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Date: 14 April 2022
Ref: Lichtenburg 2 PV Part 2 Amendment

Attention: Ms. Jo-Anne Thomas

Dear Madam,

ECOLOGICAL AND AQUATIC/WETLAND COMMENTS: PROPOSED AMENDMENT TO THE AUTHORISED ABO WIND LICHTENBURG 2 PV PROJECT (DEA REF 14/12/16/3/3/2/1092).

The ABO Wind Lichtenburg 2 PV solar energy facility is authorised for a maximum electricity export capacity of 100MW and includes the following infrastructure (refer to Figure 1).

- » Photovoltaic modules with a net generation (contracted) capacity of 100MW;
- » On-site 88/132kV substation;
- » Mounting structures (fixed tilt/static, single-axis or double-axis tracking systems) for the PV arrays and related foundations;
- » DC/AC Inverters, LV/MV power transformers and internal electrical reticulation (underground cabling);
- » A new 88/132kV overhead power line from the on-site substation to the Mmabatho / Watershed DS 1 88kV Power Line;
- » Access and internal road network;
- » Temporary laydown area;
- » Auxiliary buildings (gate-house and security, control centre, office, two warehouses, canteen & visitors centre, rainwater tanks, etc);
- » Perimeter fencing; and
- » Battery Energy Storage System (BESS), with a capacity of up to 500MW/500MWh, an extent of no more than 5ha, and a maximum height of 3.5m¹.

ABO Wind Lichtenburg 2 PV (Pty) Ltd is now considering the following amendments (Figure 2):

- » a change in the capacity of the step-up/on-site substation from 88/132kV to 33/132kV;
- » an extension to the authorised Loop-in/Loop-out (LILO) grid connection corridor, within an assessed area to allow Lichtenburg 2 PV to connect to the collector substation on Lichtenburg 3 PVs authorized property/footprint; and

¹ This infrastructure was authorised by the DFFE (Ref:14/12/16/3/3/2/1091/AM2) through a Part 2 amendment process undertaken in March 2020 for the addition of a Battery Energy Storage System (BESS) to the EA for the proposed project.

- » a substitution of the wording in the EA, 'a new 132kV overhead power line from the on-site substation to the Mmabatho/Watershed DS 1 88kV power line', with, 'a new 132kV power line from Lichtenburg 2 PV's step-up/on-site substation to a proposed collector substation complex on Lichtenburg 3 PV'.

Considering the above, it should be noted that the 132kV power line to be constructed from the step-up/on-site substation will terminate at the collector substation complex proposed on the authorised footprint for Lichtenburg 3 PV. This collector substation complex will be the point where all electricity from Lichtenburg 2 PV and other projects is collected and is evacuated via a 132kV power line to the Eskom Watershed Substation. Thus, only one 132kV power line will be built from this collector substation complex terminating at the Eskom Watershed Substation.

The authorised ABO Wind Lichtenburg 2 PV solar energy facility ('the project') is located 10km north of Lichtenburg and 7.5km south 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 Portion 23 of Farm Houthaalboomen No. 31 and Remaining Extent of Portion 2 of Farm Zamenkomst No.4. It is within these properties that Lichtenburg 2 will be constructed and operated.

The original Ecological Assessment/Report 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) 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.

Ecological comments were requested from Nkurenkuru Ecology and Biodiversity by Savannah Environmental regarding the proposed amendments.

Subsequently, the aim and terms of reference are to:

- » Determine whether the ecological findings/results as well as the impacts assessed within the original Ecological Impact Assessment (2018) still ring true for the amended preferred grid route option.
 - In the case where such impacts will change in any way due to the proposed amendments (in terms of duration, magnitude, significance etc.), a comparison should be provided of such impacts before the changes and after the proposed changes;
- » Whether there will be any additional impacts;
 - In the case where there will be additional impacts, such impacts should be assessed in-line with the methodology specified by Savannah Environmental.

- » Determine any potential advantages and/or disadvantages associated with the changes;
- » Provide measures to ensure avoidance, management and mitigation of impacts associated with such proposed changes, and any changes to the existing EMPr.

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 some areas being ploughed and cultivated) with no clear change in vegetation structure and the present ecological status of the assessed area (Figure 3). As such the need for a site visit as part of the Part 2 Amendment was deemed unnecessary with the findings of the terrestrial and wetland/ecological study and assessment still regarded as applicable.

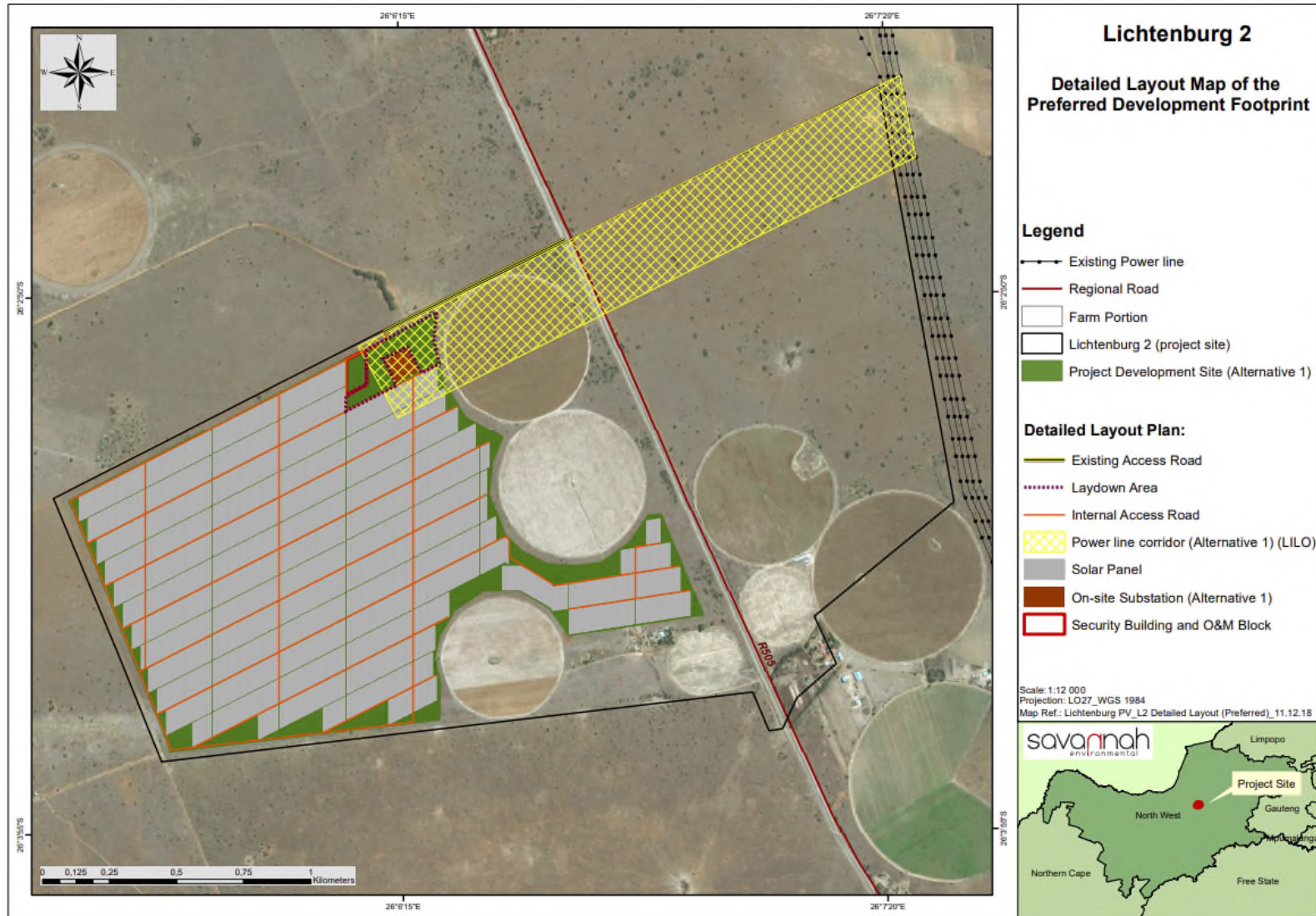


Figure 1: The authorised layout of the proposed ABO Wind Lichtenburg 2 PV solar energy facility (map provided by Savannah Environmental Pty (Ltd)).

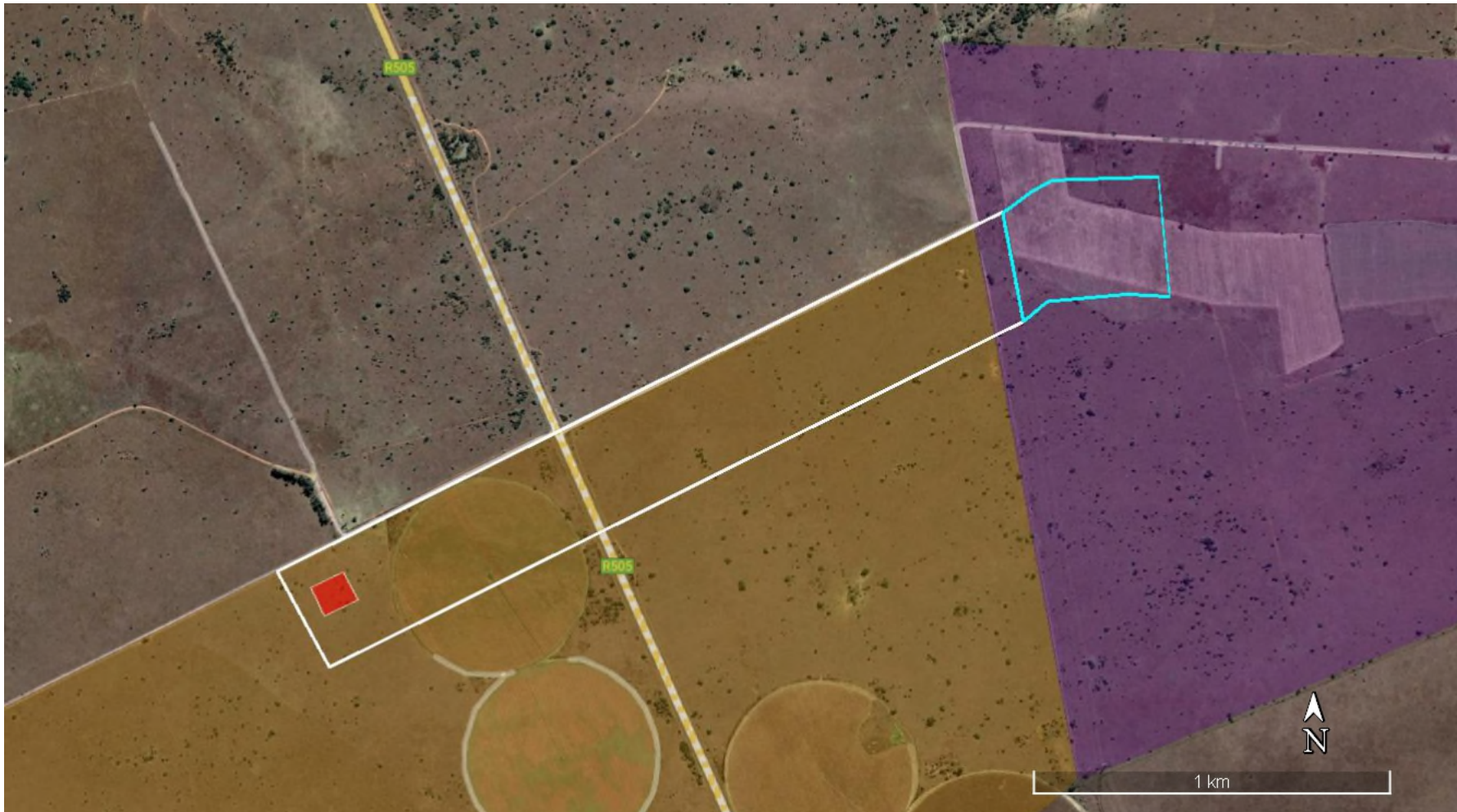


Figure 2: Google Image™ illustrating the proposed amendment (extension) to the authorised grid corridor as well as the slightly smaller on-site substation footprint (now only 900m²).

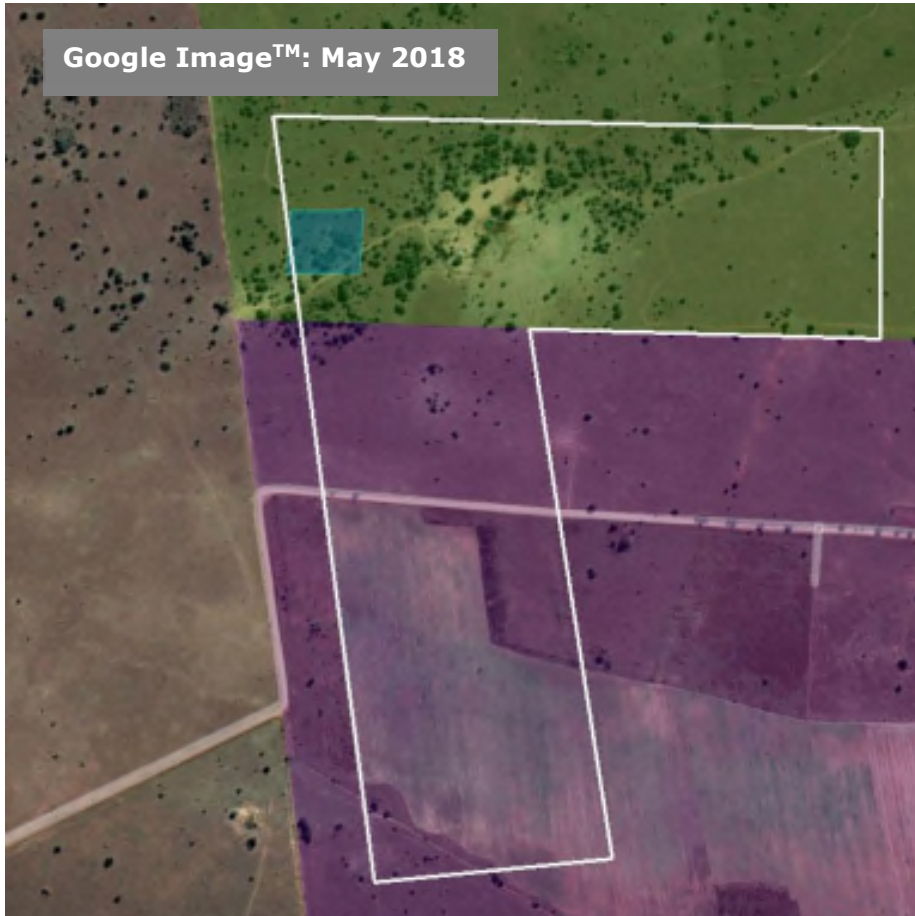
Orange shaded area: Portion 23 of the Farm Houthaalbomen No 31; Purple shaded area: Portion 2 of the Farm Zamenkomst No 4; Light blue shaded area: Extended section of the authorised grid corridor; Red shaded area: Proposed on-site substation footprint; White outlined area: Authorised grid corridor.



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Google Image™: May 2018



Google Image™: December 2021

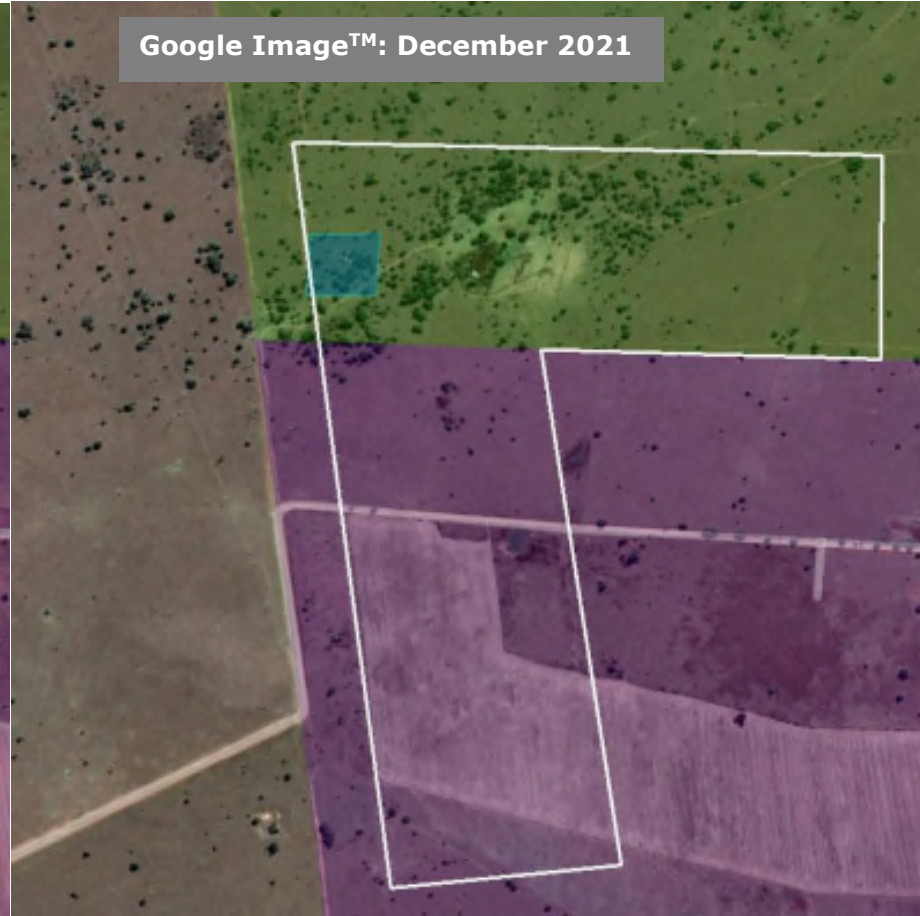




Figure 3: Google Images™ comparing how land use practices and the ecological status may have changed over time (between 2018 and 2021). From the satellite images it is clear that now significant changes have occurred over time.

1. GENERAL FINDINGS / NOTES ON THE AFFECTED ENVIRONMENT AND ASSESSED IMPACTS.

During the original ecological survey two vegetation associations were identified within the proposed grid corridors (Figure 4):

- » Association 1: *Elionurus muticus* – *Helichrysum callicomum* Savanna Grassland; and
- » Association 2: *Hyparrhenia hirta* – *Elionurus muticus* Grassland

Plant association 2 covers slightly deeper sand-loam soils which are regarded as high to moderately high arable lands and as such large portions of this association have been extensively ploughed. Almost the entire portion of the proposed grid corridor extension area will be located within such transformed/ploughed areas that was historically covered by plant association 2. The bulk of the area is, however, covered by plant association 1 which covers shallow, rocky soil forms (as described within the Ecological Assessment/Report the bulk of the authorised grid corridor will be located within this plant association). Furthermore, other forms of disturbances/land use within the grid corridors include pivot irrigated areas, kraals, the R505 Road and numerous dirt roads (twin tracks).

As mentioned, the authorised grid corridor and on-site substation will be almost entirely located within plant association 1 whilst the newly proposed grid corridor will be mostly located within plant association 2 (of which most have been transformed through cultivation practices).

According to the sensitivity assessment, both of these vegetation associations have been classified as **medium sensitivity** (Figure 5). All disturbed and transformed areas have been furthermore, classified as **low sensitivity**. During the Ecological Study and Assessment, it was found that both of these vegetation associates were regarded as **acceptable for the proposed grid infrastructure development**.

Furthermore, during the Ecological Study and Assessment, **no** faunal and floral species of conservation concern (Red Data and highly range-restricted species) have been identified within the proposed grid corridor (originally authorised grid corridor as well as the proposed extension). Additionally, the proposed grid corridor, as well as the on-site substation, are located **outside** of any significant terrestrial biodiversity features (provincially and nationally identified areas), however, within the Ecological Study and Assessment Report, a **sensitive *Vachelia erioloba* tree cluster** has been identified within the grid corridor. Within the report, it was stated that disturbance of this tree cluster can be **successfully avoided** through micro-alignment of the power line (slight route deviation) in this area. Subsequently, with the implementation of a recommended route deviation around the *V. erioloba* cluster, this grid corridor was regarded as **acceptable**.

In terms of freshwater resource features, **no** aquatic/wetland features have been identified within 500m of the proposed grid corridors and subsequently the proposed development of the grid infrastructure will **not** have an impact on any freshwater resource features.

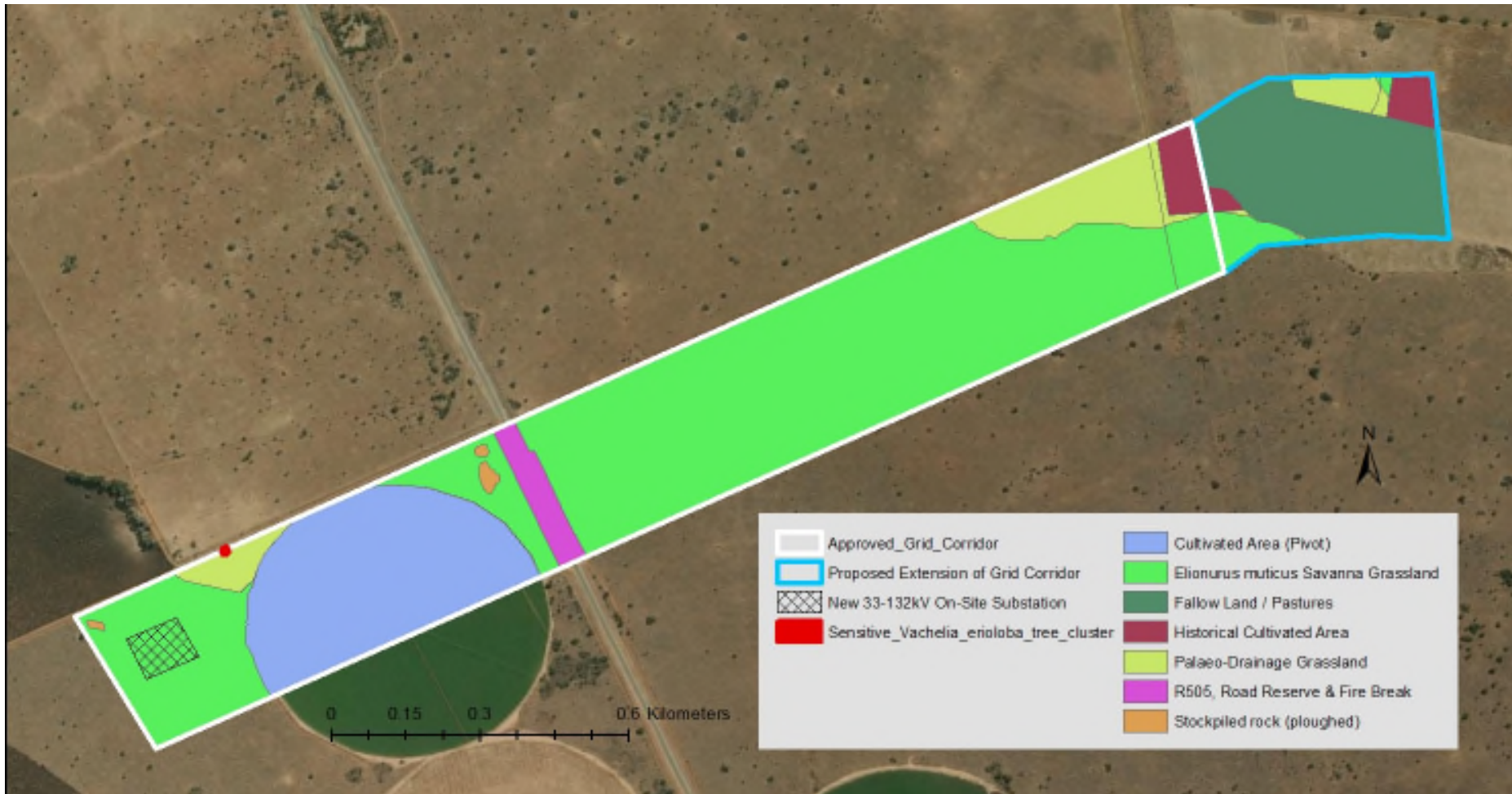


Figure 4: Maps indicating the land coverages and land uses characterizing the newly proposed grid corridor and on-site substation.



Figure 5: Maps indicating the ecological sensitivity characterizing the newly proposed grid corridor and on-site substation.

2. COMPARISON AND ASSESSMENT OF POTENTIAL IMPACTS LISTED WITHIN THE ORIGINAL ECOLOGICAL REPORT.

A summary of all applicable impacts listed within the original Ecology Report will be provided followed by a re-assessment of all impacts that that will either increase or decrease in significance following the amendment of the turbine design and location. All impacts that will have no change in significance will only be mentioned. Additional mitigation measures are provided where deemed necessary.

Within the original Ecology Report the following potential impacts where listed as applicable to the grid infrastructure development and was subsequently assessed.

- » 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 proposed significance of this impact for all assessed grid corridor and on-site substation options were 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 proposed significance of this impact for all assessed grid corridor and on-site substation options were rated as **low**, with the implementation of recommended mitigation measures.
 - 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 proposed significance of this impact for all assessed grid corridor and on-site substation options were rated as **low**, with the implementation of recommended mitigation measures.
 - 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 proposed significance of this impact for all assessed grid corridor and on-site substation options were rated as **low**, with the implementation of recommended mitigation measures.
 - 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 proposed significance of this impact for all assessed grid corridor and on-site substation options were rated as **low**, with the implementation of recommended mitigation measures.
 - Increased human presence can lead to poaching, illegal plant harvesting and other forms of disturbance such as fire.
 - The proposed significance of this impact for all assessed grid corridor and on-site substation options were rated as **low**, with the implementation of recommended mitigation measures.
- » 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.
 - The proposed significance of this impact for all assessed grid corridor and on-site substation options were rated as **low**, with the implementation of recommended mitigation measures.

2.1. Amendments to existing listed impacts and/or the addition of new potential impacts based on the proposal of an extension of the approved grid corridor and the slight reduction in the on-site substation's footprint.

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

- » Even though, the newly 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

- » The same situation is applicable for the amendment to the on-site substation, where the amendment to the development footprint (slight reduction), is not significant enough to warrant any change in the significance of all assessed impacts.
- » Furthermore, the proposed amendments to the preferred grid corridor and the on-site substation footprint will not result in any additional impacts (impacts not mentioned or assessed 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.

2.2. 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.

3. CONCLUSION AND RECOMMENDATIONS

The following amendments to the project have been proposed by ABO Wind Lichtenburg 1 PV (Pty) Ltd;

- » a change in the capacity of the step-up/on-site substation from 88/132kV to 33/132kV;
- » an extension to the authorised Loop-in/Loop-out (LILO) grid connection corridor, within an assessed area to allow Lichtenburg 2 PV to connect to the collector substation on Lichtenburg 3 PVs authorized property/footprint; and
- » a substitution of the wording in the EA, 'a new 132kV overhead power line from the on-site substation to the Mmabatho/Watershed DS 1 88kV power line', with, 'a new 132kV power line from Lichtenburg 2 PV's step-up/on-site substation to a proposed collector substation complex on Lichtenburg 3 PV'.

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 have remained the same with no clear change in vegetation structure and the present ecological status of the assessed area. As such the need for a site visit as part of the Part 2 Amendment was deemed unnecessary with the findings of the terrestrial and wetland/ecological study and assessment still regarded as applicable.

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

- » Even though, the newly 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.
- » The same situation is applicable for the amendment to the on-site/step-up substation, where the amendment to the development footprint (slight reduction), is not significant enough to warrant any change in the significance of all assessed impacts.
- » Furthermore, the proposed amendments to the preferred grid corridor and the on-site/step-up substation footprint will not result in any additional impacts (impacts not mentioned or assessed 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.
- » Furthermore, 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. Subsequently, from an ecological perspective, no objective or motives (identification of impacts of high ecological significance etc.) were identified which would hinder the proposed amendment.

Therefore, it is the opinion that 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).



Gerhard Botha (SACNASP Reg. No 400502/14)
2022/04/14