habitat units are widespread at a landscape scale, the close proximity of cattle feedlots and the high potential for livestock carcasses provide opportunistic foraging habitat for threatened scavenging birds (e.g. vultures). Approximately 15 White-backed Vultures and one Lappet-faced Vulture were observed feeding on a calf carcass corresponding to the open dolomite grassland and bush clump mosaics during the July 2018 austral winter site survey.

Areas of medium sensitivity include natural habitat represented by extensive dolomite grassland and bush clump mosaics. It also includes moist/wet secondary grassland and some of the artificial watering points. The dolomite grassland and bush clump mosaics are widespread in the region with large surface areas prevalent in the North West Province. Although these habitat units are widespread at a landscape scale, the close proximity of cattle feedlots and the high potential for livestock carcasses provide opportunistic foraging habitat for threatened scavenging birds (e.g. vultures). The wet/moist grassland patches provide habitat for a unique composition of bird species that are not often prevalent on the other habitat units. However, the composition consists of widespread species, thereby rendering the wet/moist grasslands with a medium sensitivity. These habitat units are widespread in the broader study region, therefore the displacement of birds at these habitat units are not regarded as a fatal flaw nor are any of these units considered to be no-go areas.

Areas of low sensitivity are represented by artificial habitat types and include agricultural land, fallow land and pastures. It represents transformed habitat, thereby contributing little towards local biodiversity.

The avifauna impacts identified to be associated with Lichtenburg 3 will be negative and local to regional in extent. The duration of the impacts will be medium to long-term, for the lifetime of the PV facility.

During the construction phase of Lichtenburg 3 a loss of habitat due to clearance of vegetation is expected to occur. The significance of this impact can be reduced to low with the implementation of the recommended mitigation measures provided by the specialist.

The majority of the avifauna impacts associated with the development of Lichtenburg 3 will occur during the operation phase. These impacts include the creation of "new" avian habitat which refers to the creation of novel habitat for commensal or superior competitive bird species, the electrocution of birds due to the associated power line, and collision with the PV panels and power line. The significance of the impacts will be low to medium, with the exception of a high significance for the impact of avian collision with the power line.

From the results of the avifauna assessment, it can be concluded that no fatal-flaws will be associated with the development of Lichtenburg 3 from an avifaunal perspective.

1.2.3 Results of the Heritage Impact Assessment

The only resource of heritage significance that was identified is an old Farm House located in the north-eastern corner of the Remaining Extent of Portion 02 of the Farm Zamenkomst No 04. The farm house is of low local significance and has local heritage value only. Although the farm house falls outside of the proposed development footprint, any impacts to the old farm house structure are to be avoided. As this structure has limited architectural heritage significance, no specific mitigation recommendations are provided. Any impacts to this structure will require the approval of the North West Provincial Heritage Resources Authority.

The site proposed for development is in the Malmani Group which contains a number of stromatolitic dolomites. These were formed in warm shallow sea and are the accumulation of layer upon layer of minerals deposited by blue-green algae (also known as cyanobacteria) and rarely some filamentous algae. Minerals deposited by the algae include calcium carbonate, calcium sulphate and magnesium carbonate. Very rarely are the algal cells preserved in the stromatolites and these are microscopic. Stromatolites are essentially trace fossils and these ones are 2750 to 2650 million years old and very abundant.

The area has been disturbed and transformed by agricultural activities. As such pre-existing agricultural plough fields, grazing areas and farm buildings were identified in the project area. Furthermore, throughout the farming areas several heaps of rocks that were removed from the agricultural fields were identified.

During the field assessment of the site no archaeological resources, graves or burial grounds were identified in the development area. However, graves are subterranean in nature and might not have been identified during the initial site visit and survey. The only resource of heritage significance that was identified is an old Farm House located in the north-eastern corner of the remaining extent of Portion 02 of the Farm Zamenkomst No 04. The farm house is of low local significance and has local heritage value only.
Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are much too old to contain fossils other than blue-green algae.

The Heritage Impact Assessment) identified impacts associated with the construction and operation of Lichtenburg 3 PV Facility. The assessment of impacts on heritage resources includes an assessment of the archaeology and palaeontology of the project site.

Impacts on palaeontological and archaeological resources are expected to occur during the construction phase of Lichtenburg 3. The old farm house is located in close proximity to the proposed development area, but will not be impacted by the proposed development. A fence is currently constructed around the farm house which is acting as a barrier protecting it from unnecessary impacts. It is recommended that any impacts to this structure be avoided. However, as this structure has limited architectural heritage significance, no specific mitigation recommendations are provided. It is unlikely that any palaeontological heritage resources will be impacted by the proposed development.

The significance of the impact will be low and no mitigation has been recommended by the specialist due to the lack of heritage resources within the area. The requirement for the development and implementation of a chance find procedure in the event of a heritage find has been included

1.2.4 Results of the Visual Impact Assessment

The Visual Impact Assessment indicated that the construction and operation of Lichtenburg 3 PV Facility and its associated infrastructure may have a visual impact on the area surrounding the project site, especially within (but not restricted to) a 3km radius of the facility. The visual impact will differ amongst places, depending on the distance from the facility.

Farm settlements or residences occur at irregular intervals throughout the area. Some of these in close proximity to the Lichtenburg 3 project site, include:

- Brakpan
- Grasfontein
- Sensako
- Henriksdal
- Scherppunt
- Boskoppie
- Klipbankfontein
- Klipkuil
- Manana
- Houthaaldoorns
- Greeflaagte
- Houthaalbomen
- Elandsfontein
- Welverdiend
- Samekoms
- Ruiglaagte

There are also a large number of existing power lines associated with the existing Watershed Substation located within the surrounding area of the project site. Besides the electricity transmission and distribution infrastructure, the project site and the surroundings are relatively undeveloped. The site is located in an area

that has a distinct rural and agricultural character, with some mining/quarrying activity located north of Lichtenburg and north-west of the site near Grasfontein and Bakerville.

Overall, the significance of the visual impacts is expected to range from moderate to low as a result of the generally undeveloped character of the landscape. The facility would be visible within an area that incorporates certain sensitive visual receptors who would consider visual exposure to this type of infrastructure to be intrusive. Such visual receptors include people travelling along roads and residents of rural homesteads and settlements

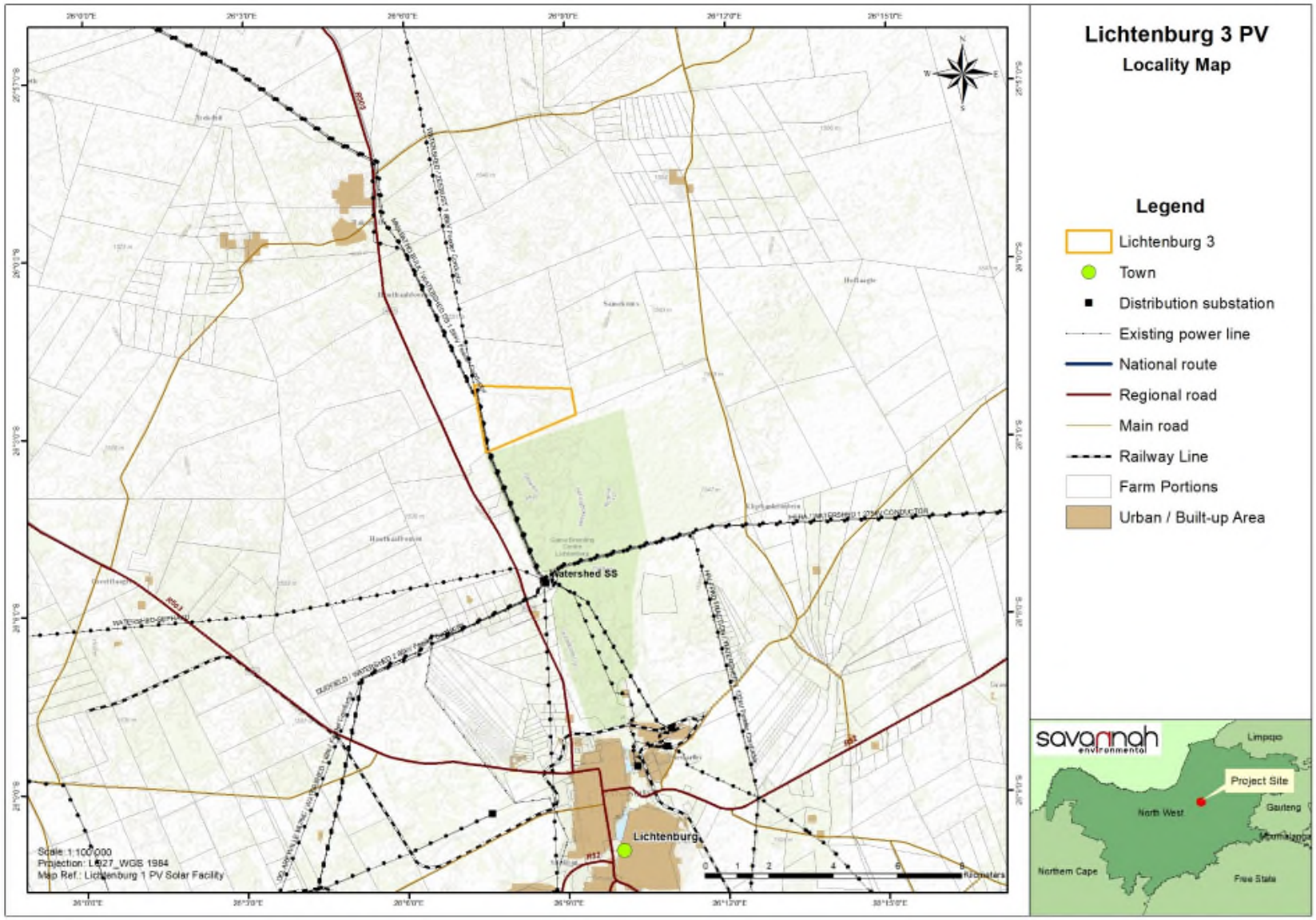

Figure 1.1: Locality map illustrating the location of the project site under investigation for the establishment of Lichtenburg 3 PV Facility on a site near Lichtenburg, North West Province **(A3 Map included in Appendix F)**.

2. DETAILS OF THE AMENDMENTS APPLIED FOR

This section of the report details the amendments considered within this report and by the specialist investigations (refer to **Appendix A – D**), and as applied for by ABO.

2.1. Amendment of the authorised power line alternative

On page 5 of the EA dated 03 July 2019, under activities authorised, it is requested that the authorised power line corridor be amended as follows:

From:

Power line Route Alternative 1 (210m)	Latitude	Longitude
On-site Substation	26°02'45.270"	26°07'31.833"
Middle	26°02'44.751"	26°07'32.702"
Mmabatho/ Watershed DS 1 88kV power line	26°02'50.116"	26°07'32.702"

To:

Power line Corridor Alternative 2	Latitude	Longitude
Collector Substation Complex (on-site substation L3/ switching stations/collector substation)	26°02'16.81"	26°07'27.80"
Middle	26°04'18.78"	26°08'08.26"
Eskom Watershed Substation	26°05'33.35''	26°08'35.83''

2.2. Amendment of the authorised on-site substation alternative

On page 5 of the EA dated 03 July 2019, under activities authorised, it is requested that the authorised substation location be amended as follows:

From:

On-site substation Alternative 1	Latitude	Longitude
North West Corner	26°02'45.270"	26°07'31.833"
North East Corner	26°02'44.751"	26°07'32.702"
South West Corner	26°02'50.116"	26°07'32.702"
South East Corner	26°02'49.602"	26°07'32\8.105"
Central point	26°02'47.267"	26°07'35.155"

To:

Collector Substation Complex (on-site substation L3/ switching stations/collector substation	Latitude	Longitude
North West Corner	26°02'22.73"	26°07'25.37"

Collector Substation Complex (on-site substation L3/ switching stations/collector substation	Latitude	Longitude
North East Corner	26°02'22.46"	26°07'36.64"
South West Corner	26°02'30.04''	26°07'26.65''
South East Corner	26°02'29.62''	26°07'37.48''
Central point	26°02'26.19''	26°07'31.75''

2.3. Amendment of the authorised Farm Description

In order to include all relevant farm portions associated with the project, it is requested that the listed properties be amended as follows:

From:

EA Page Reference	Farm Description	21 Digit Surveyor General Code
Page 4 of the EA	Remaining Extent of Portion 2 of the Farm Zamenkomst No. 4	T0IP0000000004000002

To:

EA Page Reference	Farm Description	21 Digit Surveyor General Code
Page 4 of the EA	Remaining Extent of Portion 2 of the Farm Zamenkomst No. 4	T0IP0000000004000002
	Portion 10 of the Farm Lichtenburg Town and Townlands No. 27	T0IP00000000002700010
	Remainder of Portion 1 of the Farm Lichtenburg Town and Townlands No. 27	T0IP00000000002700001
	Remaining Extent of the Farm Priem No. 30	T0IP00000000003000000

2.4. Amendment of Activities Authorised section of the EA

The Applicant is requesting to change the wording included in the Activities Authorised section of the EA (pg 5 & 6) dated 03 July 2019 as follows:

EA Page Reference	Current wording (EA dated 03 July 2019)	Requested amendment wording (amendment underlined)
Page 5 & 6 of the EA, Activities Authorised	Onsite 88/132kV Substation.	Onsite 33/132kV Collector Substation.
	A new 88/132kV overhead powerline between the on-site substation to the Eskom grid connection point.	A new 132kV overhead powerline from the Lichtenburg 3 PV facility collector substation to the Eskom Watershed Substation.

2.5. Amendment of Activities Authorised section of the EA and any amendments thereto

The Applicant is requesting to change the wording included in the Technical Details section of the EA dated 03 July 2019 (page 6) and the amended EA issued on 25 July 2019 (page 2) as follows:

From:

Component	Description/Dimensions
Area occupied by onsite substation complex	~2.25ha
Capacity of onsite substation complex	On-site inverters to convert power from Direct Current (DC) to Alternating Current (AC), and an 88/132kV on-site substation to facilitate the connection between the solar facility and the Eskom grid connection point.

To:

Component	Description/Dimensions
The area occupied by the collector substation complex	~6.92ha
The capacity of the on-site collector substation complex	On-site inverters to convert power from Direct Current (DC) to Alternating Current (AC), and a 33/132kV on-site collector substation to facilitate the connection between the solar facility and the Eskom grid connection point at the Watershed Substation.

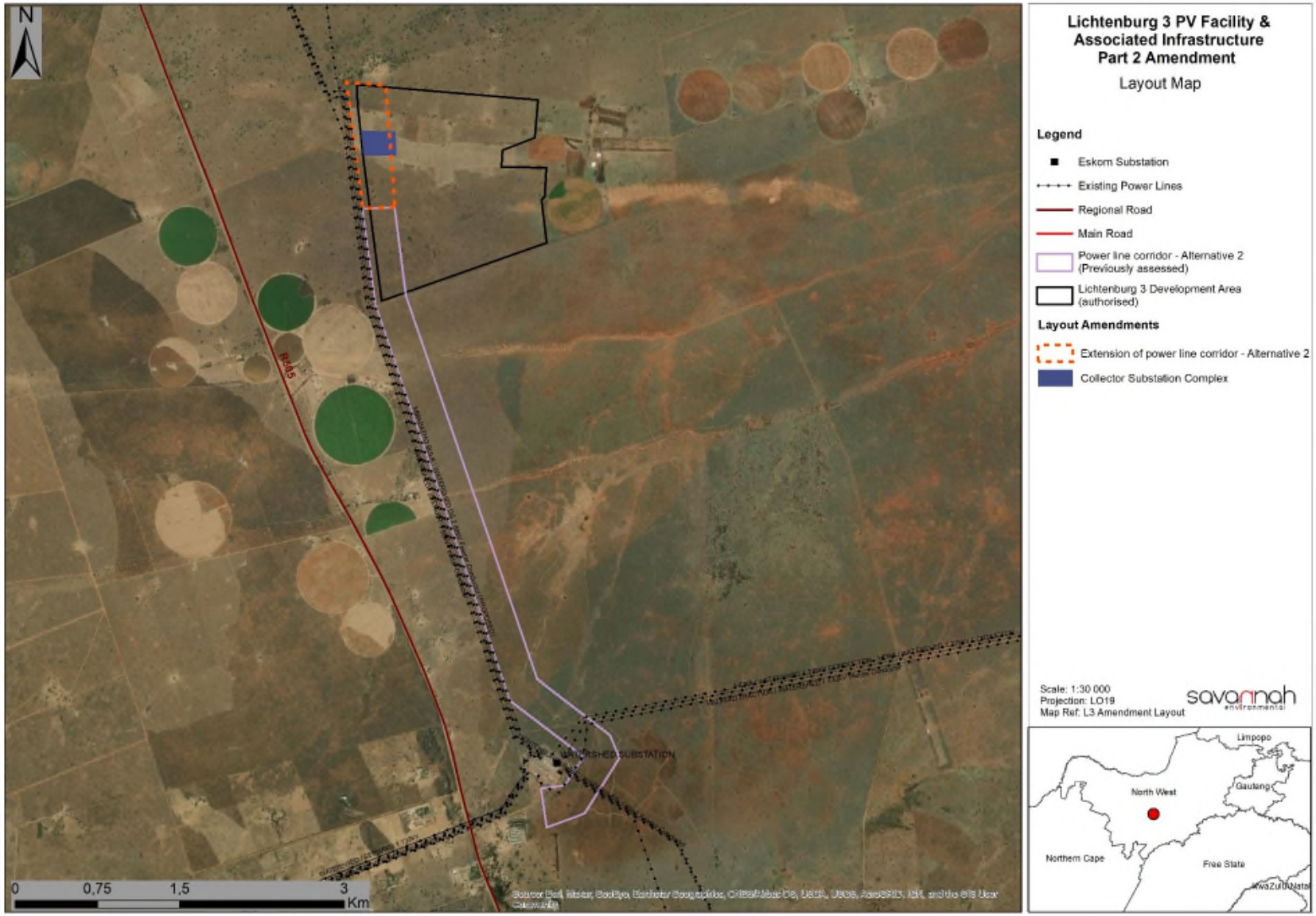

Figure 2.1: Layout of the grid connection corridor alternative 2 and the location of the development footprint of the collector substation complex and the Lichtenburg 3 PV Facility **(A3 Map included in Appendix F**).

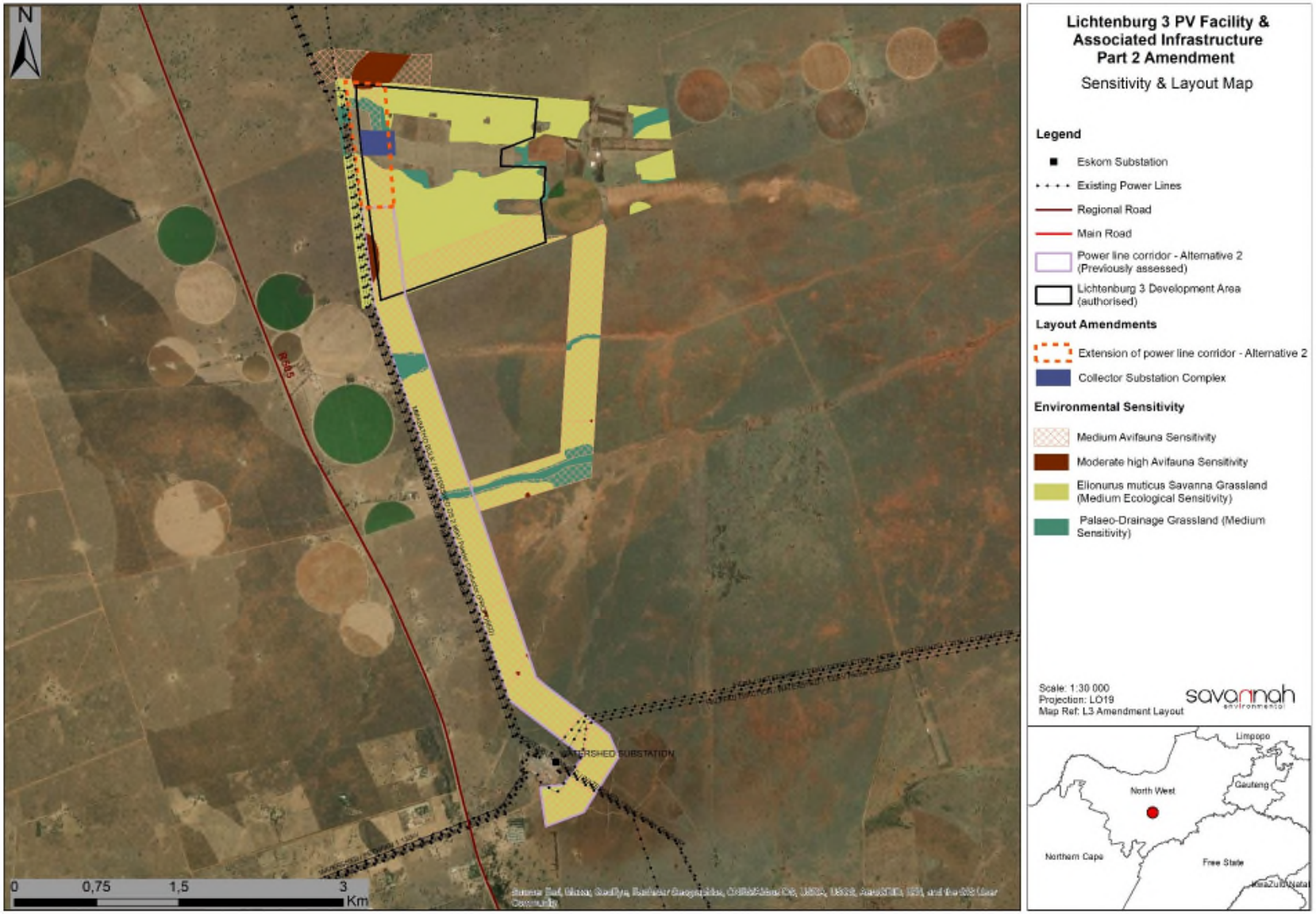

Figure 2.2: Layout of the grid connection corridor alternative 2 and the location of the development footprint of the collector substation complex and the PV Facility overlain onto the identified environmental sensitivities (2019) (A3 Map included in **Appendix F**).

3. REASONS FOR THE PROPOSED AMENDMENTS

This section of the report details the motivation for the proposed amendments included in Section 2 of this report.

3.1. Amendment of the authorised Activities Authorised of the EA (pg 4 – 6) and the EA Amendment 3

The Lichtenberg PV1, PV2 and PV3 projects have been selected as Preferred Bidders in a private PPA. The original Eskom Cost Estimate Letters (CELs) were issued separately for each project within the larger cluster (Lichtenberg PV1, PV2 and PV3). When considering the three projects together, Eskom has advised the following:

» The existing power line approved for LILO (Alternative 1 as authorised) does not have sufficient capacity.
» One power line to Watershed for all three projects from a central collector substation is preferred.

The proposed location of the Collector (step-up/on-site) Substation Complex and extension to the grid connection corridor Alternative 2 for Lichtenburg 3 PV falls within an area that was assessed by Specialists for the placement of infrastructure during the EIA process. The reason for the extension of the corridor is on the basis that the location of the step-up/on-site substation for Lichtenburg 3 PV is being moved from its authorised location to a new location within the authorised footprint of the project as part of the collector substation for all 3 projects. The change in the location of the substation is to collect the electricity from each of the three PV projects within the larger cluster at one location (with a combined footprint of 6.92 ha), the Collector Substation Complex from which electricity will be transmitted to the Eskom Watershed Substation via a 132kV power line.

4. CONSIDERATIONS IN TERMS OF THE REQUIREMENTS OF THE EIA REGULATIONS

In terms of Regulation 31 of the EIA Regulations 2014, as amended, an environmental authorisation may be amended by following the process in this Part (i.e., a Part 2 amendment) if it is expected that the amendment may result in an increased level or change in the nature of impact where such level or change in nature of impact was not:

a) Assessed and included in the initial application for environmental authorisation; or
b) Taken into consideration in the initial authorisation.

The following proposed amendments of the EA, do not constitute a listed or specified activity:

» A change in the location of the authorised on-site/step-up substation to a new location within the authorised footprint of Lichtenburg 3 PV.
» A change in the capacity of the step-up/on-site substation from 88/132kV to 33/132kV.
» Amendment of the preferred power line corridor to allow connection of Lichtenburg 3 PV (and the collector substation complex) to the existing Eskom Watershed Substation – Alternative 2 as assessed.

Therefore, the application is made in terms of Regulation 31(a).

Savannah Environmental has been appointed as independent consultants to undertake the application for amendment on behalf of ABO. This Motivation Report has been prepared in support of this amendment application and aims to provide detail pertaining to the significance and impacts of the proposed change to the project description in order for I&APs to be informed of the proposed amendments and provide comment, and for the competent authority to be able to reach a decision in this regard. This report is supported by specialist studies in order to inform the final conclusion regarding the proposed amendments (refer to **Appendix A to D** of this report). This main report must be read together with these specialist studies in order to obtain a complete understanding of the proposed amendments and the implications thereof.

Neither Savannah Environmental nor any of its specialists are subsidiaries of or are affiliated to ABO. Furthermore, Savannah Environmental does not have any interest in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consulting company providing a holistic environmental management service, including environmental assessment and planning to ensure compliance and evaluate the risk of development, and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

The Savannah Environmental team have considerable experience in environmental impact assessments and environmental management and have been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa, including those associated with electricity generation.

» ***Tebogo Mapinga*** is an experienced professional with 15 years across the fields of environment and permitting in both the public and the private sector. She holds a BSc Degree (Major in Physiology and

Zoology) from the University of Limpopo (Turfloop Campus). Her competencies lie in Environmental Impact Assessments, Basic Assessments, Environmental Screening, Environmental Management Plan. Compliance monitoring and obtaining permits for small and large scale projects. She is a member of the International Association for Impact Assessments (IAIA) and is a registered professional natural scientist as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP - 115518).

» ***Jo*-Anne *Thomas*** is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and is the registered EAP for this project (EAPASA - 2019/726). She provides technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental auditing and monitoring, environmental permitting, public participation, Environmental Management Plans and Programmes, environmental policy, strategy and guideline formulation, and integrated environmental management. Her key focus is on integration of the specialist environmental studies and findings into larger engineering-based projects, strategic assessment, and providing practical and achievable environmental management solutions and mitigation measures. Responsibilities for environmental studies include project management (including client and authority liaison and management of specialist teams); review and manipulation of data; identification and assessment of potential negative environmental impacts and benefits; review of specialist studies; and the identification of mitigation measures. She has managed the EIA processes for more than 100 renewable energy projects (including wind, solar and hydro) across South Africa.

5. POTENTIAL FOR CHANGE IN THE SIGNIFICANCE OF IMPACTS AS ASSESSED IN THE BA AS A RESULT OF THE PROPOSED AMENDMENTS

This application is considered to be a Part 2 amendment as contemplated in terms of Regulation 31 of the EIA Regulations (2014), as amended. In terms of Regulation 32(1)(a)(i), the following section provides an assessment of the impacts related to the proposed change. Understanding the nature of the proposed amendments and the impacts associated with the project (as assessed within the BA), the following has been considered:

- Potential ecological impacts;
- Potential impacts on avifauna;
- Potential impacts on heritage resources; and
- Areas of visual impact.

The amendments are expected to have **no effect** on the findings of the Socio-economic Assessment undertaken as part of the EIA process. Therefore, no Socio-economic Specialist Report has been included within this Motivation Report. The potential for change in the significance and/or nature of impacts based on the proposed amendments, as described within this Motivation Report, is discussed below and detailed in the specialists' assessment addendum letters (as applicable) contained in **Appendix A-D.** This section of the main report must be read together with the specialists' addendum letters contained in **Appendix A - D** in order for the reader to obtain a complete understanding of the proposed amendments and the implications thereof.

5.1. Impacts on Ecology

The original Ecological Assessment was conducted by Nkurenkuru Ecology and Biodiversity (Pty) Ltd (Mr. Gerhard Botha – PrSciNat: Ecology and Botany) in November 2018. The entire project site (including all alternative sites and corridors) was surveyed from the 29th to the 31st of October 2018 and survey conditions were regarded as acceptable to near optimal. As mentioned, the entire project site was surveyed and included all the alternative areas, and as such the areas now proposed for the new preferred grid route and on-site substation were also thoroughly surveyed and described and assessed.

Consideration of the change in impact on fauna and flora associated with the proposed amendment was undertaken by Gerhard Botha of Nkurenkuru Ecology and Biodiversity (Pty) Ltd in April 2022. The findings of the assessment are detailed below (**Appendix A**).

5.1.1. Comparative Assessment

i. **Grid Line Corridor Amendment:** Amendments to existing listed impacts and/or the addition of new potential impacts based on the proposal of an extension of the assessed Grid Corridor Alternative 2.

Following a review of the Ecological Study and Impact Assessment conducted in 2018 as well as a thorough survey of the most recent available Google Earth Imagery, the following comments can be made regarding the above-mentioned impacts.

- Even though, the proposed, preferred grid route will be slightly longer, the extent of the additional area as well as the present ecological condition/status of this additional area is of such a nature (small additional area, traversing mainly transformed areas), that a change in the significance of all assessed impacts is not warranted.
- Furthermore, the proposed amendments to the preferred grid corridor footprint will not result in any additional impacts (impacts not mentioned or accessed within the "original" ecological impact assessment).
- Subsequently the assessment of the impacts within the original report will remain unchanged and are still applicable.

As such no additional impact assessment or alteration to existing impact assessment was deemed necessary Refer to **Table 5.1**).

Table 5.1: Comparison of the Impact Significance Ratings (pre- and post-mitigation) that were determined/calculated for Grid Corridor Alternative 1 and 2 during the Ecological Study and Assessment.

Phase	Impact	Significance Ratings			
		Grid Corridor Alternative 1		Grid Corridor Alternative 2	
		Pre-Mitigation	Post-Mitigation	Pre-Mitigation	Post-Mitigation
Construction	Potential Impacts on vegetation and listed protected plant species.	Low (15)	Low (9)	Low (24)	Low (18)
	Faunal Impacts due to construction activities	Low (18)	Low (12)	Low (24)	Low (15)
	Potential increased erosion risk during construction	Low (18)	Low (9)	Low (24)	Low (15)
Operation	The disturbed and bare ground that is likely to be present within the power line corridor after construction will leave the corridor vulnerable to alien plant invasion for some time, and pose a potential threat to surrounding grasslands.	Low (15)	Low (9)	Low (21)	Low (15)
	Increased alien plant invasion during operation.	Low (18)	Low (9)	Low (21)	Low (15)
	Increased erosion risk during operation.	Low (18)	Low (9)	Low (21)	Low (15)

ii. Grid Line Corridor Amendment: Additional mitigation measures deemed necessary to be included

No additional or amended mitigation measures, relating to fauna, flora and terrestrial biodiversity, in addition to those specified in the original Ecological specialist study (dated November 2018) are recommended.

iii. On-Site Substation Amendment: Comparison and assessment of potential impacts listed within the original Ecological Report.

The change in capacity of the step-up/on-site substation from 88/132kV to 33/132kV is of such a nature, that this change in capacity will not have any bearing on the impacts assessed during the EIA phase.

The relocation of the authorised on-site substation will however, have a slight impact (reduction) on the significance ratings of some of the impacts assessed during the EIA phase. This is due to the fact that the substation will be relocated from a near-natural to natural grassland area to an area that has been largely disturbed and transformed (ploughing). The relocation of the on-site sub-station will furthermore, not result in any new impacts and some of the impacts assessed becoming irrelevant.

During the assessment of the impacts associated with the approved on-site substation location, the following statements/conclusions were drawn:

Within the original Ecology Report the following potential impacts were listed as applicable to the authorised on-site sub-station development and was subsequently assessed during the EIA phase.

- Potential ecological impacts resulting from the proposed development would stem from a variety of different activities and risk factors associated with the construction and operation phases of the project, including the following:
  - Human presence and uncontrolled access to the site may result in negative impacts on fauna and flora through poaching of fauna and uncontrolled collection of plants for traditional medicine or other purpose.
  - The significance of this impact was rated as **low**.

- Construction Phase
  - Site clearing and exploration activities for site establishment.
  - Vegetation clearing will potentially impact listed plant and faunal species.
    - There are only a few provincially protected plant animal species (and no species of conservation concern) potentially present within the power line corridor alternatives and it is likely that some of these protected species may be impacted.
    - Vegetation clearing during construction will lead to the loss of currently intact habitat (plant and animal) within the power line corridor alternatives and is an inevitable consequence of the development. As this impact is certain to occur it is assessed for the construction phase as this is when clearing will take place.
    - The significance of this was rated as **low**.
  - Soil compaction and increased erosion risk would occur due to the loss of plant cover and soil disturbance created during the construction phase.
    - These potential impacts may result in a reduction in the buffering capacities of the landscape during extreme weather events.
    - The significance of this impact was rated as **low**.
  - Presence and operation of construction machinery on site.
    - This will create a physical impact as well as generate noise, potential pollution and other forms of disturbance at the site.
    - The significance of this impact was rated as **low**.
  - Increased human presence can lead to poaching, illegal plant harvesting and other forms of disturbance such as fire.
    - The significance of this impact was rated as **low**.

- Operation Phase

- The facility will require management and if this is not done effectively, it could impact adjacent intact areas through impacts such as erosion and the invasion of alien plant species.
- Invasion by alien plants may be attributed to excessive disturbance to vegetation,
  - This may create a window of opportunity for the establishment of these alien invasive species.
  - In addition, regenerative material of alien invasive species may be introduced to the site by machinery traversing through areas with such plants or materials that may contain regenerative materials of such species.
  - The significance of this impact was rated as **low**, post mitigation (medium pre-mitigation).
- Soil compaction and increased erosion risk would occur due to the loss of plant cover and soil disturbance created during the construction phase.
  - These potential impacts may result in a reduction in the buffering capacities of the landscape during extreme weather events.
  - The significance of this impact was rated as **low**.

As mentioned above, the new substation location is characterised by a largely transformed and disturbed area due to active ploughing and rainfed cultivation practices (crops and pastures). As such impacts on natural vegetation and habitats will be lower as well as the impact on the natural faunal communities of the area (due to a reduction of impacts on natural faunal habitats). Subsequently, the following Impacts will be re-assessed below:

- Construction Phase
  - Impact on natural vegetation communities; and
  - Impacts on Faunal activity and natural habitats;

All remainder of the impacts assessed during the EIA phase still remain applicable and unchanged (in terms of significance).

iv. On-site sub-station Amendment: Amendments to existing listed impacts based on the relocation of the approved substation location.

***Construction Impact 1**: Impacts on local vegetation.*

Impact Nature: Impacts on vegetation would occur due to vegetation clearance associated with the construction of the substation. The most likely consequences include: » local loss of habitat; and » very small and local disturbance to processes maintaining local biodiversity and ecosystem goods and services.				
	Authorised On-site Substation Location		**New On-site Substation Location**	
	Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Extent	Local (1)	Local (1)	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)	Long-term (4)	Long-term (4)
Magnitude	Minor (2)	Small (0)	Minor (2)	Small (0)
Probability	Probable (3)	Probable (3)	Improbable (2)	Improbable (2)
Significance	**Low (21)**	**Low (15)**	**Low (14)**	**Low (10)**
Status	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative
Reversibility	Moderate	High	High	High
Irreplaceable loss of resources	Very slight loss of resources	Very slight loss of resources	No irreplaceable loss of natural resources.	No irreplaceable loss of natural resources.

Can impacts be mitigated?	To some extent. Areas of vegetation will be replaced with infrastructure and hard surfaces. The only recommended mitigation is to ensure that all activities occur within the development footprint with no disturbance of vegetation outside of the substation location.	
Residual Impacts	Some loss of vegetation is inevitable and cannot be avoided.	Very limited residual impact restricted to the small natural areas where the loss of natural vegetation will be inevitable.

Construction Impact 2: Impacts on faunal activity and natural habitats

Impact Nature: Construction activities such as the operation of heavy machinery and the presence of construction personnel at the substation location could result in direct (e.g. road mortalities) and indirect impacts as a result of noise and dust pollution on terrestrial fauna at the site during construction.
The most likely consequence includes a reduction in the area of occupancy of some of the affected species.

	Authorised On-site Substation Location		**New On-site Substation Location**	
	Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Extent	Local (1)	Local (1)	Local (1)	Local (1)
Duration	Medium-term (3)	Short-term (2)	Long-term (4)	Long-term (4)
Magnitude	Minor (2)	Small (1)	Minor (2)	Small (0)
Probability	Probable (3)	Probable (3)	Improbable (2)	Improbable (2)
Significance	**Low (18)**	**Low (12)**	**Low (14)**	**Low (10)**
Status	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative
Reversibility	Medium	High	High	High
Irreplaceable loss of resources	Slight loss of resources	None	No irreplaceable loss of natural resources.	No irreplaceable loss of natural resources.
Can impacts be mitigated?	To some extent. Areas of vegetation will be replaced with infrastructure and hard surfaces. The only recommended mitigation is to ensure that all activities occur within the development footprint with no disturbance of vegetation outside of the substation location.			
Residual Impacts	Some loss of vegetation is inevitable and cannot be avoided.		Very limited residual impact restricted to the small natural areas where the loss of natural vegetation will be inevitable.	

On-site substation Amendment: Additional mitigation measures deemed necessary to be included

No additional or amended mitigation measures, relating to fauna, flora and terrestrial biodiversity, in addition to those specified in the original Ecological specialist study (dated November 2018) are recommended.

5.1.2. *Conclusion and Recommendations*

The amendments are proposed within the authorised footprint of Lichtenburg 3 PV assessed within the EIA process. In addition, the extension request to the grid connection corridor for Lichtenburg 3 PV is proposed within an area that was assessed by Specialists during the EIA process.

Based on a comparison between recent satellite images (Google Earth Satellite Image from December 2021) and satellite images used during the Ecological Assessment (Google Earth Image from May 2018), land use practices remained the same (predominantly cattle grazing with small scale ploughing and cultivation (rain fed crops/pastures) towards the northern portion of the proposed extended area and new on-site substation area), with no clear change in vegetation structure and the present ecological status of the assessed area.

Following a review of the Ecological Study and Impact Assessment conducted in 2018 as well as a thorough survey of the most recent available Google Earth Imagery, the following comments can be made regarding the above-mentioned impacts.

- Even though, the proposed and preferred grid route (Grid Corridor Alternative 2 with a slight amendment/extension) will be slightly longer than the originally assessed Grid Alternative 2 route, the extent of the additional area as well as the present ecological condition/status of this additional area is of such a nature (small additional area, traversing mainly transformed areas) that a change in the significance of all assessed impacts is not warranted.
- Furthermore, the proposed grid line amendments will not result in any additional impacts (impacts not mentioned or assessed within the "original" ecological impact assessment).
- In terms of amendment to the on-site substation location, the proposed relocation of the authorised on-site collector substation complex will have a slight impact (reduction) on the significance ratings of some of the impacts assessed during the EIA phase. This is because the substation will be relocated from a near-natural to natural grassland area, to an area that has been largely disturbed and transformed (ploughing).
    - As the new location is largely characterised by largely transformed and disturbed areas, impacts on natural vegetation and habitats as well as the impact on the natural faunal communities of the area (due to a reduction of impacts on natural faunal habitats) will be lower than predicted in the EIA. Subsequently, these impacts have been re-assessed within this Part 2 Amendment Letter and it was found that for both aspects (impacts on natural vegetation and fauna) there was a slight reduction in the significance.
- Furthermore, the proposed on-site substation amendment will not result in any additional impacts (impacts not mentioned or assessed within the "original" ecological impact assessment).
- No additional or amended mitigation measures, relating to fauna, flora and terrestrial biodiversity, in addition to those specified in the original Ecological specialist study (dated November 2018) are recommended.

In conclusion the proposed amendments will result in similar ecological impacts to those identified and assessed in the EIA. Subsequently, from an ecological perspective, no objection or motives (identification of impacts of high ecological significance etc.) were identified which would hinder the proposed amendment. There will be a slight advantage in the reduction of impacts associated with the substation. Therefore, the proposed amendment is acceptable and may be authorised, subject to the implementation of the

recommended mitigation measures provided within the original Ecological Impact Assessment (Botha, 2018).

5.2. Impacts on Avifauna

The original Avifauna Assessment was conducted by of Pachnoda Consulting CC (Mr. Lukas Niemand) in 2018.

The baseline avian data was obtained from point count sampling techniques during two independent sampling sessions (July 2018 and October 2018). The objectives of the avifaunal study were to: (a) describe the avifauna associations in the project area according to species composition and richness prior to construction activities; (b) provide an inventory of bird species occurring in the project area including species prone towards collisions with the proposed infrastructure; (c) provide an impact assessment; and (d) provide an indication of the occurrence of species of concern (e.g. threatened and near threatened species).

Five avifaunal habitat types were identified, and consisted of open mixed dolomite grassland with bush clump mosaics, artificial livestock watering points, moist/wet grasslands, pastures/agricultural land and power line servitudes of which the pylons were used for roosting by vultures. Approximately 206 bird species are expected to occur in the wider study area, of which 100 species were observed in the area with 87 species confined to the study site (infrastructure footprint). The expected richness included 12 threatened or near threatened species, 15 southern African endemics and 21 are near-endemic species. The critically endangered White-backed Vulture (Gyps africanus) and near-threatened Black-winged Pratincole (*Glareola nordmanni*) were observed on the study site, although the endangered Cape Vulture (*G. coprotheres*) and endangered Lappet-faced Vulture (*Torgos tracheliotos*) were confirmed from habitat adjacent to the study site. Nine southern African endemics and 10 near-endemic species were confirmed on the study site. In addition, a total of 48 collision-prone bird species have been recorded from the wider study area (sensu atlas data), of which 23 species were birds of prey.

The main impacts associated with the proposed PV solar facility includes the following:

- The loss of habitat and subsequent displacement of bird species due to the ecological footprint required during construction.
- Direct interaction (collision trauma) by birds with the surface infrastructure (photovoltaic panels) caused by polarised light pollution and/or colliding with the panels (as they are mistaken for waterbodies).
- Collision with associated infrastructure (mainly overhead power lines).

An evaluation of potential and likely impacts on the avifauna revealed that the impact significance was moderate after mitigation (depending on the type of impact), with the exception of the potential for birds to collide with the associated power lines, which was high without mitigation (and moderate after mitigation). The study site is not located near any prominent wetland system or impoundment, and therefore the risk of waterbird collisions with the proposed infrastructure was considered to be low.

The endangered Cape Vulture (*Gyps coprotheres*), critically endangered White-backed Vulture (Gyps africanus) and Lappet-faced Vulture (*Torgos tracheliotos*) were identified as regular foraging visitors to the study site (according to SABAP2 reporting rates and on-site observations). These species are highly prone to power line collisions, whereby the proposed energy facility (especially the proposed overhead power lines) could pose a collision and electrocution risk to vultures. The risk of collision/electrocution was considered

likely when vultures feed on a carcass in close proximity to a power line or when attempting to roost on the pylon structures (especially vultures visiting a nearby active vulture restaurant). However, with mitigation the risk of vultures colliding with the associated infrastructure could be reduced from a high to a medium significance. The findings of the assessment relating to the proposed amendments are detailed below (**Appendix B**).

5.2.1. Comparative Assessment

All impacts as presented in the 2018 Avifaunal Report will remain unchanged during the implementation of the proposed amendments, which will have no change in the overall impact significance. In addition, the on-site collector substation complex will be located on habitat with a low avifaunal sensitivity (c. agricultural land) and will cover a small surface area, which will result in a low impact significance rating (when compared to the PV layout).

The Alternative 2 Grid Connection Corridor is located alongside existing power line servitudes (in contrast to a section of Alternative Grid Connection 3 which deviated from the existing powerline servitudes), and the advantage of the Alternative 2 Grid Connection Corridor is that its placement along existing power lines will greatly increase the visibility of the overhead cables to passing birds (during daylight), thereby reducing avian collision with the overhead cabling structures. Therefore, the impact of avian collisions at the Alternative 2 Grid Connection Corridor is predicted to be lower when compared to Alternative Grid Connection 3 (refer to the 2018 Avifaunal Report).

Nevertheless, it is recommended that all the proposed mitigation measures and EMPr actions be rigorously implemented as stipulated in the 2018 Avifaunal Report. However, it is further recommended that all artificial livestock watering points that are to be spanned by overhead powerline corridors be relocated/removed to prevent potential bird collisions (e.g. when birds congregate at the watering holes in an attempt to drink/ingest water or when birds of prey are hunting prey attracted to the water resource).

5.2.2. Conclusion and Recommendation

The proposed amendments will not result in a change in impacts on avifauna as predicted in the EIA. No additional mitigation measures are recommended as a result of the proposed amendments. Therefore, the proposed amendment is acceptable and may be authorised, subject to the implementation of the recommended mitigation measures provided within the original Ecological Impact Assessment.

5.3. Impacts on Heritage Resources

An Archaeological Field Assessment was conducted for the Lichtenburg PV facilities by Cedar Tower Services (CTS) in 2019. The physical survey focused on the areas proposed for Lichtenburg 3 PV Facility and included the area proposed for the proposed amendments. The field assessment noted that the area has been disturbed and transformed by agricultural activities. As such pre-existing agricultural plough fields, grazing areas and farm buildings were identified in the development area. Furthermore, throughout the farming areas, several heaps of rocks that were removed from the agricultural fields were identified. During the field assessment of the site no archaeological resources, graves or burial grounds were identified in the project area. However, graves are subterranean in nature and might not have been identified during the initial site visit and survey. In his assessment completed for an adjacent PV facility, Van Schalkwyk (2021)

identified no significant archaeological heritage resources but did identify a number of informal burials. One of these burial grounds (Site 138628) is located in close proximity to the proposed Lichtenburg 3 PV Facility OHL Grid Corridor 2. This site is described as "*An informal burial site with probably more than 30 graves. Most are only marked with stone cairns. It is not fenced off and occurs in close proximity of some houses*." This site falls outside of the proposed grid corridor by approximately 80m and is on the other side of a road. To ensure that no impact occurs, it is recommended that a no-development buffer of 100m is implemented around this grave. As long as this recommendation is implemented, it is very unlikely that the proposed amendments will negatively impact significant archaeological or built environment heritage.

Palaeontology

The proposed development is located on geological deposits belonging to the Monte Christo Formation of the Chuniespoort Group. The Monte Christo Formation is within the Malmani Subgroup. These deposits have a very high sensitivity for impacts to palaeontological resources. This group is known to contain a range of shallow marine to intertidal stromatolites (domes, columns etc) and organic-walled microfossils. In addition, it is within this group that fossiliferous Late Cenozoic cave breccias have been identified such as within the Cradle of Humankind region. The area under consideration in this assessment was surveyed on foot by Bamford et al. (2019) as part of the Heritage Impact Assessment completed for the Lichtenburg 3 PV facilities in 2019.

According to Bamford (2019), the project area lies on rocks of the Malmani Subgroup, Chuniespoort Group. The Malmani Subgroup is up to 2000m thick and comprises five formations distinguished by the amount of chert, stromatolite morphology, intercalated shales and erosion surfaces (Eriksson et al., 2006). The basal Oaktree Formation overlies the Black Reef Formation, and is made up of carbonaceous shales, stromatolitic dolomites and locally developed quartzites. Above this is the Monte Christo Formation comprising erosive breccia, overlain by stromatolitic and oolitic platformal dolomites. Next is the Lyttleton Formation of shales quartzites and stromatolitic dolomites. The Eccles Formation comprises a series of erosional breccias and the overlying Frisco Formation is made up mostly of stromatolitic dolomites.

The site proposed for development is in the Malmani Subgroup which contains a number of stromatolitic dolomites. These were formed in warm shallow sea and are the accumulation of layer upon layer of minerals deposited by blue-green algae (also known as cyanobacteria) and rarely some filamentous algae. Minerals deposited by the algae include calcium carbonate, calcium sulphate and magnesium carbonate. Very rarely are the algal cells preserved in the stromatolites and these are microscopic. Stromatolites are essentially trace fossils and these ones are 2750 to 2650 million years old and very abundant. Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are much too old to contain fossils other than blue-green algae. Taking account of the defined criteria, the potential impact to fossil heritage resources is negligible to extremely low. As such, the proposed amendments are unlikely to negatively impact significant palaeontological heritage resources.

The findings of the assessment of the proposed amendments are detailed below (**Appendix C**). Additional mitigation measures proposed are underlined for ease of reference.

5.3.1. Comparative Assessment

Nature: *Impacts on archaeological resources*

The construction phase of the project will require excavation, which may impact on heritage resources if present. No heritage resources of significance were identified during the field assessments for archaeology.				
	Authorised Sites		**Proposed Amendments**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Localised within the site boundary (1)	Not applicable as no impacts are anticipated	Localised within the site boundary (1)	Localised within the site boundary (1)
Duration	Where an impact to a resource occurs, the impact will be permanent (5)		Where manifest, the impact will be permanent (5)	Where manifest, the impact will be permanent(5)
Magnitude	Low as no archaeological resources were identified (2)		No significant heritage resources were identified within the proposed development and no negative impact is anticipated from the proposed amendments. However, one burial ground (Site 138628) is located in close proximity to the proposed L3 OHL Grid Corridor 2 (5)	No significant heritage resources were identified within the proposed development and no negative impact is anticipated from the proposed amendments. However, one burial ground (Site 138628) is located in close proximity to the proposed L3 OHL Grid Corridor 2 (5)
Probability	It is extremely unlikely that any significant archaeological resources will be impacted (1)		Probability is moderate (3)	Probability is low (1)
Significance	**Low (8)**		**Medium (33)**	**Low (11)**
Status (positive or negative)	Neutral		Neutral	
Reversibility	Any impacts to heritage resources that do occur are irreversible		Any impacts to heritage resources that do occur are irreversible	Any impacts to heritage resources that do occur are irreversible
Irreplaceable loss of resources?	Unlikely		Unlikely	
Can impacts be mitigated?	Not applicable as no impacts are anticipated		Yes	Yes
Mitigation:				

» No impacts on archaeological resources are anticipated and therefore no mitigation is required. However, a chance find procedure must be developed and implemented for the project in the event that an archaeological resource is found. » Although the farm house falls outside of the proposed development footprint, any impacts to the old farm house structure are to be avoided. As this structure has limited architectural heritage significance, no specific mitigation recommendations are provided. Any impacts on this structure will require the approval of the North West Provincial Heritage Resources Authority. » One burial ground (Site 138628) is located in close proximity to the proposed L3 OHL Grid Corridor 2 (Figure 3b) and as such, a 100m no development buffer is recommended around this site.
Residual Impacts: » Should any significant recourses be impacted (however unlikely) residual impacts may occur, including a negative impact due to the loss of potentially scientific cultural resources. » If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.

Nature: *Impacts on palaeontological resources*
The construction phase of the project will require excavation, which may impact on heritage resources if present. No heritage resources of significance were identified during the field assessments for palaeontology.

	Authorised Sites		**Proposed Amendments**	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
Extent	Since only the possible fossils within the area would be microscopic blue-green algae in some stromatolites, the spatial scale will be localised within the site boundary (1)	Not applicable as no impacts are anticipated	Localised within the site boundary (1)	Localised within the site boundary (1)
Duration	Where an impact to a resources occurs, the impact will be permanent (5)		Where manifest, the impact will be permanent (5)	Where manifest, the impact will be permanent (5)
Magnitude	Loose sands do not preserve plant fossils; stromatolites are common trace fossils and not considered paleontologically important in this age deposit. They outcrop sporadically. The		According to the PIA conducted for the Lichtenburg PV Facility, "The geological structures suggest that the rocks are much too old to contain fossils other than blue-green algae. Taking account of the	According to the PIA conducted for the Lichtenburg PV Facility, "The geological structures suggest that the rocks are much too old to contain fossils other than blue-green algae.

	impact would be very unlikely (2)		defined criteria, the potential impact to fossil heritage resources is negligible to extremely low." As such, the proposed amendments are unlikely to negatively impact significant palaeontological heritage resource(L)	Taking account of the defined criteria, the potential impact to fossil heritage resources is negligible to extremely low." As such, the proposed amendments are unlikely to negatively impact significant palaeontological heritage resources (L)
Probability	It is extremely unlikely that any fossils would be found in the stromatolites which are themselves common trace fossils (1)		Probability is low (1)	Probability is low (1)
Significance	**Low (8)**		**Low (7)**	**Low (7)**
Status (positive or negative)	Neutral		Neutral	
Reversibility	Any impacts to heritage resources that do occur are irreversible			
Irreplaceable loss of resources?	Unlikely		Unlikely	
Can impacts be mitigated?	Not applicable as no impacts are anticipated		Yes	
Mitigation: No impacts on palaeontological resources are anticipated and therefore no mitigation is required. However, a chance find procedure must be developed and implemented for the project in the event that a palaeontological resource is found.				
Residual Impacts: Should any significant recourses be impacted (however unlikely) residual impacts may occur, including a negative impact due to the loss of potentially scientific cultural resources.				

5.3.2. Conclusion and Recommendation

There is no objection to the proposed amendments to the Lichtenburg 3 PV Facility on heritage grounds and no monitoring protocols are recommended. There are no disadvantages or advantages associated with the proposed amendment from a heritage perspective however, it should be noted that, although there were no other archaeological or heritage resources identified during the survey conducted for the already approved PV facility, some archaeological material, including artefacts and graves, can be buried underground and as such, may not have been identified during the initial survey and site visits. In the case where the proposed development activities bring these materials to the surface, work must cease and SAHRA must be contacted immediately to determine a way forward. The following findings have been made:

- No archaeological resources were identified in the project area identified for the proposed amendments.
- No graves or burial grounds were identified in the project area identified for the proposed amendments. However, graves are subterranean in nature and might not have been identified during the initial site visit and survey.
- One burial ground (Site 138628) is located in close proximity to the proposed Lichtenburg 3 PV Facility OHL Grid Corridor 2 and as such, a 100m no development buffer is recommended around this site.
- Based on the experience of the palaeontologist and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the stromatolites or overlying soils of the Quaternary.
- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.

5.4. Visual Impacts

A visual assessment addendum letter was compiled by LOGIS (**Appendix D**) to evaluate the visual impacts associated with the proposed amendment. The findings of the assessment are detailed below, including the measures to ensure avoidance, management, and mitigation.

5.4.1. Comparative Assessment

The amendments are proposed within the authorised footprint of Lichtenburg 3 PV. In addition, the extension request to the grid connection corridor for Lichtenburg 3 PV is proposed within an area that was assessed by Specialists during the EIA process. The reason for the extension to this corridor is on the basis that the location of the step-up/on-site substation for Lichtenburg 3 PV is being moved from its authorised location to a new location within the authorised footprint of the project. The change in the location is to collect the electricity from each of the projects at one location, the switching station/collector substation from which electricity will be transmitted to the Eskom Watershed Substation via a 132kV power line.

The proposed amendment is not expected to significantly alter the influence of the project infrastructure on areas of higher viewer incidence (observers travelling along the roads within the region) or potential sensitive visual receptors (residents of homesteads in close proximity to the PV facility).

The proposed amendment is consequently not expected to significantly influence the anticipated visual impact, as stated in the original VIA report (i.e. the visual impact is expected to occur regardless of the amendment). This statement relates specifically to the assessment of the visual impact within a 1km radius of the project structures (potentially high significance), but also generally apply to potentially moderate to low visual impacts at distances of up to 3km from the structures.

In consideration of the proposed amendment, there is no (zero) change to the significance rating compared with the original EIA VIA report and no additional visual impacts are envisaged. In addition to this, no new mitigation measures are required.

5.4.2. Conclusion and Recommendations

The proposed amendment is expected to have a neutral effect from a visual impact perspective i.e. no advantages or disadvantages are expected.

It is suggested that the proposed amendment be supported, subject to the conditions and recommendations as stipulated in the original EA, and according to the Environmental Management Programme (EMPr) and suggested mitigation measures, as provided in the original VIA report.

5.5. Changes to the EMPr

It is noted that condition 13 of the EA states that the EMPr has been approved. Based on the amendments proposed the EMPr and Layout will be amended and submitted to the Department for approval once a decision on this Part 2 amendment has been made by the Department.

6. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS

In terms of Regulation 32(1)(a)(ii), this section provides details of the advantages and disadvantages of the proposed amendment.

Advantages of the amendment	Disadvantages of the amendment
General	
The proposed location of the Collector (step-up/on-site) Substation Complex and extension to the grid connection corridor Alternative 2 for Lichtenburg 3 PV falls within an area that was assessed by Specialists for the placement of infrastructure during the EIA process. The reason for the extension of the corridor is on the basis that the location of the step-up/on-site substation for Lichtenburg 3 PV is being moved from its authorised location to a new location within the authorised footprint of the project as part of the Collector Substation Complex for all 3 projects. The change in the location of the substation is to collect the electricity from each of the three PV projects within the larger cluster at one location, the collector substation complex from which electricity will be transmitted to the Eskom Watershed Substation via a 132kV power line. This is in accordance with Eskom's requirements.	None
Ecology	
The proposed relocation of the authorised on-site collector substation complex will have a slight impact (reduction) on the significance ratings of some of the impacts assessed during the EIA phase. This is because the substation will be relocated from a near natural to natural grassland area, to an area that has been largely disturbed and transformed (ploughing).	The newly proposed and preferred grid route (Grid Corridor Alternative 2 with a slight amendment/ extension) will be slightly longer than the originally assessed Grid Alternative 2 route.
Avifauna	
The Alternative 2 Grid Connection Corridor will be located adjacent to existing power lines which will greatly increase the visibility of the overhead cables to passing birds (during daylight), thereby reducing avian collision with the overhead cabling structures.	None
Heritage	
None	One burial ground (Site 138628) is located in close proximity to the proposed L3 OHL Grid Corridor 2 therefore construction activities could potential impact the identify site, however with the implementation of the mitigation measure the impact should be low.
Visual	
None	None

Based on the above, it can be concluded that the advantages of the proposed change outweigh the disadvantages from an environmental and technical perspective.

7. REQUIREMENTS FOR ADDITIONAL MITIGATION AS A RESULT OF THE PROPOSED AMENDMENTS

As required in terms of Regulation 32(1)(a)(iii), consideration was given to the requirement for additional measures to ensure avoidance, management and mitigation of impacts associated with the proposed change. From the specialist inputs provided into this amendment motivation, it is concluded that the mitigation measures proposed within the EMPr would be sufficient to manage potential impacts within acceptable levels.

The Heritage Assessment included the following recommendation:

» One burial ground (Site 138628) is located in close proximity to the proposed L3 OHL Grid Corridor 2 and as such, a 100m no development buffer is recommended around this site.

The Avifaunal Assessment included the following additional recommendation:

» All artificial livestock watering points that are to be spanned by overhead powerline corridor must be relocated/removed to prevent potential bird collisions (e.g. when birds congregate at the watering holes in an attempt to drink/ingest water or when birds of prey are hunting prey attracted to the water resource).

No additional mitigation measures were proposed by the Ecology and Visual specialists as a result of the proposed amendments.

8. PUBLIC PARTICIPATION

A public participation process has been conducted in support of the Part 2 application for amendment of the EA for the development of the 100MW Lichtenburg PV 3 Facility and its associated infrastructure near Lichtenburg, North West Province.

A full I&AP database is included in **Appendix E1** [2]. It must be noted that the project is to be developed on the same farm portions as originally authorised, all of which are privately owned. The affected landowners were informed of the part 2 amendment process. The amendment to the EA will not result in impacts on any additional I&APs.

The public participation for the proposed amendment process included:

- The Draft Motivation Report has been made available to registered I&APs on the Savannah Environmental Website (https://savannahsa.com/public-documents/energy/) for a 30-day review and comment period from **Thursday, 14 April 2022 to Thursday, 19 May 2022.**
- Written notification to registered I&APs (refer to **Appendix E2**) and Organs of State (refer to **Appendix E3**) regarding the availability of the Draft Motivation Report was sent on **Thursday, 14 April 2022**.
- Advertisements were placed in **Die Noordwester Newspaper** on **Thursday, 14 April 2022** (refer to **Appendix E4**).
- Site notices were placed at the site on **Thursday, 14 April 2022**.

Comments received during the public review period will be included in the final submission to the DFFE for consideration in the decision-making process. Comments will be included and responded to in the Comments and Responses Report included in the final Motivation Report submission.

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[2] Contact details of I&APS are not included due to POPIA requirements.

9. CONCLUSION

Based on the specialist findings, it is concluded that the proposed amendments to the environmental authorisation are not expected to result in an increase to the significance ratings for the identified potential impacts. Specific findings were issued by the respective specialists, and are summarised below:

- The **Ecological** specialist found that the proposed amendments will result in similar ecological impacts, with reduction in impacts expected as a result of the relocation of the substation. Subsequently, from an ecological perspective no objection or motives (identification of impacts of high ecological significance etc.) were identified which would hinder the proposed amendment. Therefore, the proposed amendment is acceptable and may be authorised, subject to the implementation of the recommended mitigation measures provided within the original Ecological Impact Assessment (Botha, 2018).
- The **Avifaunal** specialist found that all impacts as presented in the 2018 Avifaunal Report will remain unchanged with the implementation of the proposed amendments, which will have no change in the overall impact significance. In addition, the Collector Substation Complex will be located on habitat with a low avifaunal sensitivity (c. agricultural land) and will cover a small surface area, which will result in a low impact significance rating (when compared to the PV layout). Therefore, the proposed amendment is acceptable and may be authorised, subject to the implementation of the recommended mitigation measures provided within the original Avifaunal Impact Assessment.
- The **Heritage** specialist noted that no archaeological resources, graves or burial grounds were identified in the project area. However, graves are subterranean in nature and might not have been identified during the initial site visit and survey. In his assessment completed for an adjacent PV facility, Van Schalkwyk (2021) identified no significant archaeological heritage resources but did identify a number of informal burials. One of these burial grounds (Site 138628) is located in close proximity to the proposed Lichtenburg 3 PV Facility OHL Grid Corridor 2. This site is described as "*An informal burial site with probably more than 30 graves. Most are only marked with stone cairns. It is not fenced off and occurs in close proximity of some houses*." This site falls outside of the proposed grid corridor by approximately 80m and is on the other side of a road. To ensure that no impact occurs, it is recommended that a no-development buffer of 100m is implemented around this grave. There is no objection to the proposed amendments to the Lichtenburg 3 PV Facility on heritage grounds and no monitoring protocols are recommended.
- The **Visual** specialist indicated that the proposed amendment is not expected to significantly alter the influence of the project infrastructure on areas of higher viewer incidence (observers travelling along the roads within the region) or potential sensitive visual receptors (residents of homesteads in close proximity to the PV facility). The proposed amendment is consequently not expected to significantly influence the anticipated visual impact, as stated in the original VIA report (i.e. the visual impact is expected to occur regardless of the amendment). This statement relates specifically to the assessment of the visual impact within a 1km radius of the project structures (potentially high significance), but also generally apply to potentially moderate to low visual impacts at distances of up to 3km from the structures. In consideration of the proposed amendment, there is no (zero) change to the significance rating compared with the original EIA VIA report and no additional visual impacts are envisaged. In addition to this, no new mitigation measures are required. The proposed amendment is expected to have a neutral effect from a visual impact perspective i.e. no advantages or disadvantages are expected.

All specialists therefore concluded that the amendments proposed are considered acceptable from their respective specialisation and that the proposed amendment be supported subject to the conditions and

recommendations as stipulated in the EA and according to the EMPr and suggested mitigation measures, as provided in the original specialist's assessments reports.

9.1. Overall Conclusion and Recommendations

The amendments proposed do not constitute any listed activities. The mitigation measures described in the original BA document are adequate to manage the expected impacts for the project. No additional mitigation measures are provided by the specialists except the additional mitigation proposed by the heritage specialists.

Given the above, ABO requests the following amendments as part of this application:

- A change in the location of the authorised on-site/step-up substation to a new location within the authorised footprint of Lichtenburg 3 PV.
- A change in the capacity of the step-up/on-site substation from 88/132kV to 33/132kV.
- Amendment of the preferred power line corridor to allow connection of Lichtenburg 3 PV (and the collector substation complex) to the existing Eskom Watershed Substation – Alternative 2 as assessed.

Taking into consideration the conclusions of the studies undertaken for the proposed amendments (as detailed in (**Appendix A–D**), it is the opinion of the EAP that these amendments are considered acceptable from an environmental perspective, provided that the original mitigation measures stipulated herein are implemented.