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SITE SENSITIVITY VERIFICATION REPORT FOR THE BENYA SOLAR ENERGY PROJECT SITE NEAR NORTHAM, LIMPOPO PROVINCE

Report by
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1 PURPOSE OF THIS REPORT

As per the Procedures for the Assessment and Minimum Report Content Requirements for Environmental Themes (GN 320 and 1150 of 2020, as amended – the Specialist Protocols), a site sensitivity verification exercise was undertaken in order to confirm the agricultural sensitivity of the proposed site as identified by the National Web-Based Environmental Screening Tool (Screening Tool).

Table 1 outlines the requirements for site sensitivity verification and the required content for a Site Sensitivity Verification Report (SSVR). These requirements and the sections of this SSVR in which they have been addressed are listed in **Table 1**.

Table 1: Content of specialist report as per Specialist Protocols

GN 320 and 1150 of 2020:	Requirement	Section Ref.:
1.1.	The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.	Section 2
1.2.	The site sensitivity verification must be undertaken through the use of: (a) a desk top analysis, using satellite imagery; (b) a preliminary on-site inspection; and (c) any other available and relevant information.	Section 2
1.3.	The outcome of the site sensitivity verification must be recorded in the form of a report that--	
	(a) confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;	Section 4
	(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and	Section 3
	(c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment (EIA) Regulations.	

2 METHODOLOGY OF STUDY

The assessment was based on an on-site investigation by Johann Lanz of the soils and agricultural conditions conducted on 5 February 2025. It was also informed by existing climate, soil, and agricultural potential data for the site (see references). The aim of the on-site assessment was to

assess and determine the cropping potential across the site. Soils were assessed based on the investigation of existing soil exposures in combination with indications of the surface conditions and topography, and strategically positioned auger samples where necessary. Soils were classified according to the South African soil classification system (Soil Classification Working Group, 2018). An interview was also conducted with the farmer for information on farming practices on the site.

An assessment of soils and long-term agricultural potential is in no way affected by the season in which the assessment is made, and therefore the date on which this assessment was done has no bearing on its results. The level of agricultural assessment is considered entirely adequate for an understanding of on-site agricultural production potential for the purposes of this assessment.

3 VERIFICATION OF THE SITE SENSITIVITY

The screening tool's classification of sensitivity is merely an initial indication of what the sensitivity of a piece of land might be, as indicated by the only data that is available. What the screening tool attempts to indicate is whether the land is suitable for crop production (high and very high sensitivity) or unsuitable for crop production (low and medium sensitivity). To do this, the screening tool uses two independent criteria, from two independent data sets, which are both indicators of suitability for crop production but are limited and were not designed for this purpose. The first is outdated and the second is fairly course, modelled data which is not accurate at site scale. The two criteria are:

1. Whether the land is classified as cropland or not on the field crop boundary data set (Crop Estimates Consortium, 2019). All classified cropland is, by definition, either high or very high sensitivity.
2. Its land capability rating as per the Department of Agriculture's updated and refined, country-wide land capability mapping (DAFF, 2017). Land capability is defined as the combination of soil, climate, and terrain suitability factors for supporting rain-fed agricultural production. The direct relationship between land capability rating, agricultural sensitivity, and rain-fed cropping suitability is summarised by this author in Table 2.

These two inputs operate independently, and the screening tool's agricultural sensitivity is simply determined by whichever of these two gives the highest sensitivity rating. The agricultural sensitivity of the site, as classified by the screening tool, is shown in Figure 1.

The true agricultural sensitivity of any land is equivalent to its actual suitability for crop production on the ground, rather than being determined by a parameter that serves as a proxy for crop suitability in a dataset. The land's suitability for cropping directly determines how important it is to conserve that land as agricultural production land. To determine suitability for crop production, and hence sensitivity, requires a site-specific assessment, as has been conducted in this assessment,

rather than a reliance on data sets that have significant limitations.

Table 2: Relationship between land capability, agricultural sensitivity, and rain-fed cropping suitability.

Land capability value	Agricultural sensitivity	Rain-fed cropping suitability	
		Summer rainfall areas	Winter rainfall areas
1 - 5	Low	Unsuitable	Unsuitable
6	Medium		
7			Suitable
8 - 10	High	Suitable	
11 - 15	Very High		

Note: There is an error in the screening tool whereby a land capability of 8 is classified as medium sensitivity, but according to NEMA's agricultural protocol, should in fact be classified as high sensitivity. This assessment follows the agricultural protocol definition and classifies a value of 8 as high sensitivity.

The mean annual rainfall versus evaporation and the seasonal distribution of rainfall in the area within which the site is located means that the climatic moisture availability is insufficient for viable rain-fed cropping on all soil types other than the dark-coloured, clay-rich, so-called turf soils that do occur in the area, but are not present on the assessed PV site, except for one small patch that is too small for viable crop production. The combination of climate and soil on the site results in an insufficient moisture reservoir to carry a crop through the season and limits the agricultural potential of the site to being suitable only as grazing land.

Turf soils that are suitable for and used for crop production occur within the LILO corridor.

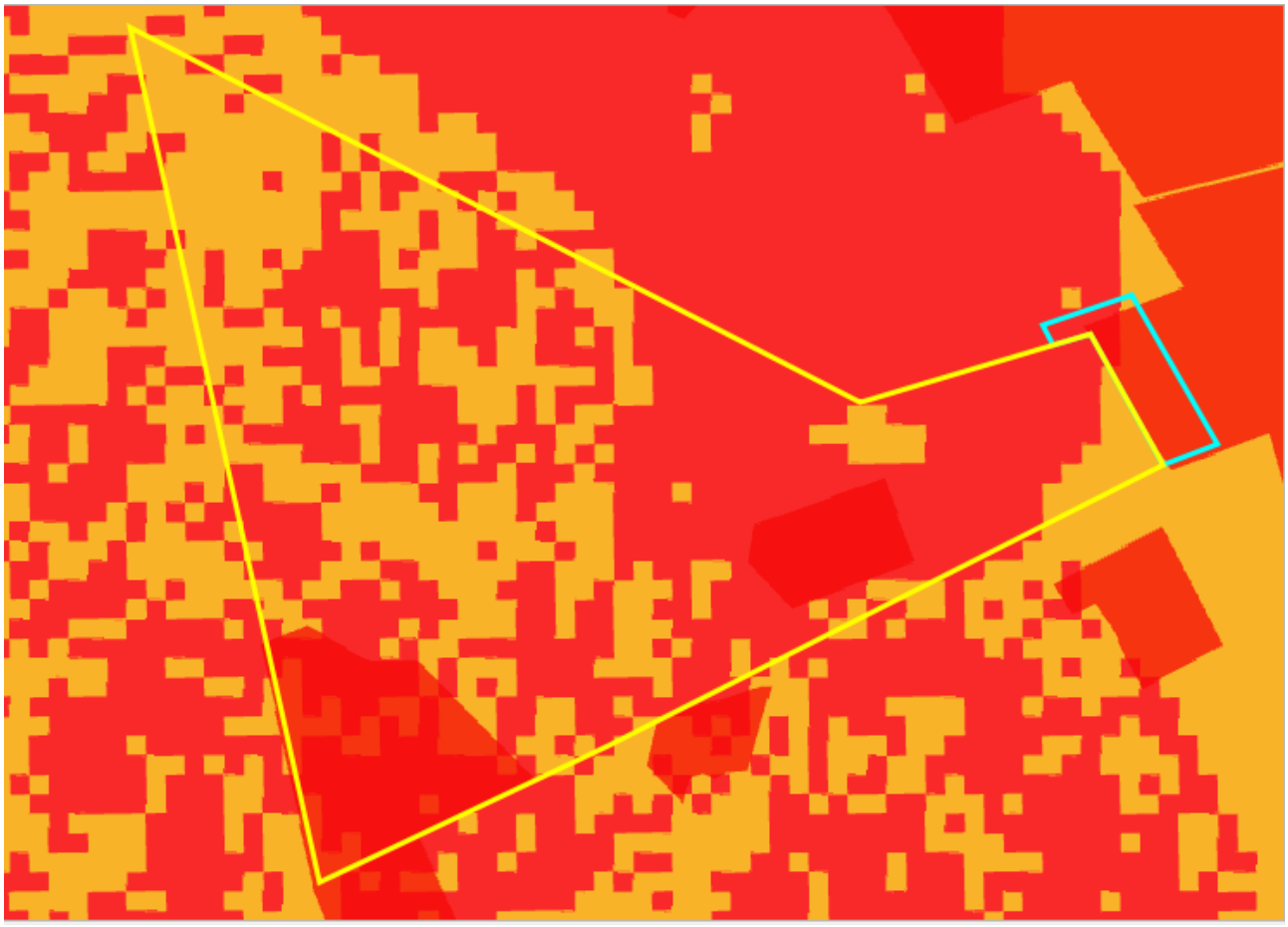

Figure 1. *The assessed PV site (yellow outline) and LILO corridor (blue outline) overlaid on agricultural sensitivity, as classified by the screening tool (green = low; yellow = medium; red = high; dark red = very high).*

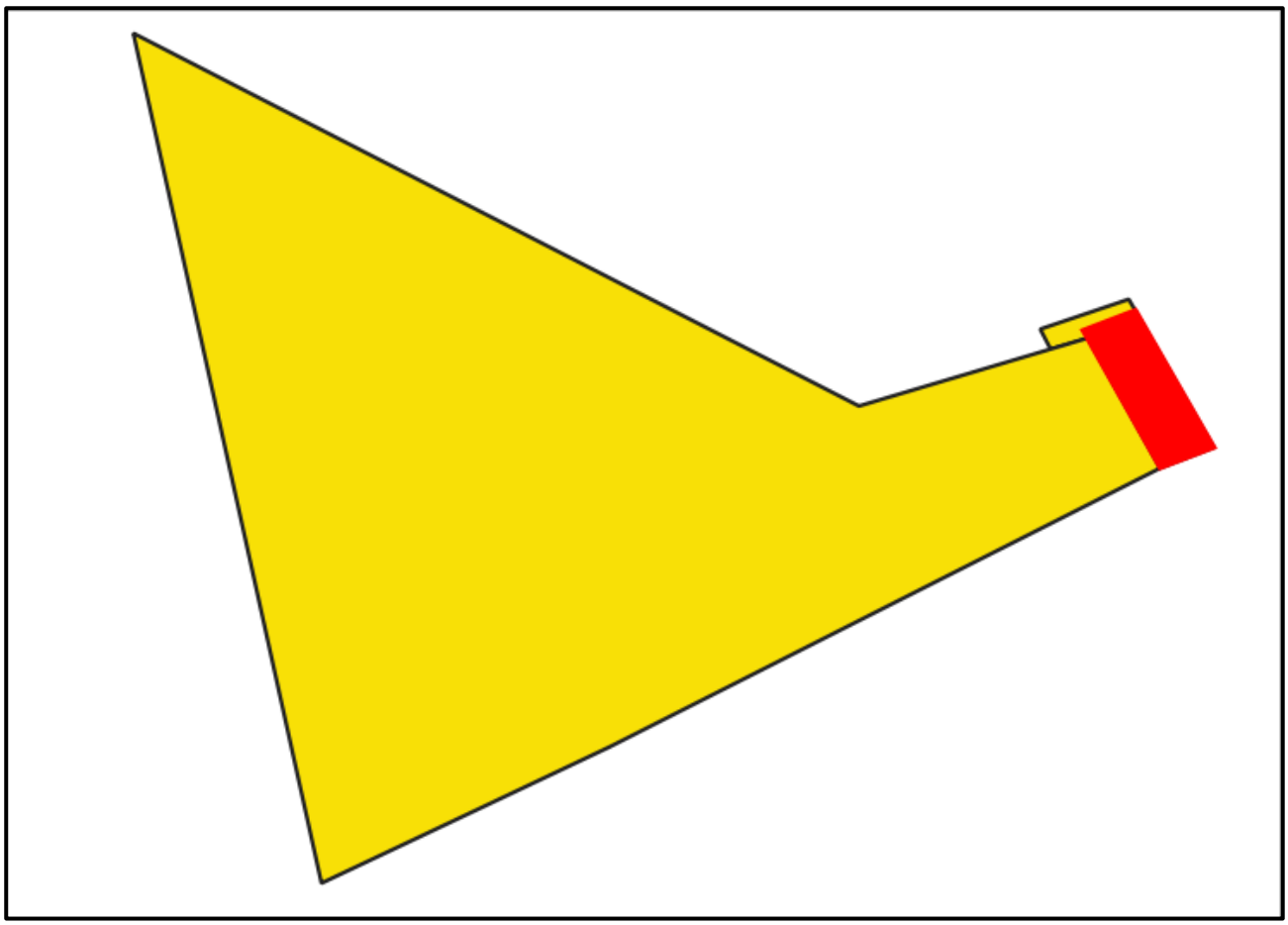

Figure 2. *The assessed site overlaid on agricultural sensitivity, as verified by this assessment (green = low; yellow = medium; red = high; dark red = very high).*

Figure 3. *Photograph of typical site conditions.*

Figure 4. *Photograph of typical site conditions.*

Figure 5. *Photograph of typical site conditions showing the red soil conditions.*

4 SITE SENSITIVTY STATEMENT

The screening tool classifies the assessed site as ranging from medium to high agricultural sensitivity and therefore classifies the overall site sensitivity, which is the highest sensitivity encountered across the site, as high. The high sensitivity classification by the screening tool is due to a combination of some land being classified as cropland (high sensitivity) and some land being classified as high sensitivity because of its land capability rating (see Table 2).

However, as shown above, only parts of the site have suitability for cropping and therefore deserve to be classified as high sensitivity. Those parts of the site that have been verified in this assessment as being of high sensitivity are shown in Figure 3 and differ from those shown by the screening tool. This assessment therefore disputes some of the detail of the sensitivity classification by the screening tool, in terms of which lands are viable for cropland, and therefore have high sensitivity, and which are not and therefore have medium sensitivity, but it confirms the overall site sensitivity - that is the highest sensitivity encountered across the site as high.

It is important to note that the PV site is verified as being entirely of medium agricultural sensitivity and the verified high sensitivity occurs only on the LILO corridor. Because the LILO corridor is linear infrastructure with negligible agricultural impact, it is not restricted from being located on high agricultural sensitivity land. There are no parts of the PV site in which development is not permitted due to agricultural sensitivity.

Because the PV site is medium sensitivity and there is only linear infrastructure on the high sensitivity, the level of agricultural assessment required by NEMA's agricultural protocol is an Agricultural Compliance Statement.

5 REFERENCES

Crop Estimates Consortium, 2019. *Field Crop Boundary data layer, 2019*. Pretoria. Department of Agriculture, Forestry and Fisheries.

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